



Equity Research

April 21, 2008

Some HDD Concern; Ent. Storage Ok So Far

Enterprise Storage/Networking Weekly

- **HDD Thoughts** - There were mixed data points on the HDD industry last week. From a negative standpoint, Seagate reported a sharp increase in its finished goods inventory, though also reporting that it exited the March quarter with only 4.4 weeks of channel inventory (vs. industry at approx. 6 wks, according to Seagate). This has caused some concern over supply/demand trends into the June quarter. Seagate did offer up weaker-than-expected guidance going into the June quarter; noting that like-to-like price declines would likely be at the high-end of the seasonal 4-7% seq. decline range. On a more positive note, Intel results and guidance were better-than-expected with the company reiterating its expectation of low-double digit yr/yr PC shipment growth in CY2008; company citing a faster shift to mobility.
- **EMC Earnings Preview: Maintain OP Rating; Investors Anticipate Cautious Tone on Prior 2008 Outlook** – Although shares of EMC (\$15.52) could face some near-term pressure as we believe there is downside risks to prior CY2008 guidance, our sense is that this is widely anticipated. We maintain our OP rating on EMC given our belief that the company's long-term competitive positioning remains sound and the company's core valuation (sub-10x CY2008 core non-GAAP EPS) remains attractive. We keep our CQ1'08 est. unchanged with GAAP (headline) EPS of \$0.16 on rev. of \$3.400B (-11% seq.; +14% yr/yr). This compares to the consensus estimate of \$0.16/\$3.45B. More importantly, we are adjusting our CY2008 consolidated GAAP EPS and revenue expectation from \$0.78/\$14.93B (+13% yr/yr) to \$0.76/\$14.71B (+11% yr/yr) as we are tempering our core EMC Information Infrastructure (ex-VMware) growth from 9% yr/yr to 7% yr/yr. We are focused on - (1) Core Storage Growth, (2) RSA, (3) Content Mgmt/Archiving, (4) Dell/EMC CLARiiON Relationship, and (5) VMW Distribution?
- **Positive Meetings with Xyratex Management** - We hosted several investor meetings with Todd Gresham, EVP of XRTX's Network Storage Systems segment. Our key takeaway is that XRTX has not seen a slowdown in customer order patterns within NSS (including NetApp). While we believe NetApp may be facing some increased complexity with regard to forecasting at the SKU level, and we are a bit concerned with the potential of a 10% seq. revenue decline at NetApp during its July 2008 quarter, Mr. Gresham remains comfortable in forecasting its NetApp revenue growth in the 15-16% yr/yr range for FY2008. Mr. Gresham was optimistic on the incremental opportunities associated with the Dell/EqualLogic relationship, noting that volume shipments have already commenced though also highlighting the fact that next-generation design wins will be very important.
- **Other** - (1) IBM Results - Positive storage growth with 17% yr/yr growth in high-end DS8000. Sys. z (mainframe) traction taking shape (ELX positive), while Sys. p (Unix) server growth was weaker given high-end P6 transition (ELX negative). Sys. x (Windows/Linux) server growth was disappointing (QLGC negative). (2) NAB Show notes; interview with DataDirect Networks executive team - company focused on \$500M in rev. over next 5 yrs, (3) IBM acquires Diligent (de-dupe), (4) HGST Business Update (Hitachi Ltd. remains committed), (5) Avnet Pre-Announcement, (6) Seagate Results - Focus on 2.5" challenges and inventory build, and (7) PMC-Sierra results - positive on storage/EMC derivative takeaway.

Enterprise Hardware

Aaron Rakers, CFA, Senior Analyst
(314) 955-4404 / aaron.rakers@wachovia.com
Matthew Nahorski, Associate Analyst
(314) 955-4638 / matthew.nahorski@wachovia.com

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Hard Disk Drives (HDDs) –Seagate Sues STEC, SanDisk Results (SSD Thoughts), Toshiba Delays Notebook SSDs, and More...

Seagate Sues STEC Over SSD Technology

Seagate announced that it has initiated a patent infringement suit against STEC over its enterprise SSDs. As a reminder, STEC is the supplier of enterprise SSDs into EMC's high-end Symmetrix DMX-4 storage arrays, option commencing shipments in late March. On one hand, we believe this provides some validation to STEC's enterprise SSD technology and the potential opportunities that this market may in fact represent over the coming years, while on the other hand we believe this could truly create a challenge for STEC and its ability to execute with additional enterprise SSD wins going forward. The suit, filed in U.S. District in San Francisco, accuse STEC of infringing on four patents held by Seagate and its Maxtor subsidiary. During its recent earnings release, Seagate's CEO, Bill Watkins, noted that this suit is about protecting the invested interest in Seagate, not over the viability of the enterprise SSD market opportunity.

SanDisk Reports March Results; Thoughts on Flash vs. HDDs

SanDisk reported revenue of \$850 million, down 32% sequentially and was relatively in-line with expectations for the March quarter. More importantly, below we highlight some of our key takeaways, mostly as they pertain to the HDD industry.

- **Comments on Flash Pricing/Demand** – In his opening remarks, Dr. Eli Harari, CEO of SanDisk, offered up some commentary around market conditions affecting CQ1'08. He stated that market conditions were similar to the first quarter of 2007, characterized by excess supply, seasonally soft demand, and aggressive pricing. The sharp decline in market pricing exceeded the company's cost reductions and resulted in lower product gross margins. Dr. Harari stated that SanDisk believes that some of the large NAND flash suppliers liquidated substantial amounts of inventory late in CQ4'07 and throughout CQ1'08 which led to depressed industry-wide margins. He also believes that conditions should improve gradually as low-priced inventory is sold through the channels and expects the new 3G Apple iPhone and competitors' models will fuel renewed demand for NAND flash in 2H'CY08.
- **March Quarter Highlights** – SanDisk reported total megabytes sold declined by 9% sequentially, which compares to a 22% sequential decline experienced in the first quarter of 2007. The company did note that prices declined by 29% sequentially. Total retail channel revenue grew 22% on a yr/yr basis. OEM revenue, primarily microSD and iNAND products into mobile handsets fell 14% yr/yr, however, if the TwinSys joint venture is excluded, OEM revenue was flat yr/yr. ASPs per megabyte in the OEM space were down 70% sequentially, driven by competitive pricing in the mobile OEM space, as well as a shift to higher capacity mobile cards. OEM average capacity grew 154% yr/yr.
- **Guidance** – SanDisk is expecting a more moderate pricing environment in the second quarter, with sequential growth in megabytes sold driven by seasonality and the continued expansion in average capacity. Total second quarter revenue is forecasted to be between \$875 and \$950 million. License and royalty revenue is expected to be \$115-\$125 million. For all of 2008, SanDisk still forecasts megabytes sold to increase 150-170% yr/yr, and while the company does believe that pricing will moderate over the course of the year, given aggressive pricing in CQ1, the annual price decline could be at the high end of the forecasted range of 50-55%.
- **Solid State Disk Adoption** – SanDisk again reiterated their belief that the SSD market will provide the company more opportunity to differentiate themselves based on SanDisk's strong expertise and IP. The company believes that this market is developing into two significant segments – a large commodity segment in the notebook space, where price per megabyte will be key, and the enterprise space where premiums could be significant. Dr. Harari also commented that he has seen growing interest in SSDs in the enterprise space to augment HDD storage arrays with high I/O bandwidth and low power flash memory. **We believe it is interesting that Mr. Harari used the term “augment” rather than replace traditional HDDs within enterprise arrays (though industry contacts do note that there is work underway on all SSD-based arrays).** Dr. Harari further commented that in enterprise server storage architectures, the higher price of flash SSDs is not an impediment (as much as 30x price premium on a \$/GB basis when compared to traditional enterprise-class HDDs), and that SanDisk expects the accelerated deployment of flash SSDs in the enterprise storage space in 2009 and beyond.

SanDisk offered up no change in the assumption that the penetration rate of SSDs into traditional notebooks will be minimal over the next few years – industry contacts continuing to point to 10% penetration by the end of 2010.

Intel Reports CQ1'08 Results – Positive Commentary on PC Growth; HDD Derivative

- **Intel Guide Positive for Shares of PC-Related Companies (STX and WDC)** – Within our coverage, we believe that Intel's reiteration of low double-digit PC growth and expectations of a seasonal June quarter PC market are a positive for shares of STX and WDC. Even though Seagate reported lower guidance expectations for the June quarter based in part on lower demand, we would note that the June quarter tends to be a seasonally down quarter in the HDD industry and Intel's guidance does provide some comfort that demand could be better than expected at Seagate. Western Digital reports on Thursday this week after the market closes and we will be focusing on their comments about demand trends looking into the June quarter.
- **Key PC Related Data** – Intel's CQ1'08 results reflected a stable PC market environment. In fact, during the Q&A portion of the conference call, management did reiterate their PC shipment growth expectations for 2008 of low double digit growth. Intel stated that they are not seeing any impact in orders or delays from the possible impact of a laptop battery shortage caused by the LG Chem plant fire back in March. Intel has previously highlighted the trend within the PC market of a transition to mobility and indicated that their CQ1'08 results show an acceleration in this trend. The acceleration compared to last year was so great that Intel is now forecasting that the shipment crossover of desktop PCs to mobile PCs will now happen this year instead of next. Given the company's June guidance, we could imply that PC related sales might be down 1-2% sequentially, which would be within normal seasonality at Intel. The company also reported that overall ASPs were flat sequentially, with notebook ASPs down sequentially due to mix shifts towards the consumer and emerging markets segments. Desktop ASPs could have been flat sequentially.
- **Continue to Favor Seagate** – Although we believe shares of Seagate and Western Digital will mostly trade in-line with each other, we continue to favor Seagate over Western Digital. Despite the fact that Western Digital has a much more favorable position in the external drive market, and has an ongoing technology leadership position in the faster growing notebook PC market (mainly high capacity drives), we believe Seagate has positioned itself to regain share in the 2.5" notebook space, has a solid/improving FCF story, and is well positioned as the market share leader within the desktop disk drive space.
- Intel reported revenue of \$9.7 billion (down 1-7% seq.), which was at the midpoint of the company's expectations and above the consensus estimate of \$9.0 billion. The company noted that this was driven by strong industry demand for edge processors and chipsets. With regard to outlook, Intel noted that it expects CQ2'08 revenue to be in the range of \$9.0-\$9.6 billion, which, using the midpoint, would be down 4% sequentially from CQ1'08. As a result of the Numonyx transaction, NOR flash revenue is expected to decline by approximately \$200 million sequentially, and excluding this revenue decline, overall revenue is forecasted to be down 1.5% sequentially. Some investors could argue that Intel's net positive tone is somewhat reflective of market share gains versus AMD.

Toshiba Delays 128GB SSD Notebook Deployment

Toshiba has postponed the launch of its new Dynabook SS RX1 notebook. The Synabook is supposed to ship with a 128GB solid-state drive (SSD), according to the company. This notebook has been billed as the first to ship with a 128GB drive and was originally scheduled to be shipped sometime this month, but now shipments will be delayed until June, according to Toshiba. In a press release, Toshiba cited parts delays, but it is not clear whether the delays were SSD related or some other component (possible battery shortages due to plant fire a few months ago at a major supplier). However, we would point out that Toshiba did postpone the launch of a notebook last year with a 64GB SSD due to flash memory chip procurement delays. In a related story, Toshiba Europe has listed the Portege R500-12Q with an 128GB SSD, but no information on availability has yet been given.

Ent. Storage: IBM Acquires Diligent and Reports CQ1'08 Results - Collateral Damage, Avnet Pre-Announcement, and More...

Diligent Acquired by IBM – Data Domain Headline Negative, Though Widely Anticipated

Following weeks of speculation, IBM has officially announced the acquisition of Diligent Technologies, a privately-held provider of de-duplication software. No financial details were disclosed, though speculation was that IBM would pay as much as \$200 million for Diligent (probably a 5x-plus P/S multiple). It is interesting that Diligent was co-founded by Moshe Yanai, the founder of IBM's recent acquisition of Isreali-based XIV Information Systems (Mr. Yanai was the inventor behind EMC's high-end Symmetrix platform). Diligent was spun-out of EMC in 2002.

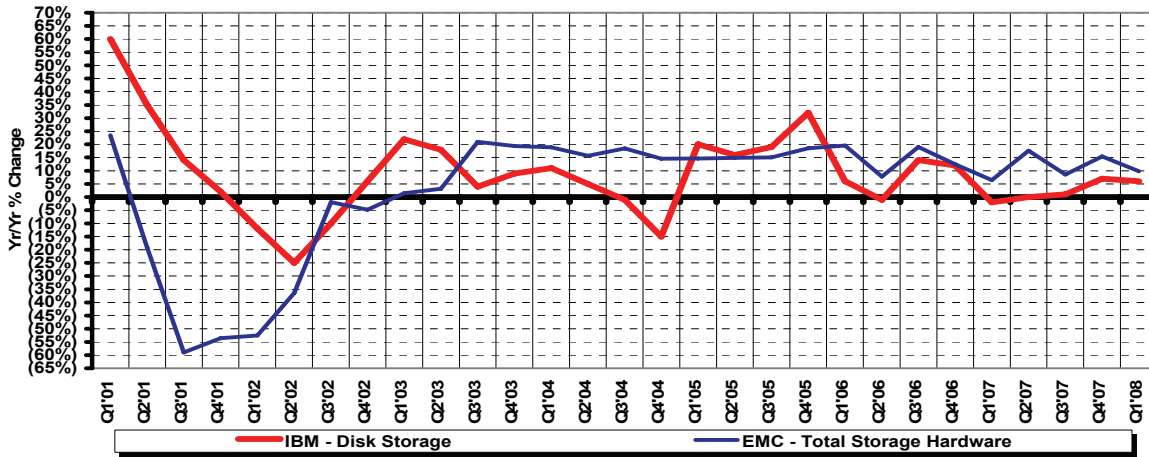
Data Domain Derivative Headline Negative – Diligent, which has had a relationship with Hitachi Data Systems and Sun Microsystems, is a provider of data de-dupe software and therefore is a competitor against Data Domain. While we believe there is meaningful growth opportunities ahead of Data Domain (note: industry contacts/presentations continue to highlight data de-dupe as the hottest trend in the storage market; replacing tape-based backup) and the IBM/Diligent combination has been expected for quite sometime, this official announcement could be viewed as a headline concern for Data Domain. That being said, we believe Diligent has had some challenges competing against Data Domain thus far and only time will tell on how IBM will integrate the Diligent technology in its product family going forward. We believe Data Domain will report a strong CQ1'08 next week with revenue and EPS upside (Apr 24, after close).

Hitachi/Diligent Relationship - Hitachi's official take on this announcement is that this is now expected to have a "material" impact on Hitachi's Storage Solutions business result. The company does not expect any changes to its global reseller agreement and there are contractual protections in place with the company's customers. The company will continue to provide its VTL solutions, although we believe traction has been limited. That said, the company noted that the Diligent ProtecTIER software offers tailored data de-dupe technology that addresses only a fraction of the company's overall business continuity and disaster recovery capabilities. While Hitachi remains committed to providing customers a full line-up of backup and recovery solutions, this will likely put some question into the company's long-term de-dupe strategy. As a reminder, de-dupe was noted as the hottest storage trend taking place in 2008.

IBM Reports CQ1'08 Results - Storage Collateral Damage

- **Overall IT Spend Thoughts** - IBM provided an overall positive tone with regard to IT spending trends (though clearly helped by some favorable product cycle trends - z10 mainframe, midrange p6 servers, etc; offset by weakness in some areas - System x servers, high-end System p, etc.). IBM noted that it saw strong Telco spend and a return to growth in financial services, +5% in CC - positive for enterprise storage with financial services accounting for 18-20% of total storage spending, though again likely helped by mainframe business. IBM did note that it had seen some momentum slowdown during the final month of CQ1'08, though stated that this was not meaningfully different than prior quarter trends and its plans. There were some elongated sales cycles, most notably in developed markets (no surprise).
- **EMC Thoughts** - IBM reported solid results in its disk storage results for CQ1'08. Disk rev +6% yr/yr (vs. +7% yr/yr in prior qtr), in which high-end DS8000 grew a strong 17% yr/yr (vs. +21% yr/yr in prior qtr). This compares to our estimate of EMC's total storage hardware growing 10% yr/yr during CQ1'08 (see Figure 1) in which we estimate Symmetrix revenue to be roughly flat yr/yr (vs. a solid 12% yr/yr growth in the prior qtr). That said, we continue to discount IBM's high-end strength as a meaningful competitive concern for EMC given: (1) more than 70% of IBM's disk storage business is driven from its own server environments (i.e. server-to-storage drag; high-end significantly driven by mainframe), (2) our checks suggesting that IBM continues to lag in technology, and (3) we believe EMC continues to have a favorable product cycle dynamic with its Symmetrix DMX-4 platform; recently commencing support for enterprise SSDs and virtual provisioning (two features IBM has yet to offer). That said, we continue to await a high-end storage refresh out of IBM - now hearing this is a CQ3'08 story - as well as the integration of the XIV acquisition.

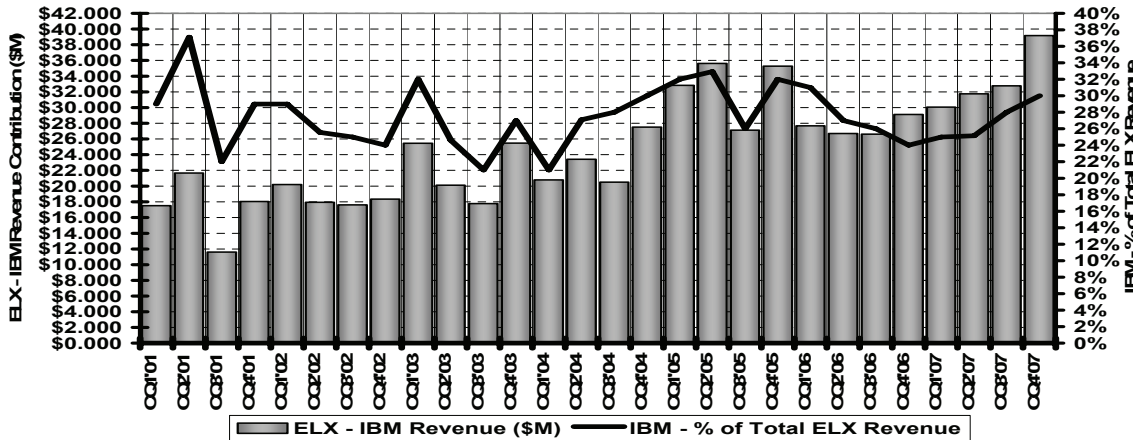
Figure 1: EMC Total Storage Hardware versus IBM Disclosed Disk Storage – YR/YR % Change



Source: Company Data, Wachovia Capital Markets, LLC

- Emulex Thoughts** - IBM's positive commentary on the Sys z (z10 mainframe) cycle could be viewed as a positive for ELX, which sells chips into these environments (despite our recent more sluggish checks). IBM reported total System z rev growth of 10% yr/yr, or we estimate -46% sequential (better than the high-50%/low-60% sequential declines in the prior three March quarters). Offsetting this positive was a slowdown in System p (Unix) server growth at 2% yr/yr vs. +9% yr/yr in the prior qtr. System p server revenue declined at a slightly more pronounced sequential range than historical patterns over the past few yrs, according to our estimates. IBM did note that its high-end System p servers were hurt by the P6 transition that took place in early April. Emulex derived ~30% of revenue from IBM during its Dec 07 quarter (see Figure 2); IBM representing its largest customer.

Figure 2: ELX - IBM Rev. (\$M) and % of Total ELX Revenue



Source: Emulex, Wachovia Capital Markets, LLC

- QLogic Thoughts** - IBM's disappointing System x (Windows/Linux) server results could be viewed as a net-negative data point for QLogic. System x revenue was flat yr/yr, which compares to 6% yr/yr growth in the prior two qtrs. This implies a ~25% sequential decline, according to our estimates, which compares to a ~20% sequential decline in the prior two March quarters. IBM accounts for ~17% of QLogic's total revenue (most notably HBAs going into System x servers). IBM did report 31% yr/yr growth in blade servers, comparable with prior quarter, a segment in which QLogic remains well positioned.
- Brocade Thoughts** - IBM's positive commentary on mainframes could be viewed as a Brocade positive; only supplier of high-end 8Gbps directors and a legacy McDATA installed base to harvest (estimate directors attached to mainframes account for ~3-5% of Brocade's total revenue today).

See our detailed note published on 4/16/08 for further information.

Avnet Issues Negative Pre-Announcement – Not a Storage Concern

Last week, Avnet issued a negative pre-announcement for its FQ3'08 (March 2008) results. It is important to note that Avnet had previously stated that it was not seeing a meaningful impact related to the macroeconomic environment. The company announced that it now expects total revenue for the quarter to be approximately \$4.42 billion (+13% yr/yr). This is below the consensus estimate of \$4.47 billion for the quarter. Previous guidance from the company had been between \$4.37 and \$4.57 billion. Avnet also declared that EPS is now expected to be \$0.74-\$0.76, which compares to original guidance of \$0.85-\$0.89 and the Street's estimate of \$0.87.

Segment Results – Avnet operates two main business segments – Electronic Marketing (EM) and Technology Solutions (TS). In the EM segment, revenue is now expected to be \$2.62 billion, which is \$70M below the midpoint of the guidance for this segment, which was \$2.64-\$2.74 billion. Op. income was flat yr/yr due to ongoing weakness in EMEA and geographic business mix. Looking at the TS business, in which the company utilizes products from NetApp, as well as other key storage and server providers, is expected to be \$1.80 billion, which is towards the top of expectations of \$1.73-\$1.83 billion. We view this as a positive for NetApp. However, operating income in the segment was down due to four reasons given by the company: (1) Lower revenues in certain business units resulted in lower rebates earned from suppliers (company disclosed that this was mainly one large North American supplier; checks point to high-end Unix server market, possibly IBM or Sun Micro), 2.) Changes in a major IT supplier's rebate program in EMEA (company disclosed that the changes were structurally based, and not performance based), 3.) Greater than anticipated expenses in EMEA due to synergy cost savings taking longer than expected to achieve, and 4.) Negative organic growth in EMEA local currency.

June Quarter Forecast – The company is now expecting normal seasonality at EM and slightly below normal seasonality at TS, although revenue at TS will be up on a sequential basis due to the impact of Sun's June fiscal year end. Avnet is now forecasting total revenue to be \$4.55-\$4.75 billion and EPS between \$0.79 and \$0.83.

Our Take – While at first glance this appeared to be a negative data point for the storage market (noting that NetApp sees 17% of its revenue from Avnet and Arrow combined during its most recent quarter), further investigation finds that this is not entirely the case. During a conference call to discuss these results, company management did note that TS results was towards the high end of the guidance range and that operating income was lower due to specific supplier issues, none of which appear to be NetApp, according to our checks. Avnet indicated that they have taken the necessary steps to correct these rebate issues and that they should not be a problem during the June quarter.

NAB Show Highlights - Focus on Storage Solution in Increasingly Digital World & Interview with DataDirect Networks' Executive Management Team

Last week we spent a day at the NAB Show in Las Vegas, which is an enormous conference focused on the broadcasting market and the explosion taking place in digital content. As expected, we spent our day focused on understanding the dynamics taking place in this market as it pertains to the storage industry, and left the show feeling more comfortable in our thesis that there will continue to be a bifurcation in the overall storage market between traditional enterprise environments and those markets driving the creation next-generation digital content (i.e. a tremendous amount of unstructured data from video files in the broadcasting/post-production market to medical images, photos, etc.). Below we highlight our key takeaways from the show, as well as meetings with privately-held DataDirect Networks (DDN) executives including the President and Co-Chairman, Chairman and CEO, EVP of Worldwide Sales, CTO, and CFO.

- **Key Show Takeaways** – The most notable takeaway is that this is an extremely large show in which the explosion in digital content takes center stage. From radio and cable to post-production activities in the film industry and imagery requirements from the likes of the Jet Propulsion Laboratory, digital content is being created all around us – growing at a breathtaking pace. This show hosted seminars on topics such as storage in content capture and creation, digital content editing and post-production, and content delivery and archiving strategies. The conference had exhibits by more than 100 companies in the area of Digital Asset Management and Storage. Storage companies with notable presence at this show included: DataDirect Networks, Isilon, EMC, NetApp, InforTrend, Promise Technology, XenData, QLogic, Quantum and others.

Some HDD Concern; Ent. Storage Ok So Far

- **EMC Exhibit** – EMC had an exhibit at the NAB conference highlighted the company’s “Hulk” solution, which appears to be currently shipping under a “quiet” GA release and is branded as the *Infiniflex 1000* solution. Our understanding is that this solution is the combination of dedicated filers utilizing IBRIX’s scalable software-based parallel file system and JBOD back-end disks. The configuration we had seen looked to have 30TB/server capacity, which equated to 300TB total (using 10 servers). Our conversations were a bit more evasive with regard to the “Maui” product, which could represent software rather than a hardware solution. Our conversations suggest that “Maui” could be focused on distributed content storage and fall within the company’s “cloud” architecture solutions.
- **Isilon Exhibit** – We did not see much new at the Isilon exhibit at the NAB conference. In fact, the company was demonstrating its IQ-series solutions, rather than the IQ X-series clustered storage systems. There seemed to be some interest around the company’s ability to offer parallel scalability, though at the time we walked through the exhibit there was not a lot of activity taking place. We continue to monitor Isilon and its roadmap given concerns over scalability and downtime associated with operating system upgrades across the company’s nodes. From a competitive standpoint, we continue to monitor NetApp’s Data ONTAP GX success (expecting convergence of 7G and GX operating systems, to form Data ONTAP 8.0, in mid/late 2009 timeframe), as well as EMC’s push into this market and what appears to be ongoing traction at privately-held DataDirect Networks (DDN). At the conference NAB, Isilon, along with 3ality Digital Systems, demonstrated the screening of a live 3D broadcast. The company also announced that it has been selected to provide Isilon IQ clustered storage systems to NBC during the network’s coverage of the 2008 Beijing Olympics (this is no surprise, in our opinion, as the company has had a long relationship with NBC Universal). We will want to question the recovery contribution this can represent.
- **NetApp Exhibit** – We had a relatively large exhibit at the NAB conference, primarily demonstrating the company’s traditional NAS solutions and its Data ONTAP GX operating system. NetApp did announce that Dalet Digital Media Systems has partnered to create digital asset management archival solutions together; utilizing the Data ONTAP GX operating system on Dalet systems. We continue to monitor NetApp’s progress toward the convergence of its two disparate operating systems – Data ONTAP 7G and GX. The company has stated that it would have another refresh of each of these operating systems on a standalone basis (possibly later this year), prior to the next version being a converged solution (Data ONTAP 8.0). Our checks suggest that Data ONTAP 8.0 could surface in the mid/late 2009 timeframe.

DataDirect Networks – Interview with Executive Mgmt Team; Focused on Growing to \$500M

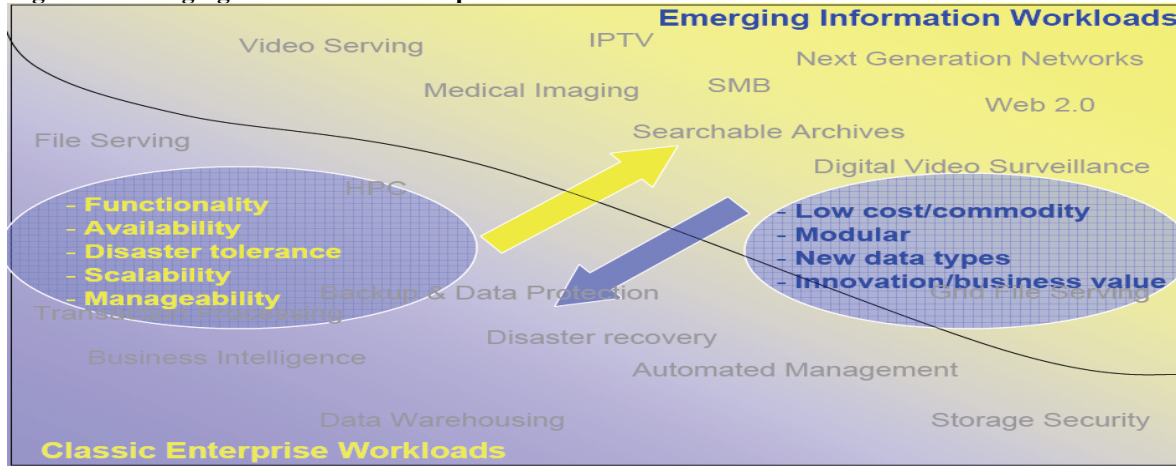
At the NAB conference we had the opportunity to meet with the top executives at one of the fastest growing players in the digital storage systems market – DataDirect Networks, or DDN. While we do not see DDN competing meaningfully with the traditional storage providers at this point in time, though clearly competing against Isilon, we believe the company is positioned very well in the fast growing digital content market, most notably in the Government and broadcasting verticals. We met with: (1) Chairman & CEO – Alex Bouzari, (2) President & Co-Chairman – Paul Bloch, (3) Executive Vice President of Worldwide Sales – Scott Genereux, (4) CTO – David Fellingner, and (5) CFO – Kevin Rubin.

Before we discuss some of the key highlights from our meetings, we thought it would be helpful to first provide a summary of our thoughts on what is developing in what we consider to be *Next-Generation Storage Environments*. The next-generation storage market is quickly evolving across many different industries. From the growth in Video-on-Demand (VoD), digital broadcasting and post production, HDTV, high resolution digital images, and digital video surveillance, to the explosion of content across the Web 2.0 market and large content files such as medical images, these markets look to be evolving into a burgeoning storage growth opportunity. We believe there have been many recent announcements/events validating the notion that this market is in fact a fundamentally different market than the traditional enterprise market – often driven by dramatically different performance requirements. This has vendors focusing on the development of highly scalable systems (often times implementing a form of clustering or highly scalable next-generation operating systems, as well as the adoption of new next-generation interface technologies such as InfiniBand). Some of the more notable developments supporting the fact that this market is evolving include: (1) IBM acquiring XIV (expect product announcements in the Aug/Sept 08 timeframe; shipments in Oct/Nov 08), (2) EMC doing a “quiet” GA release of its “Hulk” solution, which leverages the IBRIX scalable parallel file system, (3) Rapid growth in emerging players such as DataDirect Networks, 3Par, and others, and (4) NetApp’s focus on providing an integrated next-generating Data ONTAP operating system (Data ONTAP 8) that supports clustered NAS (Global Namespace). We believe Figure 3 below, from a

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presentation on IBM's recent XIV acquisition, provides a good high level summary of the changing dynamics, or rather bifurcation, we are seeing take shape within the storage market.

Figure 3: Changing Workload Landscape – Classic versus New Use Cases



Source: IBM

With that said, a few of the more notable key takeaways from our meetings with DDN executives include:

- DataDirect Networks Quick Description** – Founded in 1988 and headquartered in Chatsworth, CA, DataDirect Networks focus on providing high-end storage solutions specifically for large capacity and high-bandwidth applications (i.e. non-traditional enterprise applications). The company's products had initially focused on High-Performance Computing environments, in which it established a footprint in more than 40 of the world's top-100 supercomputing environments (many of which utilize InfiniBand interfaces in high-end clustered configurations). The company's S2A Storage Systems currently focus on the following verticals: Media & Entertainment, Internet Media, Oil & Gas, Engineering, Government, Life Sciences, and Deep Archival (see Figure 4 below)

Figure 4: DataDirect Networks – Customer Summary

Source: DataDirect Networks

From a competitive landscape, we believe DataDirect does face competition from the likes of EMC, Hitachi, NetApp, Isilon, and others, but really appears to be focused on next-generation high-performance applications with an exploding amount of next-generation digital content. Our conversations suggest that the company could look to build-out its product portfolio and possibly move down market over time.

- **Financial Thoughts – Strong Growth with Trend; Focus on \$500 Million Over 5 Years** – While DataDirect is not providing specific details on its financials, our conversations did note that it achieved its CO1'08 targets and has not seen any macroeconomic related slowdown. DDN's management noted that it has good visibility looking out 2-3 quarters with a pipeline continuing to point to solid double digit growth over the coming quarters. In early January the company did report that its revenue now exceeded \$100 million annualized; we believe growing at a strong double-digit clip. Our conversations suggested that the company is focused on expanding to a \$500 million revenue run rate over the next 5 years.

The company has also been operating at profitability, possibly as high as the mid/high-teens, according to our conversations. Breakeven is estimated to be in the \$20-\$30 million range. The company has more than 150 petabytes of capacity installed worldwide (though we would note that some deals could be as large as 5PB to up as much as 10PB or more). The company also has reseller arrangements with IBM (relatively healthy size; HPC still accounting for ~80% of business) and Dell in HPC environments (s, as well as partnerships with SeaChange (post production), Raytheon, Sony, and Cray. We believe IBM is the most notable partner, a relationship DataDirect has expanded beyond just the HPC market recently. The company currently has approximately 250 employees, of which approximately 35-40 are quota carrying sales persons. Mr. Genereux noted that he is very focused on expanding the company's current sales organization (possibly doubling over the next 12 months; taking 3-6 months to ramp to productivity), though partnerships remain an important focus. He believes the channel will be an important piece of DataDirect's long-term go-to-market strategy.

- **Bringing Products Down Market** – DataDirect currently offers four storage configurations within its S2A product families (stands for Silicon Storage Appliances):
 1. **S2A9900** – The S2A9900 is the company's flagship high-end system scalable to up to 1,200 drives for a total of 1.2PB of capacity in an 84U rack (2-bay) configuration under only two performance controllers ("couplets"). This product offers the same capacity as the new S2A9700, but at 2x the read/write performance. The S2A9900 supports the integration of the company's new 60 drive 4U enclosures. This product is said to carry a list price starting in the \$200,000 range.
 2. **S2A9700 (NEW)** – Introduced at the NAB conference, the S2A9700 offers read and write performance, but at 3GB/s (vs. 6GB/s with the S2A9900). The company is positioned as a lower-end complement to the company's S2A9900. The product supports both SAS (up to 450GB 15K) and SATA (1TB 7.2K) drives and the company's new 60-drive enclosures. The product scales up to 1,200 drives per system, for a total of 1.2PB in 2 racks.
 3. **S2A6620 (NEW)** – The S2A6620 was also introduced at this year's NAB conference and represents the company's push into the lower-end of the next-generation storage market. This new configuration is noted as being ideal for animation rendering clusters, e-mail, OLTP, Database Workloads, and Internet services. In its press release, the company compares the new system to Sun's X4500 "Thumper" system and EMC's CLARiiON CX3-80 arrays. This system supports up to 30,000 IOPs and up to 1.4GB/s of throughput to the disk. The system supports up to 120 disk drives. And is architected with 2 RAID storage managers (controllers) in an active-active configuration. The company noted that this solution has an initial like price starting in the \$50,000 range; enabling the company to broaden its presence to reach 60-70% of the TAM. The company believes this solution will be squarely going after the sweet spot of Isilon's product family.
 4. **S2A9550** – This is the company's lower-end system scalable up to 960 drives for 960TB of total capacity. The company uses high-capacity 1TB drives.

DDN's CTO, David Fellingner, highlighted the fact that DDN's initial focus was to develop a solution that dealt with real-time root cause analysis. He noted that the company must develop "self-healing" storage arrays that eliminated issues relating to silent data corruption at the drive level. DDN's systems, like many of the emerging companies in the storage market, utilize a proprietary operating system – the DirectOS Virtualization Layer – but leverage open file systems (i.e. file system agnostic with Lustre, StorNext, IBRIX, GPFS). The company does not currently offer thin-provisioning capabilities, though they view this as a non-issue in their core addressable market currently. The company's systems utilize InfiniBand interface technology and specialized FPGAs (10 Xilinx Virtex FPGAs in the front-end and 8 data FPGAs)

with proprietary firmware. The FPGAs followed the company’s initial use of proprietary ASICs, which separate the command and data control characteristics. The company’s firmware enables double RAID production in that if a single member of a RAID group is slowed by an internal error recovery the system can still provide host data at a high-level of QoS.

Host connectivity is done through a PCIe x8 connections to dual-ported cards running at 1.2-1.4 GB/s and using 4Gbps FC and/or 4x InfiniBand DDR ports. Disk connectivity is done through 5 SAS ports (3Gbps); running 1.2Gbps x 10 = 12GB/s bandwidth (24GB/s in a dual active/active configuration). The company notes that it uses a SAS interface in order to eliminate a FC-to-SATA bridge (Emulex) in order to reduce costs and leverage native SAS and SATA connectivity. The company’s S2A9900 system enables 6GB/s of both read and write throughout (consistently upon scaling the system), which compares to 100 MB/s read and 50 MB/s write performance in Isilon’s IQ-series systems. The company also has a maximum internal bandwidth of 24GB/s, which compares to only 1GB/s at Isilon. Isilon systems also offer scalability via the clustering of up to 94 nodes, which we have heard to present issues with regard to performance scalability and operating system upgrades. This compares to DataDirect’s systems only employing two clustered controllers. We believe the company could look to develop a next-generation S2A platform in early 2009, which would represent the company’s 9th generation architecture (possibly focused on reaching into the “small I/O” market opportunities). Broadening its product portfolio toward the lower-end of the market was noted as a key focus by the Mr. Bouzari and Mr. Bloch.

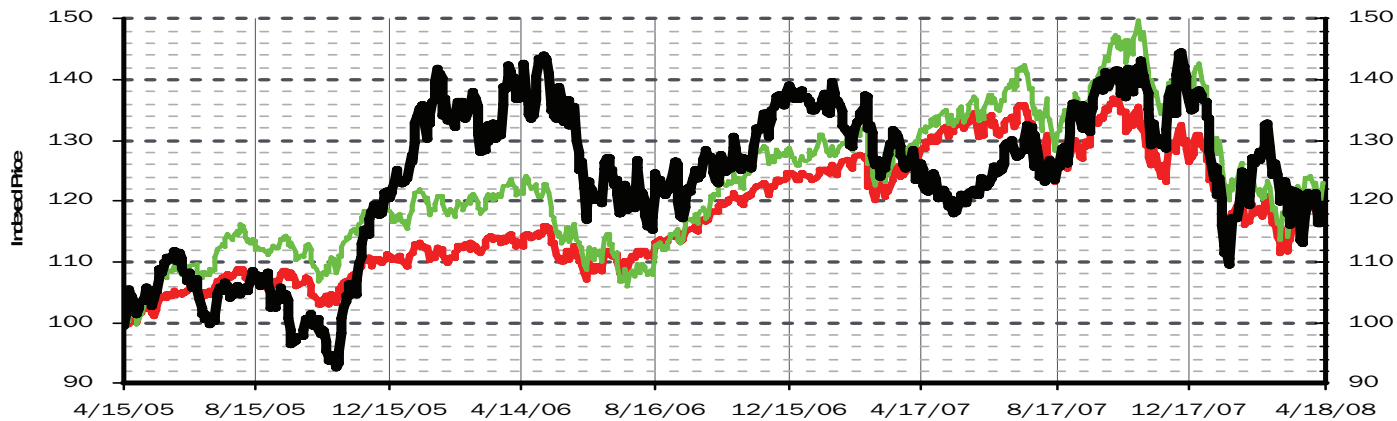
One of the most impressive characteristics of the company’s S2A systems is its support for very dense 60 drives per 4U disk array enclosure (DAE), which compares to traditional modular arrays supporting only 14-16 drives per DAE. Mr. Genereux highlighted this drive density characteristic by comparing its system relative to NetApp’s FAS6000, EMC’s high-end CLARiiON CX3-80, and Isilon’s systems (details shown below). As we can see, the company’s density, as measured by TB/square-foot, is nearly 2x better than Isilon’s IQ systems. Another characteristic of the company’s new 60-drive enclosures is the ability to spin down all but one of the HDDs for power consumption (i.e. MAID capabilities). This differs from privately-held Copan that enables the spin-down/up of only a portion of the disks within its systems.

Systems Comparison	NetApp FAS6000	EMC CX3-80	Isilon IQ Systems	DataDirect S2A 9900
Capacity	1,172TB	480TB	1,152TB	1,200TB
Footprint	42.9 sq-ft	16 sq-ft	30.64 sq-ft	16.33 sq-ft
Density	27.4 TB/sq-ft	30 TB/sq-ft	37.6 TB/sq-ft	73.5 TB/sq-ft

- **Other Key Highlights** – Other interesting notes from our meetings include:
 - **Sales Cycle** – Mr. Genereux noted that the company has traditionally seen sales cycles take approximately 60-90 days.
 - **Add-On Software** – DDN currently does not have any add-on software, but rather sells solution from others. We believe it would make sense for the company to eventually develop its own proprietary management software portfolio in order to compete in the broader storage market.
 - **Direct vs. Indirect** – DDN’s model has had approximately 20-30% of its revenue flowing through its direct channel, while 70-80% of revenue comes from the company’s channel or OEM partners.
 - **Domestic vs. International** – DDN currently derives approximately 80% of its revenue from the domestic markets, though possibly trending toward the 60% range going forward.
 - **ASPs** – DDN’s ASPs have typically trended between \$250-\$500K, though this could look to decline as the company commences shipments of its new lower-end S2A6620 solutions (expected in the August/September timeframe).
 - **Customer Concentration** – DDN saw four customers account for more than 10% of its total revenue during 2007; collectively accounting for a revenue contribution in the high-40% range. The company’s top 10 customers account for 65-80% of total revenue, in any given quarter.

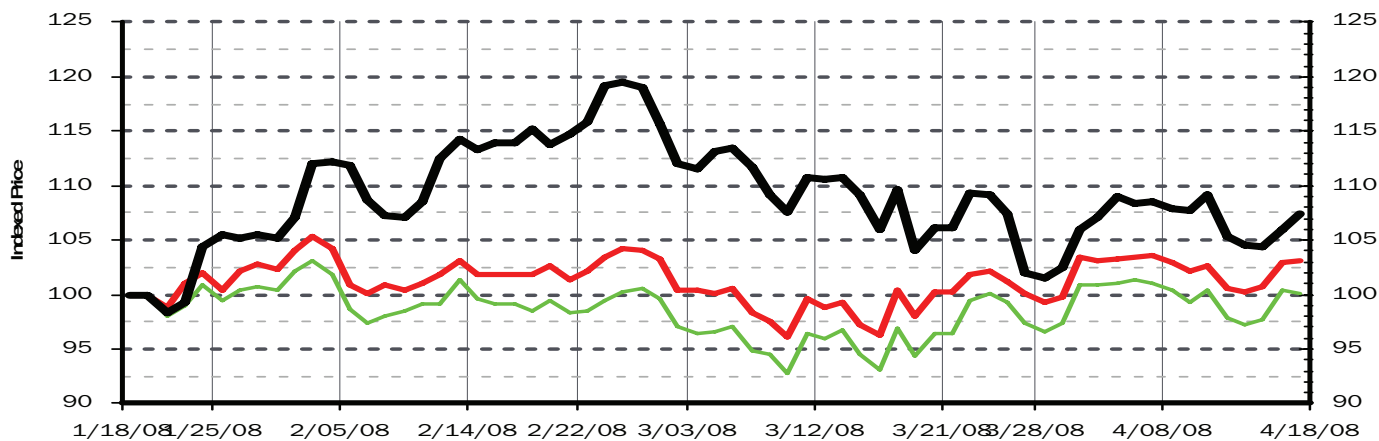
Industry Performance; Median Forward P/E – Hard Disk Drives

3-Year - HDD Index versus S&P 500 and Nasdaq Composite



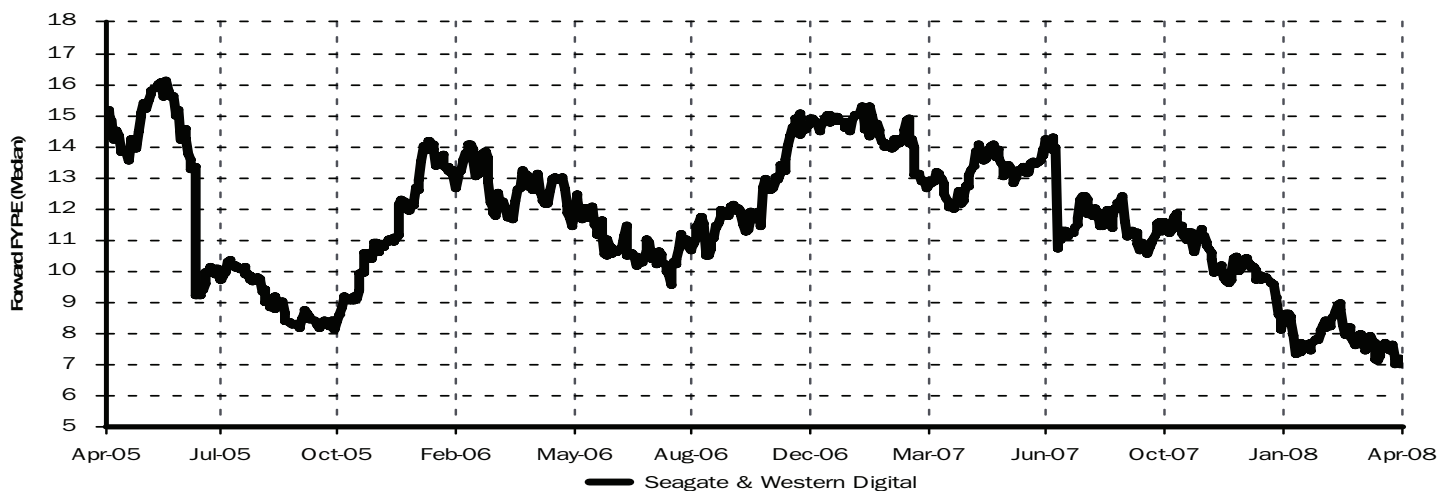
Includes: STX, WDC, HTCH, XRTX, TDK, IVAC, VECO, and NJ
Source: FactSet Research Systems

3 Month - HDD Index versus S&P 500 and Nasdaq Composite



Includes: STX, WDC, HTCH, XRTX, TDK, IVAC, VECO, and NJ
Source: FactSet Research Systems

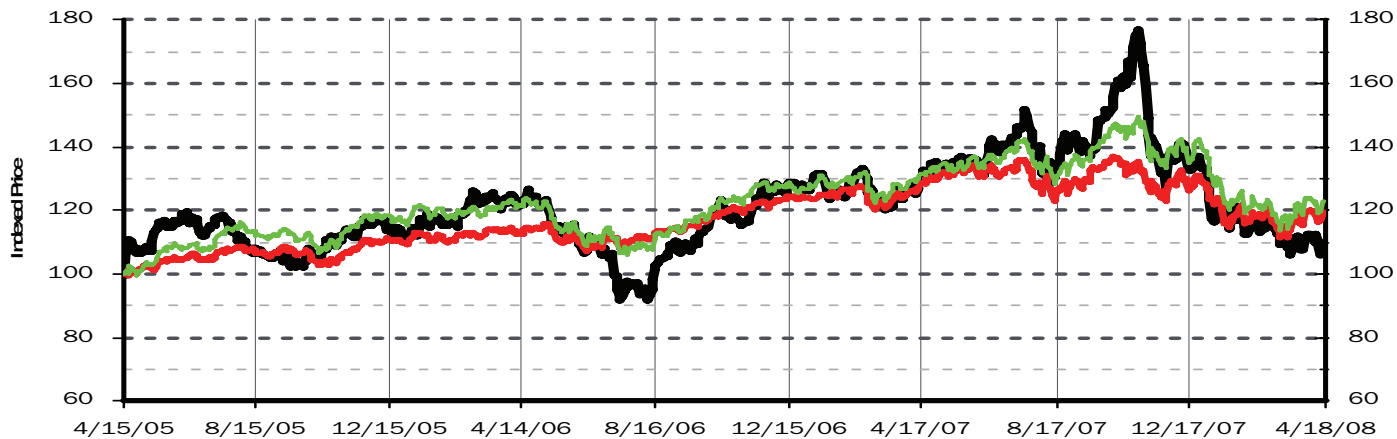
3-Year Median Forward FY P/E - Seagate and Western Digital



Includes: WDC and STX
Source: FactSet; Wachovia Capital Markets, LLC

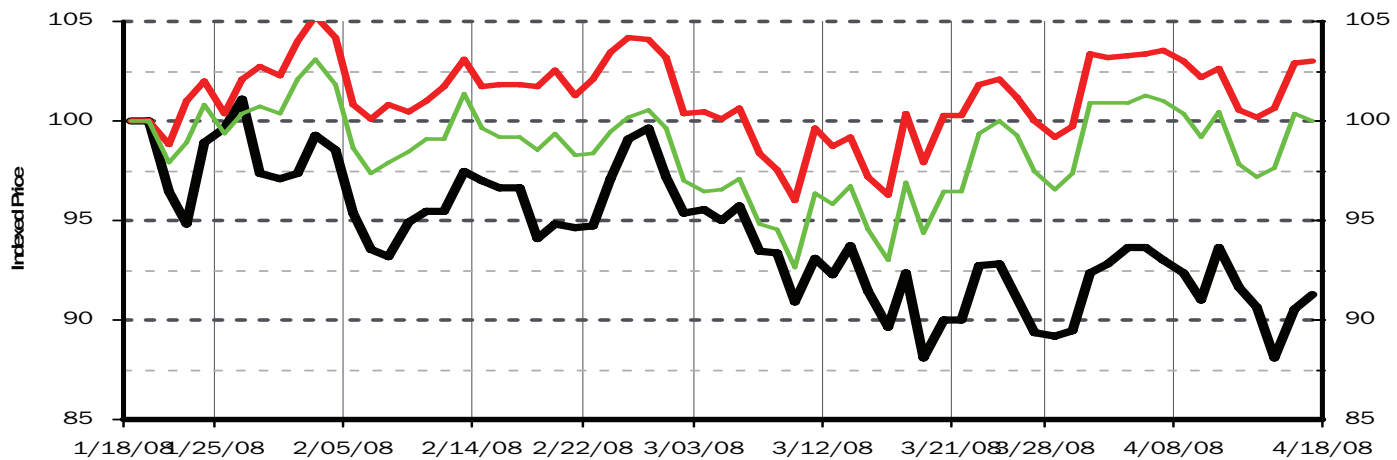
Industry Performance; Median Forward P/E – Enterprise Storage

3-Year - Enterprise Storage versus S&P 500 and Nasdaq Composite



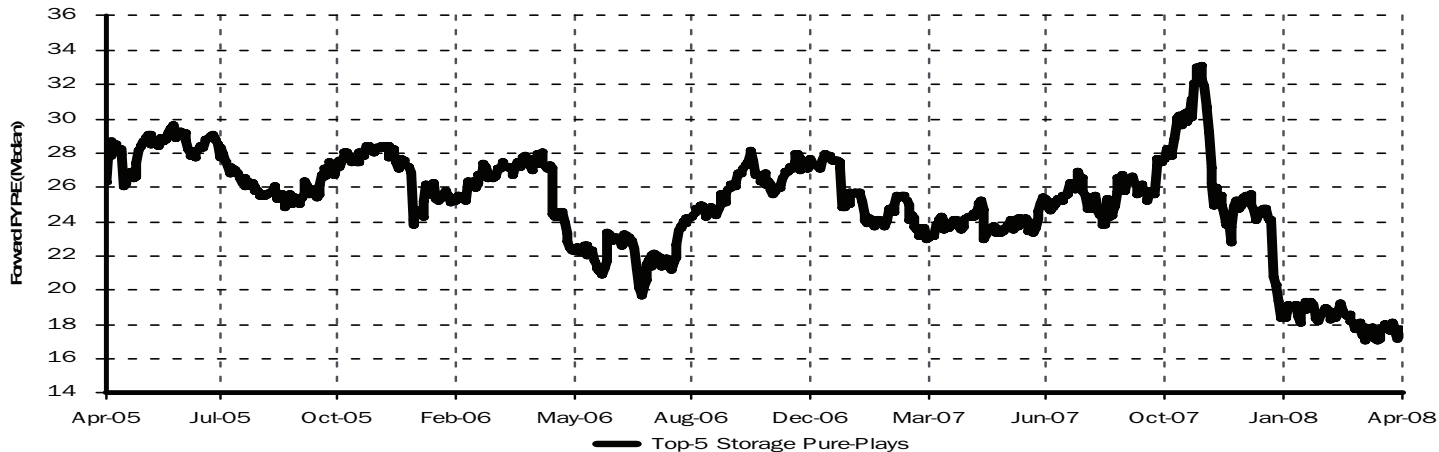
Includes: EMC, NTAP, XRTX, DDUP, CML, ISLN, QLGC, ELX, BRCD, HILL, QTM, CVLT, DBTK, MLNX, and VOLT Source: FactSet Research Systems

3 Month - Enterprise Storage versus S&P 500 and Nasdaq Composite



Includes: EMC, NTAP, XRTX, DDUP, CML, ISLN, QLGC, ELX, BRCD, HILL, QTM, CVLT, DBTK, MLNX, and VOLT Source: FactSet Research Systems

3-Year Median Forward FY P/E - Top-5 Storage Pure-Plays



Includes: EMC, NTAP, ELX, QLGC, & BRCD Source: FactSet; Wachovia Capital Markets, LLC

Noteworthy News Review – Wachovia Thoughts/Analysis

EMC

(EMC-NYSE/\$15.52 – Outperform)

EMC to Report CQ1 2008 Financial Results Before Market Open on Wednesday, April 23rd

EMC is due to announce its March 2008 (FQ1 2008) financial results before the market opens on Wednesday, April 23rd. The company will also host a conference call that same morning at 8:30am EST (5:30am PST) to discuss the results. The call can be accessed through the company's website at www.emc.com under the investor relations section or by using the dial-in information below:

Dial-In: (773) 681-5826

Password: EMC

EMC Job Listings Update

As of the end of last week, EMC's overall job listings totaled 1,232, up 2 openings compared to 1,230 listings as of the end of the prior week and down from 1,273 listings the week before that. In this, the company has 615 openings in core EMC functions, down from 631 at the end of the prior week. Documentum listings totaled 60, up from 58 the prior week, while RSA listings increased to 84 from 77. EMC's total sales listings rose to 270, up from 263 and from 266 at the end of the prior two weeks, respectively. In this, core EMC sales listings totaled 127, down from 132. The company decreased its professional services listings from 155 to 151 listings as the end of last week (156 two weeks ago). Software engineering listings totaled 276, up from 271 the prior week and down from 288 the week prior to that. We are going to be more closely monitoring these listings as interesting data points on EMC's thoughts on the current IT spending trends.

4/16/08: EMC EPS Preview – Cautious Tone Expected; Maintain Outperform, but Reduce Estimates

- Conclusion - Maintain OP Rating; Investors Anticipate Cautious Tone on Prior 2008 Outlook** – EMC is to report its CQ1'08 results on April 23 (prior to open). Although shares of EMC could continue to face some near-term pressure as we believe there is downside risks to prior CY2008 guidance, our sense is that this is widely anticipated. We are maintaining our Outperform rating on EMC given our belief that the company's long-term competitive positioning remains sound and the company's core valuation (sub-10x CY2008 core non-GAAP EPS) remains attractive for long-term investors.
- Moderating CY2008 Core EMC Estimates Below Guidance** – We keep our CQ1'08 est. unchanged with GAAP (headline) EPS of \$0.16 on rev. of \$3.400B (-11% seq.; +14% yr/yr). This compares to the consensus estimate of \$0.16/\$3.45B. More importantly, we are adjusting our CY2008 consolidated GAAP EPS and revenue expectation from \$0.78/\$14.93B (+13% yr/yr) to \$0.76/\$14.71B (+11% yr/yr) as we are tempering our core EMC Information Infrastructure (ex-VMware) growth from 9% yr/yr to 7% yr/yr. On a core EMC basis, we now estimate CY2008 GAAP EPS of \$0.68, down from our prior \$0.71 estimate (note: this reflects \$0.85 on a non-GAAP basis, down from prior \$0.88 est.). EMC had previously guided CY2008 core EMC revenue to be up ~9% yr/yr and non-GAAP EPS of \$0.88. See Figure 5 below.

Figure 5: Wachovia Estimate Changes

Revenue	Consolidate EMC		Core EMC Info. Infrastructure	
	New Est.	Prior Est.	New Est.	Prior Est.
CQ1'08	\$3,400.5M (+14% yr/yr)	\$3,400.5M (+15% yr/yr)	\$2,979.3M (+10% yr/yr)	\$2,979.3M (+10% yr/yr)
CQ2'08	\$3,438.9M (+10% yr/yr)	\$3,508.7M (+12% yr/yr)	\$2,976.9M (+5% yr/yr)	\$3,046.7M (+8% yr/yr)
CY2008	\$14,718.5M (+11% yr/yr)	\$14,930.4M (+13% yr/yr)	\$12,718.8M (+7% yr/yr)	\$12,930.5M (+9% yr/yr)
CY2009	\$16,145.5M (+10% yr/yr)	\$16,394.2M (+10% yr/yr)	\$13,373.6M (+5% yr/yr)	\$13,622.3M (+5% yr/yr)

GAAP EPS	Consolidate EMC		Core EMC Info. Infrastructure	
	New Est.	Prior Est.	New Est.	Prior Est.
CQ1'08	\$0.16 (+8% yr/yr)	\$0.16 (+8% yr/yr)	\$0.14 (+8% yr/yr)	\$0.14 (+8% yr/yr)
CQ2'08	\$0.17 (+11% yr/yr)	\$0.18 (+13% yr/yr)	\$0.16 (+12% yr/yr)	\$0.16 (+14% yr/yr)
CY2008	\$0.76 (+6% yr/yr)	\$0.78 (+8% yr/yr)	\$0.68 (0% yr/yr)	\$0.71 (+3% yr/yr)
CY2009	\$0.88 (+16% yr/yr)	\$0.90 (+16% yr/yr)	\$0.73 (+7% yr/yr)	\$0.75 (+6% yr/yr)

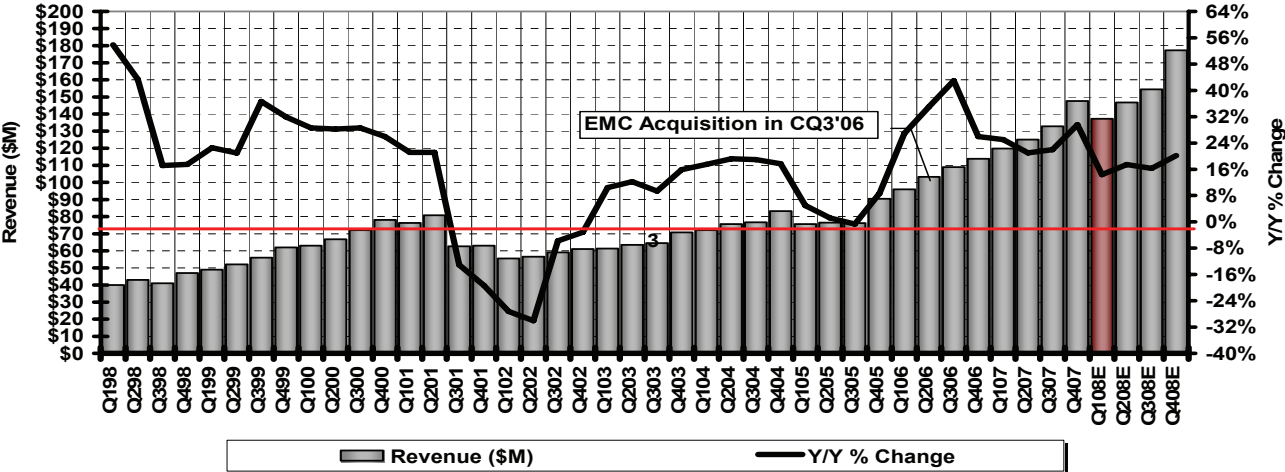
Source: company reports and Wachovia Capital Markets, LLC estimates

Enterprise Hardware

Note: Our CY2008 and CY2009 consolidated Non-GAAP EPS was adjusted from \$1.03 and \$1.18 to \$1.02 and \$1.17, respectively. On an EMC core basis, our CY2008 and CY2009 Non-GAAP EPS estimates were adjusted from \$0.88 and \$0.95 to \$0.85 and \$0.94, respectively.

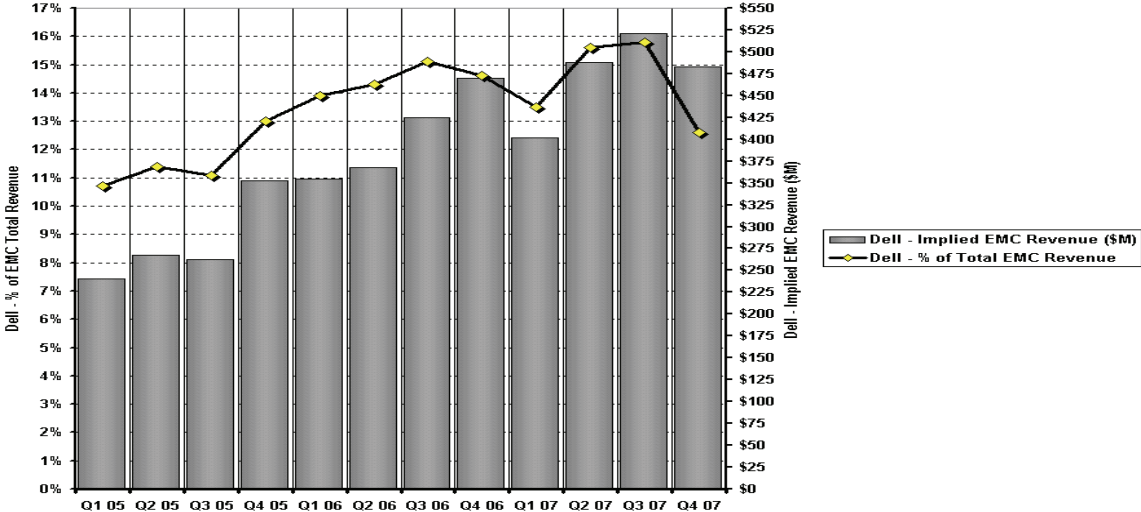
- **Things We Are Focused On:** (1) Core Storage Growth – checks suggest segments had a challenging quarter close (now well known, in our opinion); both in the high-end Symmetrix and midrange CLARiiON product families. We also believe that EMC faces downward pressure on the company’s core storage software attach rate. (2) RSA – while accounting for only 4% of EMC’s consolidated revenue, we believe RSA represents a potential long-term upside driver; checks remain positive (see Figure 6), (3) Content Mgmt/Archiving – checks have also remained positive on EMC’s CMA segment, which we estimate to grow 20% yr/yr during CQ1’08 (easy comps continue into CQ2’08), (4) Dell/EMC CLARiiON Relationship – We believe this partnership could continue to come under strain going forward as Dell ramps its EqualLogic acquisition; Dell accounted for ~33% of CLARiiON revenue during the Dec 07 quarter (see Dell contribution trend in Figure 7 below). That said, our checks do point to a forthcoming CLARiiON refresh (CX4) over the coming months, and (5) VMW Distribution – Investors will likely be focused on EMC’s commentary around the potential spin-out of the VMW looking into early 2009.

Figure 6: EMC RSA Security Revenue (Standalone and Post-EMC Acquisition in CQ3’06)



Source: Company Results; Wachovia Capital Markets, LLC

Figure 7: Dell Revenue as a Percentage of EMC Total Revenue



Source: EMC, Wachovia Capital Markets, LLC

Some HDD Concern; Ent. Storage Ok So Far

EMC Core Valuation Snapshot

We continue to monitor EMC's core valuation as we believe it remains very important to watch as EMC shares do not need to increase in order for the core valuation to become expensive. We have seen this core valuation increase to 10.7x as shares of EMC relatively underperformed shares of VMware last week. That said, we have seen the EMC/VMware trading dynamics remain fairly consistent since late January when EMC's core valuation increased significantly as shares of VMware declined more than 30%. Since then, we have seen EMC's core valuation trade in the ~9-11x range based on our CY2008 core EPS estimate. Figure 8 below provides a summary of our valuation analysis on EMC. As shown, we are using a 30% discount rate in our assumptions. In using no discount rate (which some could assume if EMC were to distribute VMware shares via a dividend to its shareholders), this would imply that shares are currently trading at only a 7.5x core forward P/E multiple on our current estimates. However, EMC's recently filed 10-K does make a comment regarding potential risks associated with comments on a "...spin-off, spin-out, or sale..." of the company's holding of VMware shares (326.5 million shares, or 85% interest). We believe a core valuation in excess of 15x would become more challenging to support.

Figure 8: EMC Core Valuation Summary

	Current Price Summary			Variance Analysis on VMware		
	\$/Sh.	Mkt. Cap.	Shs Out.	\$/Sh.	Mkt. Cap.	Shs Out.
Current Share Price/Mkt Cap. (EMC)	\$15.52	\$32,625.9	2,102.2	\$20.00	\$42,043.7	2,102.2
Current Share Price/Mkt Cap. (VMW)	\$58.47	\$19,090.5	326.5	\$55.00	\$17,957.5	326.5
-- Implied EMC Core Value (Straight) --	\$6.44	\$13,535.5		\$11.46	\$24,086.2	
			EMC ownership			
Discounted Valuation						
Liquidity Discount Rate Assumption	30.0%			30.0%		
-- Discounted Value on VMware w/in EMC	\$6.36	\$13,363.3		\$5.98	\$12,570.3	
-- Implied EMC Core Value --	\$9.16	\$19,262.6		\$14.02	\$29,473.5	
Implied Core EMC P/E on CY2008 (Non-GA)	10.7			16.4		
Implied Core EMC P/E on CY2008 (GAAP)	13.4			20.5		
Implied Core EMC Mkt Cap/Sales on CY200	1.51			2.32		

Valuation Variance Summary:

EMC Core Multiple Est.	VMware Share Price Assumption									
	\$40	\$45	\$50	\$55	\$60	\$65	\$70	\$75	\$80	\$85
10.0	\$12.88	\$13.42	\$13.97	\$14.51	\$15.05	\$15.60	\$16.14	\$16.68	\$17.23	\$17.77
11.0	\$13.73	\$14.27	\$14.82	\$15.36	\$15.91	\$16.45	\$16.99	\$17.54	\$18.08	\$18.62
12.0	\$14.58	\$15.13	\$15.67	\$16.22	\$16.76	\$17.30	\$17.85	\$18.39	\$18.93	\$19.48
13.0	\$15.44	\$15.98	\$16.52	\$17.07	\$17.61	\$18.16	\$18.70	\$19.24	\$19.79	\$20.33
14.0	\$16.29	\$16.83	\$17.38	\$17.92	\$18.46	\$19.01	\$19.55	\$20.10	\$20.64	\$21.18
15.0	\$17.14	\$17.69	\$18.23	\$18.77	\$19.32	\$19.86	\$20.40	\$20.95	\$21.49	\$22.04
16.0	\$18.00	\$18.54	\$19.08	\$19.63	\$20.17	\$20.71	\$21.26	\$21.80	\$22.34	\$22.89
17.0	\$18.85	\$19.39	\$19.94	\$20.48	\$21.02	\$21.57	\$22.11	\$22.65	\$23.20	\$23.74
18.0	\$19.70	\$20.25	\$20.79	\$21.33	\$21.88	\$22.42	\$22.96	\$23.51	\$24.05	\$24.59

Core EMC Rev./Non-GAAP EPS Summary			
	Revenue	Yr/Yr % Ch.	Non-GAAP EPS
CY2007	\$11,909.4	14.0%	\$0.79
CY2008	\$12,718.8	6.8%	\$0.85
CY2009	\$13,373.6	5.1%	\$0.94

EMC Cash Position Summary		
	(\$M)	\$/Share
EMC - Total Cash & Investments	\$7,972	\$3.61
-- Less -- VMware Cash	\$1,231	\$0.56
EMC Core - Total Cash & Investments	\$6,741	\$3.05
-- Less -- International Cash (~50%)	\$3,371	\$1.53
-- Less -- Cash for Operations	\$1,000	\$0.45
-- Less -- Cash Cushion	\$1,000	\$0.45
-- Add -- CY2008 FCF Generation	\$1,600	\$0.72
Total Excess Cash	\$2,971	\$1.34

Source: Wachovia Capital Markets, LLC Estimates

Network Appliance

(NTAP-Nasdaq/\$22.89 - Outperform)

NetApp Job Listings Update

NetApp's job listings declined this week after increasing last week for the first time in 5 consecutive weeks, coming in at 370 as of the end of last week, down from 390 listings the week prior and 383 two weeks ago. Sales listings rose by 1 to 120 total, while software engineering listings showed a decrease to 94 from 95 as of the end of the prior week (92 listings two weeks ago). Professional services remained flat at 29, while hardware engineering listings also showed no change at 7. We are going to be more closely monitoring these listings as interesting data points on NetApp's thoughts on the current IT spending trends.

4/14/08: NetApp and Dalet Streamline Digital Asset Management

NetApp and Dalet Digital Media Systems today announced a partnership to create a digital asset management and archive solution certified for NetApp's Data ONTAP GX operating system. Data ONTAP GX allows

Dalet system users to increase productivity and get higher quality content faster in multi-site facilities. NetApp and Dalet have been partners since 2006 and have been providing enterprise-level broadcast customers a content management system capable of meeting a variety of throughput requirements, scaling up to 6PB. The solutions feature an open file-based architecture, allowing customers to choose among several applications to access their files so that content can be shared more easily throughout the pipeline. Customers also benefit from 24/7 mission-critical media operations from NetApp Global Services (NGS).

Data Domain**(DDUP-Nasdaq/\$21.99 - Market Perform)******NOTE – Data Domain to Report Q1 2008 Financial Results on April 24th After Market Close****

Data Domain is due to report its March 2008 financial results on Thursday, April 24th after the market closes. The company will also host a conference call at 5:00pm EST/2:00pm PST to discuss the results. The call can be accessed on the company's website at www.datadomain.com or be using the dial-in information below:

Dial-In Number: (800) 591-6945

Password: 46364463

****See prior commentary on IBM's acquisition of privately-held data de-dupe software provider Diligent Technology; Headline Risks for Data Domain, Though Widely Anticipated******4/18/08: Executives Selling Shares**

As part of 10b5-1 plans, last week we saw two executive execute share sales of DDUP common shares. Data Domain Kai Li sold 11,000 shares at \$22.36-\$22.90/share, while Senior Vice President, David Schneider sold 12,500 shares between \$22.99-\$23.43/share. This follows the Mr. Schneider's sale of 16,500 shares between \$23.97-\$24.41/share in early April. Mr. Schneider also sold approximately 13,000 shares in late March, while Mr. Kai sold 11,000 shares in mid-March.

4/18/08: Data Domain Joins SNIA

Data Domain has joined the Storage Networking Industry Association (SNIA). As part of its membership, Data Domain will work with member companies to define, implement, etc. reliable methods for the protection, retention, and lifecycle management of data and information. Within the organization itself, Data Domain has joined SNIA's Data Management Forum (DMF) and is a founding member of the DMF's new Data De-duplication and Space Reduction Special Interest Group. With other member, Data Domain is participating in advancing market adoption of de-dup technology and the education of end-users.

4/16/08: Data Domain Joins The Green Grid

Data Domain has announced that it has joined The Green Grid. By joining this organization, Data Domain will be promoting the adoption of energy efficient standards, process, measurements, etc. in conjunction with the application of data de-duplication technologies in data centers. The Green Grid itself is a consortium of companies and organizations whose goal is to advance energy efficiency in data centers and business computing ecosystems. The Green Grid collaborates with other industry groups as well as government organizations to ensure goals are aligned with developers and users of data center technology. Data Domain already sees a positive impact on its power consumption in data centers for disk-based backup environments. Storage systems equipped with inline data de-duplication can bring power consumption rates down into the range of 1.5-3.0 WATTS per usable TB.

Checks Point to Continued Momentum at Data Domain; Headcount Investments a Bit Higher

As we have highlighted over the past few weeks, and as noted above, our positive checks on Data Domain's March quarter and momentum looking forward continued at last week's SNW conference. We continue to believe that the company is on track to meet/beat top-line expectations. Our checks suggest that Data De-Duplication continues to see meaningful adoption across a wide variety of enterprise environments – one enterprise recently telling us with de-dupe is a "must have" in most organizations. This notion was strongly supported at last week's conference with several companies noting that de-dupe is by far the "hottest" storage technology in 2008. We are not seeing macro-related pressures on the company's momentum thus far in 2008. We believe Data Domain continues to have a solid competitive position when compared to EMC (continuing to see EMC in 80%-plus of its engagements), NetApp (15-20% meet rate; most notably in NetApp environments), Quantum, and others (Diligent, Sepaton, Symantec/PureDisk, etc.).

We believe the company is seeing traction in both smaller engagements, as well as possibly seeing a healthy build in larger deals (believe we could continue to see a healthy build in the company's \$1 million plus deal

Some HDD Concern; Ent. Storage Ok So Far

size flow over the coming quarters). We are leaving our estimates unchanged, despite having positive checks. Outside of headline risks associated with competitive announcements (see below), we believe one of the most meaningful risk to the story are street expectations. We believe the company could possibly look to invest for long-term growth; possibly putting a bit of risks in thinking top-line upside could meaningful fall to the bottom-line. That said, we remain comfortable with our trend toward an 10% non-GAAP operating margin level as we exit 2008.

EMC/Quantum to be Officially Announced Soon (EMC World – May 19-22); Lingering Headline Risk to Data Domain?

Another topic we have highlighted over the past few weeks has been our industry checks suggesting that EMC could be soon announcing a new solution focused on the rapidly growing adoption of data de-duplication. We had previously noted that we thought EMC would possibly announce a new disk-library with de-dupe functionality at last week's SNW Conference; however, we were surprised that this did not happen. Our conversations now suggest that this could be announced at the upcoming EMC World conference being held in Las Vegas on May 19-22. Our conversations suggest that EMC is taking a three-pronged approach to addressing this market, which already includes the company's integration of its late-2006 acquisition of Avamar with the company's backup offerings. Our conversations suggest that this solution is only part of EMC's longer-term de-dupe strategy.

Enter Quantum – As a reminder, Quantum completed an acquisition of legacy tape storage provider ADIC in August, 2006. ADIC had acquired a company called Rocksoft for \$63 million in early 2006, which had a strong patent position in the emerging de-duplication market. Currently, Quantum is shipping modular solutions addressing the de-dupe market under its DXi-series family (consisting of the DXi3500, DXi5500, and the newest high-end DXi7500 systems). During its Dec 07 quarter, Quantum reported that its DXi-series revenue grew 31% sequentially (small base considered). This compares to Data Domain reporting more than 40% sequential growth in the same period. Quantum noted that it had deferred as much as \$2.3 million in DXi-series revenue as it had a deferral in the release of its DXi7500. The company disclosed that it had exited 2007 with approximately 200 customers, which compares to more than 1,500 at Data Domain.

With regard to EMC, on 1/28/08 Quantum had officially announced that it entered into an OEM agreement with a major OEM, under which this OEM would license Quantum's DXi-series data de-duplication and replication enterprise software to deliver in its own solution. Since this announcement, our industry contacts have suggested that this "major OEM" is likely EMC. Our industry contacts also suggest that this relationship could be officially announced by EMC soon (actually had heard that it would have possibly been announced last week). We believe EMC will leverage Quantum's software to integrate with the company's Disk Library for disk-based backup.

Key point – **We believe this relationship has, and could remain, a headline risk on Data Domain. We believe some investors have already known, or believed, that EMC was Quantum's OEM.** That said, we believe Data Domain remains well positioned and has not been open to forming an OEM relationship; possibly even being approached by EMC. Our conversations with regard to the EMC/Quantum relationship do not change our thoughts on Data Domain's competitive positioning in the de-dupe market.

As noted above, our checks have remained positive with regard to Data Domain's momentum into 2008. We believe the company, which sees average deal sizes in the \$100,000 range, continues to see a strong pipeline with an increasing contribution from larger (\$1 million plus) deals into 2008. We have maintained our Market Perform rating on the shares given valuation and investor sentiment for smaller cap growth stories. However, we continue to believe that shares are increasingly attractive in the sub-\$20 range and believe long-term growth focused investors could build positions in shares of DDUP.

3Par**(PAR-NYSE/\$6.89 - Market Perform)******NOTE – 3Par to Report Mar 08 (FQ4'08) Results on May 6; After Close****

Data Domain is due to report its March 2008 (FQ4'08) financial results on Tuesday, May 6th after the market closes. The company will also host a conference call at 5:00pm EDT/2:00pm PDT to discuss the results. The call can be accessed on the company's website at www.3par.com or with the dial-in information below:

Dial-In: (866) 700-6067
Password: 32838020

CommVault**(CVLT-Nasdaq/\$12.35 - Outperform)****CommVault Job Listings Update**

CommVault's total job listings stood at 48 as of the end of last week, falling by 4 from the end of the prior week and down 2 openings from two weeks ago. Sales listings decreased by 2 openings to 13.

4/16/08: Rackspace Standardizes on CommVault Simpana Software to Provide Availability of Data

CommVault announced that Rackspace, a specialist in the IT-hosting market delivering enterprise-level managed services, has reported that its IT operations have become more reliable and efficient and has added to the management services available to its customers by using CommVault Simpana software. Rackspace host the IT infrastructure of over 16,000 customers and to protect against application downtime and data loss, they have employed CommVault Galaxy Data Protection software. The switch to CommVault software allowed Rackspace to replace five point products with Simpana to build a single data protection platform. On the back-end one central database now delivers consolidated reporting information to share with customers. Rackspace has been deploying CommVault solutions since January 2007.

Xyratex**(XRTX-Nasdaq/\$20.99 – Outperform)****4/18/08: Positive Management Meeting w/ Todd Gresham, EVP of NSS Segment; NSS = Undervalued**

- **Conclusion--Positive Meetings With Todd Gresham, EVP Of XRTX's NSS Segment**—Late last week, we hosted several investor meetings with Todd Gresham, EVP of XRTX's Network Storage Systems segment (86.5% of FQ1 2008 revenue). Our key takeaway is that XRTX has not seen a slowdown in customer order patterns within NSS (including NetApp), though seeing some increased complexity with regard to forecasting at the individual product SKU level. We believe Mr. Gresham has successfully diversified its NSS customer base (VERY well positioned in many emerging/rapidly growing storage players), solidified its NetApp relationship, and expanded higher-margin RAID business. Our meetings once again left us believing that NSS is being undervalued – see Figure 9. Maintain OP rating.

Figure 9: Sum of the Parts Valuation – Implied Current Valuation using Annualized Estimates Exiting FY2008

Network Storage Systems		Storage Infrastructure	
Revenue (\$M)	\$929.62	Revenue (\$M)	\$338.51
Y/Y % Change	24.1%	Y/Y % Change	39.3%
Gross Margin (\$M)	\$135.73	Gross Margin (\$M)	\$104.94
Gross Margin - %	14.6%	Gross Margin - %	31.0%
Operating Expenses (\$M)	\$108.30	Operating Expenses (\$M)	\$46.41
Operating Expenses - % of Rev.	11.6%	Operating Expenses - % of Rev.	13.7%
% of Total Est. Operating Expenses	70.0%	% of Total Est. Operating Expenses	30.0%
Implied NSS Operating Income (\$M)	\$27.43	Implied SI Operating Income (\$M)	\$58.53
Implied NSS Operating Margin - %	3.0%	Implied SI Operating Margin - %	17.3%
Estimated NSS Tax Rate - %	35.0%	Estimated SI Tax Rate - %	1.0%
Estimated NSS NOPAT per Share	\$0.63	Estimated SI NOPAT per Share	\$2.05
Reasonable NSS Multiple	2.0	Reasonable SI Multiple	8.0
Implied NSS Enterprise Value (\$/Share)	\$1.23	Implied SI Enterprise Value (\$/Share)	\$16.41
Total Sum-of-the-Parts Enterprise Value	\$17.65		
-- Current Net Cash/Share:	\$1.95		
Total Sum-of-the-Parts Valuation (\$/Sh.)	\$19.59		

Source: Wachovia Capital Markets, LLC Estimates

- **NetApp Thoughts--No Change in Order Patterns (Positive)**--XRTX stated it has not seen any change in order patterns out of NetApp, which accounted for 74% of NSS revenue during FQ1. While we believe NetApp may be facing some increased complexity with regard to forecasting at the SKU level, and we are a bit concerned with the potential of a 10% sequential revenue decline at NetApp during its July 2008

Some HDD Concern; Ent. Storage Ok So Far

quarter (already guided by NetApp), Mr. Gresham remains comfortable in forecasting its NetApp revenue growth in the 15-16% yr/yr range for FY2008.

- Dell/EqualLogic--Volume Shipments Underway**--Mr. Gresham was optimistic on the incremental opportunities associated with the Dell/EqualLogic relationship, noting that volume shipments have already commenced (shipping out of 2 of the 3 manufacturing facilities). He does remain cautious as XRTX must stay focused on the fact that being an acquired supplier is not the preferred way to win new business; meaning that XRTX must focus on successfully winning designs within next-generation systems over the next 1.5-3 years. That said, he believes Dell/EqualLogic could represent a recognizable/material revenue contributor later this year. As a side note, we continue to believe there are incremental risks/concerns surrounding Dell/EqualLogic and its impact on the Dell/EMC relationship.
- No Meaningful News Last Week; We Remain Focused On:** (1) Xyratex’s order patterns within its largest customer, NetApp (which have remained steady – see above), (2) The company’s traction and potential upside impact from Dell/EqualLogic and over the longer-term IBM/XIV; continued diversification within the company’s Network Storage Systems segment, (3) Xyratex’s gross margin trends with the idea that a ramping Dell/EqualLogic could mitigate gross margin expansion from current levels, (4) The company’s traction toward seeing a meaningful recovery in HDD CapEx spending trends looking into 2H’CY08; Seagate’s forthcoming earnings release and commentary on CapEx spending trends will be an important data point, (5) The company’s ramping opportunities in the solar market, and (6) Our expectation that Xyratex can see a trend toward driving more than \$2.70/sh. in annualized earnings looking into 2H’CY08.

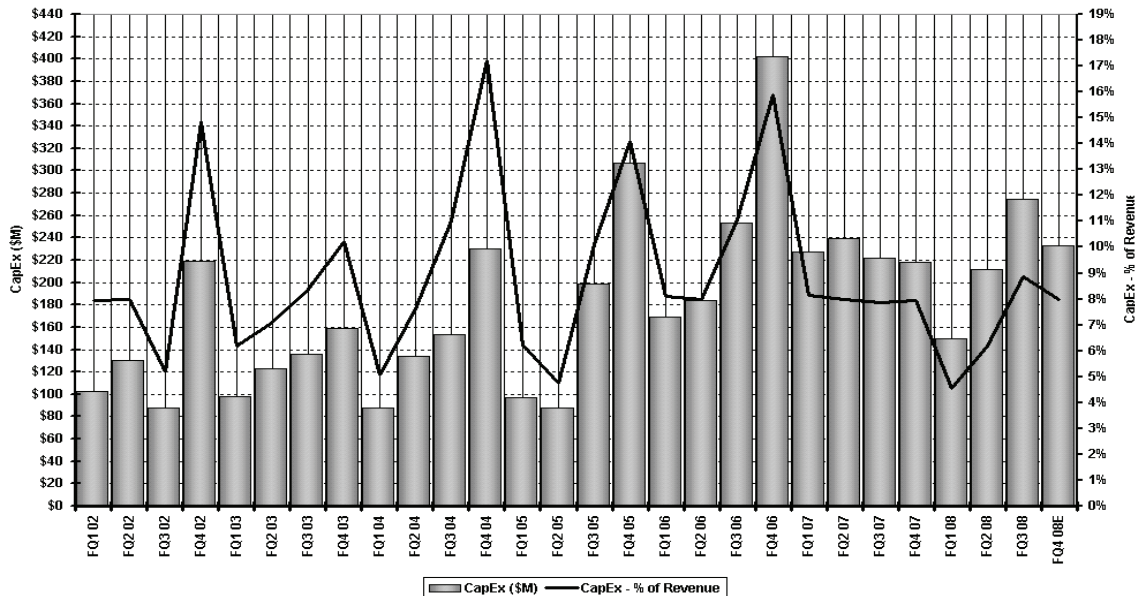
Please see our detailed report published on 4/18/08.

4/15/08: Seagate Reports FQ3’08 Results – Highlights Potential FY2009 CapEx Increase; Inventory Rise a Focus/Concern for Xyratex

Seagate reported its March 2008 (FQ3’08) results last week in which there were a couple of key derivative takeaways as it pertains to Xyratex:

- Modest Yr/Yr Increase Expected in Seagate FY2009 CapEx** – As anticipated, and noted by Charles Pope (Seagate CFO) in our mid-March Wachovia hosted conference call, Seagate stated that investors should anticipate a modest increase in the company’s CapEx looking into FY2009 (versus spending approximately \$900 million during FY2008). The company spent approximately \$275 million in CapEx during the March quarter, which represented the highest level the company has seen (see Figure 10 below).

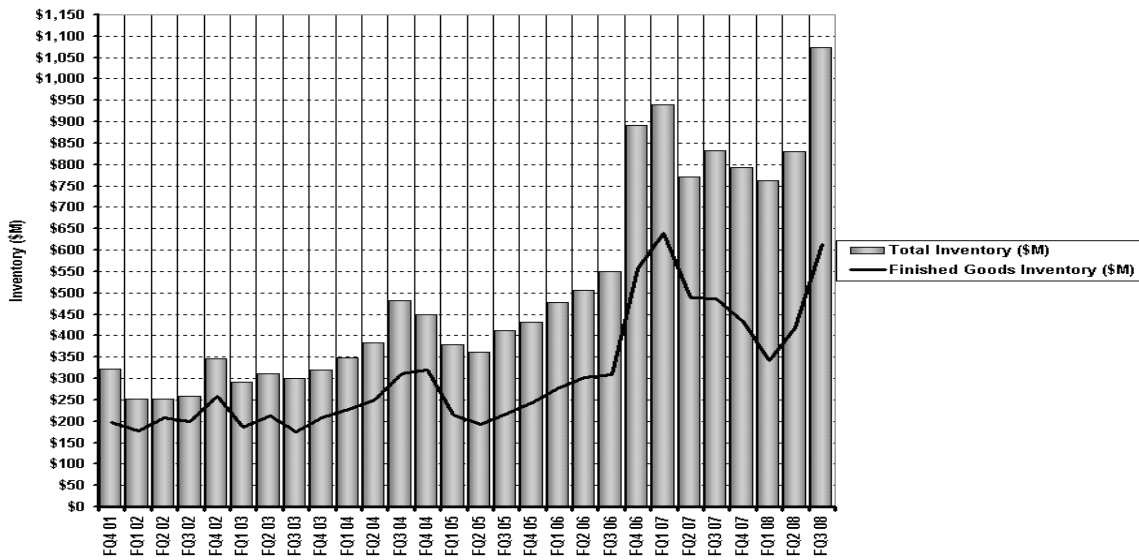
Figure 10: Seagate Quarterly Capital Expenditures



Source: Seagate; Wachovia Capital Markets, LLC

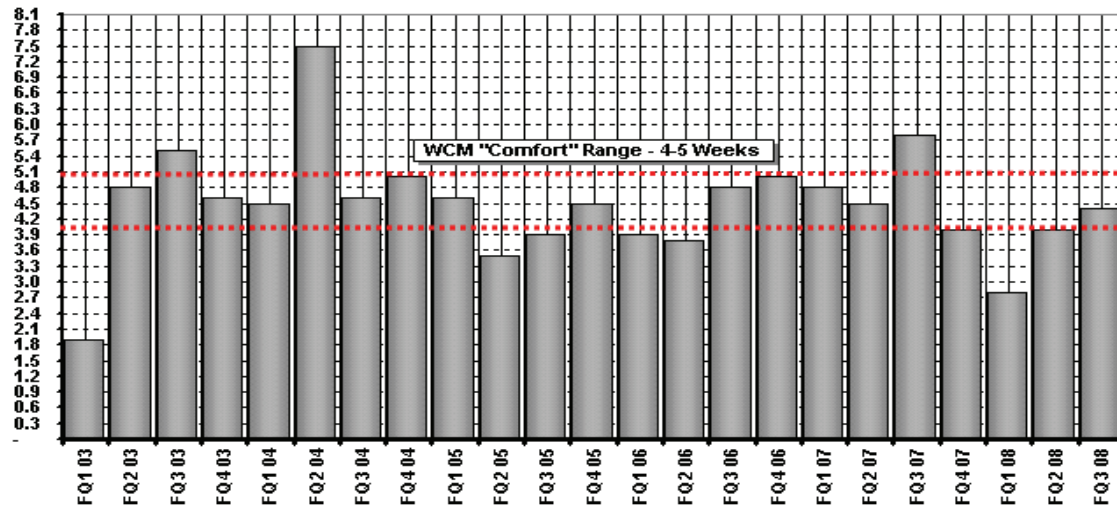
- Return to “Normalized” CapEx Breakdown in FY2009** – Seagate noted that it should expect to see a more normalized CapEx breakdown develop in FY2009. This means the company should see a return to roughly a 1/3 of spending on media, 1/3 of spending on heads, and 1/3 of spending on production/capacity equipment (i.e. Xyratex equipment). Seagate has seen a higher “bricks and mortar” spend over the past several quarters as the company builds out Woodlands III for finished media and a new substrate facility in Jahor. This also looks to represent the fact that Seagate has adequately worked through the redeployment of the legacy Maxtor equipment.
- Seagate Inventory Increase – Potentially Impacting Xyratex’s Expected Equipment Order Patterns?** – As illustrated in Figure 11 below, Seagate saw a significant (+29%) sequential increase in its total inventory exiting the March quarter, in which Finished Goods inventory grew by more than 46% sequentially. While we believe it is a bit premature to consider this a significant concern for Xyratex, we believe this does warrant monitoring as having a potential impact on the timing of the company’s Storage Infrastructure orders looking into 2H’CY08. Figure 12 highlights Seagate’s disclosed weeks of desktop channel inventory over the past several years.

Figure 11: Seagate Inventory



Source: Seagate; Wachovia Capital Markets, LLC

Figure 12: Seagate – Weeks of Desktop Channel Inventory



Source: Seagate; Wachovia Capital Markets, LLC

Isilon Systems**(ISLN-Nasdaq/\$5.20 – Market Perform)****4/15/08: Isilon to Provide Clustered Storage for NBC's Coverage of the Beijing Olympic Games**

Isilon announced that the company will be providing Isilon IQ clustered storage to NBC during the 2008 Beijing Olympics, being held August 8-24. NBC plans to present more than 3600 hours of broadcast coverage of the Olympics and will use Isilon IQ as the primary, on-site storage solution for media created on its HD EVS XT server system. Also, the entire collection of low resolution Olympic footage will be archived using Isilon IQ. NBC previously used Isilon IT for the 2004 Olympics in Athens and the 2006 Olympic games in Torino, Italy. NBC plans to use Isilon systems for two key functions. First, NBC will use the solutions to serve the real-time editing and production needs on-site in Beijing by deploying separate Isilon clusters in the International Broadcast Center and to other venues to store the content product by the HD EVS XT server system. Second, NBC will utilize Isilon clustered storage to archive video of the Games to be accessed later by producers. This announcement builds on the agreement that Isilon signed with NBC Universal in April 2007 for use of Isilon IQ clustered storage.

4/14/08: Isilon Showcases New Digital Media at NAB 2008

Isilon featured two key demonstrations last week at the National Association of Broadcaster (NAB) conference. Working with 3ality Digital Systems, Isilon presented the "Isilon 3D Theater" which featured a screening of live-action 3D broadcast programming. The two companies screened 3D music and sports programming be streaming in two concurrent uncompressed HD streams directly from an Isilon IQ storage cluster. Isilon also featured a demonstration in which studios can produce HD programming in real-time using Isilon clustered storage in conjunction with Apple Final Cut Pro production environments. Isilon, partnered with Tekserve Professional and Gallery/Sienna, showcased a complete automation workflow solution built around Apple's Final Cut Pro editing suite.

Hitachi (Hitachi Data Systems and HGST [HDDs])**(HIT-NYSE-ADR/\$65.50 - Not Rated)****4/17/08: Hitachi (HGST) Business Update – Remaining a Rational Competitor = STX & WDC Positive; Hitachi Ltd. Standing Completely Behind HGST**

- **News** - Hitachi Global Storage Technologies (HGST; Hitachi's HDD operations) provided a business review update in which the company reviewed its restructuring efforts, the current HDD demand/competitive environment, and its focus on sustaining profitability. The initial takeaway is that the company appears to be focused on sustaining profitability by remaining a rational competitor in the HDD market (a positive for STX and WDC; note that STX did tell us that HGST was overall rational with some aggressive tactics in certain areas during CQ1'08, but not across the board like it has been in the past).
- **Key Highlights:** (1) HGST has reduced its HDD costs structure by 13% from 2006 to the end of 2007 (primarily through consolidation of head/media operations). This was one of the drivers, along with favorable industry dynamics, in the company's ability to attain profitability in CQ4'07 (expect profitability in CQ1'08 and for 2008 in total). As a reminder, HGST has targeted \$300M in cost savings over the next few years, (2) HGST notes that the three major HDD suppliers continue to emerge; driven by vertical integration (STX, WDC, and HGST), (3) HGST forecast HDD shipments to be up 12% in 2008 (558M units), (4) HGST completed its manufacturing consolidation efforts in March, and (5) HGST notes that it is "solidly" backed by Hitachi, Ltd.

4/16/08: Hitachi Enterprise Hard Drive Establishes New Performance and Capacity Standards

Hitachi has announced the UltraStar 15K450, a new enterprise HDD that uses perpendicular magnetic recording (PMR) technology to deliver 450GB of storage (currently the highest available capacity available in 15,000 RPM enterprise-class hard drives; compares to Seagate's 300GB drive). Hitachi said that the drive features a 30% improvement in sequential throughput over its predecessor and features average seek times as low as 3.3 milliseconds. The drive will ship with either 3Gbps Serial Attached SCSI (SAS) or 4Gbps FC interfaces. The 15K450 also features 4 platters with 8 recording heads. Seagate currently features a 15,000 RPM enterprise drive with a maximum capacity of 300GB, while Western Digital does not have a 15,000 RPM enterprise drive, however, the company does produce a 750GB SATA drive, with an RPM of 7,200.

No Other Meaningful News Last Week - Focus Remains on Long-Term Strategy in HDD Operations, as well as Our Recent Checks Pointing to Quite a bit of Fluctuations Going on within Hitachi Data Systems.

Our checks suggest that HDS' growth could remain in the low/mid-single digit yr/yr range going forward; possibly seeing EMC recapture some share within the high-end storage market. We would also highlight the aforementioned potential acquisition of Diligent, and Hitachi Data Systems partner, by IBM.

Seagate Technology

(STX-NYSE/\$19.48 - Outperform)

4/15/08: Seagate FQ3'08 Results: Near-Term Negatives, but Expect Better 2H'CY08

- Conclusion - Concerns Outweigh Positives, but Maintain OP Rating on Valuation and Belief STX Can Recapture 2.5 Mobile Share in 2H'CY08** – Although it is clear that the negatives outweigh the positives (i.e. lower guidance, continued share loss in 2.5" mobile drives, declining gross margin, inventory build, etc.), we believe much of this has already been factored into expectations. Therefore, while we are reducing our expectations and believe near-term negative sentiment will prevail, we are maintaining our OP rating with shares trading at 8x our CY2008 EPS estimate of \$2.50; ~12% FCF yield.
- Key Negatives** - (1) Inventory Build - Inventory grew from \$830M to \$1.07B exiting the March qtr; sharpest increase we have seen in several years. Finished goods inventory rose 47% seq. as the company saw a slowdown in 3.5" demand and decided to not participate in some channel programs late in the qtr. STX noted that it had a positive 4.4 wks of channel inventory for 3.5" drives, vs. the industry at ~6 wks. (2) Slower Demand - most notable in the 3.5" ATA market, but also seeing some macro-related pressures temper 2.5" demand; enterprise holding up relatively well, (3) Guide - \$2.85-\$3.0B in rev. and \$0.41-\$0.45 non-GAAP EPS in June qtr. falls below our prior \$3.2B/\$0.58 est. Guidance implies a gross margin at ~23% (vs. 26.7% in March qtr), and (4) Share Loss in 2.5" - STX likely losing 2-3pp of ship share in 2.5" drives during March qtr due to lack of high-cap. solutions (250GB+ drives at 20-25% of TAM; STX believes 2.5" share has now bottomed).
- Derivative Thoughts (WDC & XRTX)** - While it is again clear that WD is capitalizing on STX's challenges in the high-cap 2.5" mobile HDD market (a trend that looks to continue into current qtr), we are concerned with STX's commentary on channel inventory builds in the high-cap 3.5" space and believe concerns over industry supply/demand trends looking into June qtr could weigh on shares of WDC. STX did note that it will see a shift back to more traditional production/capacity equip. spending looking into FY09; expecting some modest CapEx increase - remains a positive for XRTX, in our opinion.
- Estimate Changes** – As summarized in Figure 13, we are adjusting our FY2008 revenue and non-GAAP EPS estimates from \$13.436B/\$2.79 to \$12.715B/\$2.60; FY2009 revenue and non-GAAP EPS from \$14.042B/\$2.97 to \$13.575B/\$2.55.

Figure 13: Wachovia Estimate Changes for Seagate

Revenue (\$ in Millions)	Seagate Guidance	Prior WCM	New WCM	% Ch. Vs. Prior	Prior Consensus
FQ3'08 - Updated	\$3,200-\$3,300	\$3,268	\$3,104 (A)	(5.0%)	\$3,253
FQ4'08 (June 08)	\$2,850-\$3,000	\$3,192	\$2,906	(8.9%)	\$3,106
FQ1'09 (Sept 08)	--	\$3,523	\$3,326	(5.6%)	\$3,431
FY2008	--	\$13,165	\$12,715	(3.4%)	\$13,063
FY2009	--	\$14,042	\$13,575	(3.3%)	\$14,011
FY2010	--	\$14,466	\$14,468	0.0%	\$14,872

Non-GAAP EPS (including Options)	Seagate Guidance	Prior WCM	New WCM	% Ch. Vs. Prior	Prior Consensus
FQ3'08 - Updated	\$0.68-\$0.72	\$0.71	\$0.70 (A)	(1.4%)	\$0.69
FQ4'08 (June 08)	\$0.41-\$0.45	\$0.58	\$0.41	(29.0%)	\$0.57
FQ1'09 (Sept 08)	--	\$0.76	\$0.60	(20.5%)	\$0.69
FY2008	--	\$2.79	\$2.60	(6.9%)	\$2.76
FY2009	--	\$2.97	\$2.55	(14.0%)	\$2.85
FY2010	--	\$3.22	\$2.88	(10.4%)	\$3.13

Source: Seagate, Wachovia Capital Markets, LLC estimates

Please see our detailed note published on 4/15/08 for further information.

4/14/08: Seagate Files Patent Infringement Suit Against STEC

As noted above, Seagate has filed a patent suit against flash drive maker STEC, following comments from Seagate’s CEO, Bill Watkins, a few weeks ago in which he claimed that flash drive makers could be infringing on Seagate’s patents. However, he also mentioned during the same interview that he did not believe that flash drives had the potential to gain any significant share within the laptop market (STEC is primarily focused on the enterprise-class SSD market). Specifically, Seagate claims that STEC has violated four of its patents covering the way a storage device communicates with a computer (interface technologies). STEC has countered that Seagate’s lawsuit is “completely without merit and primarily motivated by competitive concerns rather than a desire to protect its intellectual property”. STEC also said that they have been building flash drives since before Seagate won its patents.

4/14/08: Atrato Announces Strategic Partnership with Seagate

Atrato, a provider of high-volume on-demand storage for high performance computing, digital entertainment and Web sectors, and Seagate have announced a partnership to deliver new capabilities in the content delivery market. From this partnership, the companies hope to develop new solutions that deliver (1) increased performance for serving non-linear editing, video-on-demand, media streaming, and other content-rich applications, (2) improved security, and (3) optimized cost-effectiveness for data centers, particularly savings in power consumption and rack space. The nature of the relationship will include co-marketing, joint development and industry showcase solutions. The partnership is already in affect and the companies plan to announce joint customers over the next few months.

Western Digital

(WDC-NYSE/\$29.30 – Market Perform)

****Note – WD to Report FQ3 2008 Financial Results on Thursday, April 24; After Market Close****

Western Digital plans to release its financial results for the fiscal third quarter on Thursday, April 24; after the market close. The company will also host a conference call at 5:00pm EDT/2:00pm PDT that same day to discuss these results. The company’s call can be accessed online at www.westerndigital.com/investor or by telephone as follows:

Dial-In Number: (877) 709-5339

International: (210) 234-0005

Conference ID: Western Digital

We expect WD to report in-line results with its positive pre-announcement; however, we believe investors could anticipate a bit of a tempered outlook going into the June quarter given recent concerns on pricing and inventory levels, especially after seeing the high inventory levels reported by Seagate. Specific to Western Digital, we will be focused on: (1) The company’s competitive thoughts on the 2.5” mobile market – seeing the company be a bit more aggressive with regard to high-capacity pricing given some increased competitive pressures; Seagate expected to ramp its high-cap 250GB and 320GB drives going into the mid-2008 timeframe, (3) The company’s ability to sustain what we believe is a very positive gross margin trend; we believe it will prove incrementally more challenging to support gross above the 22% range. We would be interested to see how much of a benefit WD has seen from the Komag acquisition exiting the March quarter (versus seeing an 80bps positive impact during the Dec 07 quarter; company had estimated the realization of a 300bps of positive impact over 3-4 quarters following the acquisition), (4) WD’s market expansion – both with regard to expanding the company’s addressable markets in the 2.5” mobile space, as well as a potential entry into the enterprise-class HDD market, (5) WD’s position as having a higher degree of risks relating to potentially slowing PC shipment growth trends, and (6) WD’s thoughts with regard to its leadership position in the external disk drive market as competition looks to increase.

QLogic

(QLGC-Nasdaq/\$16.27 - Market Perform)

No Other Meaningful News Last Week; We Remain Focused On: (1) QLogic’s core HBA growth – we continue to believe that the HBA market is a mid-single digit growth opportunity, in which growth could become less driven by the adoption of server virtualization going forward. QLogic could also continue to face market share pressure as Emulex garners traction within IBM and its System x servers, (2) SAN Switching – QLogic’s SAN switching business (10-15% of total revenue) continues to suffer, in our opinion. The company has launched 8Gbps solutions in the fabric switching market, but continues to lack any meaningful traction with regard to its director-class (high-end) switches. (3) InfiniBand – while our checks

on QLogic's InfiniBand business remain positive, and we do believe this remains an important incremental growth driver going forward, we expect this business to continue to exhibit extreme volatility and likely pressure gross margin longer than initially expected. As a reminder, QLogic had been expecting its InfiniBand gross margin levels to get into the company's corporate average range over the next 2-3 quarters (we now estimate trending in the high-30% to mid-40% range, and **(4) Management Turnover** – QLogic has seen the departure of its CFO, Tony Massetti, as well as the recent resignation of the company's President and COO, Jeff Benck over the past few months.

Emulex**(ELX-NYSE/\$12.83 - Outperform)**

****Note: Emulex to be reporting its Mar 08 (FQ3'08) Results on April 24 (After Close).** The webcast can be accessed at www.emulex.com, or the presentation can be accessed via the following dial-in information:

Dial-In: (877) 723-9522

Password: 9960243

No Meaningful News Last Week; Focused On: (1) Upcoming Results – believe company met March quarter expectations, however, we remain concerned with guidance (although recent share pressure has likely discounted much of this; we estimate a sequential decline of 3-4% into the June quarter), **(2) HBA Trends** – we believe the HBA market has trended toward a mid-single digit growth arena; pricing remains stable (2-3% sequential like-for-like ASP erosion). We remain focused on Brocade's traction in the HBA market as a competitive disrupter. **(3) Embedded Storage Products (ESP; 25-30% of revenue)** – Emulex's ESP segment remains a long-term growth driver for Emulex. The company continues to have a meaningful number of new programs ramping through 2008. However, we believe there has been some near-term concern over slower-than-expected ramps at some customers and a slower growth dynamic at NetApp (likely still the largest ESP customer), and **(4) HBA Market Share Gains** - Emulex's traction with regard to market share gains in the HBA market (Blades, System x servers at IBM, etc.).

Brocade Communications**(BRCD-Nasdaq-\$7.26 – Market Perform)**

No Other Meaningful News Last Week; We Remain Focused On: (1) 8Gbps – We continue to believe that Brocade is very well positioned with regard to the 8Gbps product cycle; now having its new DCX Backbone direct qualified at all leading OEMs (HP, IBM, EMC, and Sun Microsystems). With regard to IBM, we believe Brocade is well positioned versus Cisco to benefit from the company's new z10 mainframe cycle, especially when considering the legacy installed base of McDATA directors. Checks continue to point to a late 2008 rollout of 8Gbps solutions at Cisco, **(2) Switch Upgrade** – We will be focused on Brocade's forthcoming rollout of new 8Gbps fabric switching offerings looking out over the next few months; focused on continued strong positioning versus Cisco, **(3) Cisco's Storage Strategy** – We believe investors should pay very close attention to Cisco's plans with its new Nexus 7000-series solutions; there has been some speculation on whether the company could de-emphasize its MDS-series storage switching solutions to focus on the development of FCoE and the idea of network convergence with the Nexus 7000 switch as the platform, and **(4) File Area Network (FAN)** – We remain focused on Brocade's incremental growth opportunities within its FAN product family. We believe this has thus far been a bit slower, and lumpier, than initially anticipated.

Cisco Systems**(CSCO-Nasdaq/\$24.51 – Outperform)****Cisco Job Listings Update**

As of the end of last week, Cisco had a total of 2,553 total job listings on its website. This is up from 2,546 listings two weeks ago and up from 2,537 at the end of the prior week. In this, the company has a total of 536 listings under sales functions, which compares to 524 at the end of the prior week and 536 the week prior to that. We are going to be more closely monitoring these listings as interesting data points on Cisco's thoughts on the current IT spending trends.

4/17/08: Linksys Incorporates IBM Tivoli Data Protection Software into Linksys by Cisco Small Businesses Network Storage Portfolio

Linksys, a division of Cisco, has entered into an agreement with IBM in which Linksys will incorporate IBM Tivoli Continuous Data Protection (CDP) for Files software into the Linksys by Cisco small business solutions product and services portfolio. The Linksys solution is designed to deliver automatic data back-up

Some HDD Concern; Ent. Storage Ok So Far

by saving files instantaneously or at scheduled intervals and restore functionality to small business organizations. IBM Tivoli software is an integrated recovery solution that is designed to provide data protection in case of a corruption, user error, virus, or system failure.

4/15/08: IP-PRIME Doubles HD Channels Using Cisco Advanced HD Encoders

Cisco has announced that SES AMERICOM will be using Cisco Moving Picture Experts Group (MPEG) Advanced Video Coding (AVC) HD encoders to launch 40 additional HD channels on its IP-PRIME Internet Protocol television service (IPTV). The IP-PRIME service is an end-to-end, turnkey entertainment distribution service that allows rural local exchange carriers in North America to offer more SD and HD television channels to their customers. The MPEG AVC encoders provide bandwidth maximization technology to support advanced services and improve a service provider's ability to launch new or expanded services, such as HD and Video on Demand. The new encoders will be added to the 300 Cisco SD and HD encoders already in place at IP-PRIME.

OTHER NOTEWORTHY NEWS**4/18/08: U.S. Video Game Sales Rise 57% in March; Xbox Regains Position as #2 Game Console**

According to market research firm NPD, U.S. sales of video game hardware and software rose 57% yr/yr in March to \$1.7 billion. This was led by Nintendo's Wii console once again, which showed its biggest non-holiday month ever. Nintendo sold 720K Wii's, driven in part by the release of a new Super Mario video game. Microsoft's Xbox 360 regained its lead over Sony's PS3 in March, selling 262K consoles compared to PS3 selling 257K consoles. The Xbox had fallen behind the PS3 in total sales the past few months, with Microsoft citing supply constraints. We view this as a positive for Seagate as they provide the HDDs found in the Xbox 360 consoles.

4/17/08: PMC Sierra Reports March Results; Storage Remains Solid

PMC reported December revenue of \$125 million (+21% yr/yr; +1.1% seq.) driven by improved activity in the company's Fibre-to-the-home and printer related businesses. The company also reported strong bookings late in the quarter and that they have carried forward into the April, resulting in a book-to-bill exceeding 1. As expected, the company reported solid growth in its storage division and the company appears to be well positioned for the embedded chip market for the industry's adoption for SAS/SATA drive interconnectivity (as we have noted in the past, PMC has focused on SAS/SATA while Emulex has positioned itself for the FC-to-SATA bridge connectivity market). Below are some of the storage-specific highlights from the company's release:

- The company reported that Cisco and HP both exceeded 10% of overall revenue for the quarter, while EMC was just under 10% of revenue. EMC had been a 10% customer in prior quarters.
- **PMC does expect its enterprise storage revenue to increase sequentially during the current quarter.**
- EMC represents PMC's largest storage customer. The company has a position within EMC's CLARiiON solutions for intelligent PBCs, as we have highlighted in the past. This competes against Emulex's InSpeed SOC capabilities.
- Within the storage business, PMC noted that the SAS interconnect business continued to ramp and that Fibre Channel controller and disk interconnect shipments rose on a sequential basis. This is interesting when considering our checks noting that EMC's hardware shipments likely declined in the 15%-plus sequential range during CQ1'08.
- PMC also highlighted their new joint development partnership with IBM for RAID technology. The company expects this agreement to accelerate the development of innovative RAID chipset and software solutions for 6G next generation enterprise servers and storage systems. PMC did note that much planning and execution needs to continue and does not expect any significant revenues from this relationship until the 2010 timeframe.
- In the area of NAS that utilizes the company's SoC products, PMC won several design wins in the small to medium business market with Linksys. The NAS solutions were also being looked at for integration with IP video surveillance network systems. PMC expects its microprocessor business to grow in the double-digit range in 2008.
- The company noted that it had a solid quarter in terms of design wins in enterprise storage with Tier 1 storage customers. The company achieved several wins with their Tachyon SPC 8x6G SAS Controller, which enables the first generation of SAS 2.0 enterprise-class tiered storage. PMC noted that they are

continuing to win the “lion’s share” of the next-generation SAS 2.0 controller sockets market and is extending the reach of its SRC 6G RAID-on-Chip with additional design wins. PMC noted that they believe that this going to be the company’s highest revenue producing business in 2008.

4/17/08: Violin Memory Qualifies 1010 Memory Appliance with FalconStor NSS for Data Storage Apps

Violin Memory, a provider of scalable memory appliances, announced that it has successfully tested the Violin 1010 memory appliance with the FalconStor Network Storage Server (NSS). The two solutions can be integrated within a solution to help meet the virtualized data storage demands of enterprise data centers. The Violin 1010 memory appliance supports up to 1/2TB of DRAM in 2U and reduces the TCO of Tier-0 memory in the data center. The appliance features low latency and IOPS that are 1000x faster than HDDs and 50x faster than Flash SSDs, according to the company. On a totally open network storage solution platform, the FalconStor NSS delivers inline storage virtualization with a range of data protection features. Combined, the Violin and FalconStor solutions are designed to help enterprise data centers benefit from data de-duplication, storage caching and Tier-0 solutions.

4/16/08: Datalink Reports CQ1’08 Results

Datalink reported revenues of \$47.7 million (+17% yr/yr; -6% seq.). The company did not have any 10% customers during the quarter, however, the company did have one (12% of revenue) in CQ1’07. In terms of product mix for the quarter, Datalink saw revenues consist of 40% disk, 9% tape, 7% software, 3% storage networking and 41% services. The company noted that they are seeing a growing percentage of disk business in the overall mix as customers are using disk-based solutions more often in traditional backup environments. Our conversations suggest that the company has seen significant adoption of data de-duplication solutions in traditional tape-based markets. The company also disclosed that they were better able to penetrate their enterprise accounts due to virtualization and de-duplication technologies and gain a greater share of storage spending in many of the company’s key accounts.

Guidance – Datalink exited CQ1’08 with a backlog of \$30 million, which is up from \$23 million a year ago. The company did note that macro concerns exist, but yet they were still seeing customers moving forward with storage projects, specifically in data de-duplication and server and storage virtualization. Due to these factors, Datalink is guiding revenue to be in the range of \$48-\$52 million (+19-29% yr/yr), with non-GAAP earnings to be \$0.07-\$0.11 per share. Non-GAAP EPS was \$0.00 in CQ1’07.

Key Areas of Focus Going Forward – The company indicated 5 key areas that they would be focused on going forward – 1) Increasing employee productivity through training and best practices, 2) Investing in customer support capabilities and managed service offerings, 3) Building critical mass in key geographies by hiring additional account executives, storage architects and storage engineers, 4) Exploring possible acquisitions, and 5) Develop and deliver more compelling solutions through stronger internal alignment. These new solutions are to focus on virtualization and consolidation, backup and recovery, archiving and compliance, and databases and applications for storage.

Other Interesting Tidbits – When asked specifically about what percentage of Datalink’s revenue came from NetApp products, management did not disclose a number. However, management did say that they continue to have good success with NetApp technology increasingly in the backup environments with NetApp’s VTL capabilities. There was also strength in the NAS and Enterprise Fibre Channel space as well. Overall, management said they continue to see more strength from both NetApp and Hitachi with disk backup space. Company management also noted that they did not see any order slowdown exiting the March quarter and that strong order flow has continued this far into the June quarter. Also, Datalink mentioned that they have not seen any weakness in any major verticals, however, we would point out here that the company does not have a lot of business in the financial vertical.

4/16/08: FalconStor Introduces Thin Disaster Recovery, Makes Enhancements to Several Solutions

FalconStor has announced enhancements to the FalconStor Network Storage Server (NSS), Continuous Data Protector (CDP), and Virtual Tape Library (VTL) solutions. These solutions are all powered by the FalconStor IPStor virtualization platform that results in more efficient storage and storage management through thin disaster recovery, virtual appliances, and improved storage application performance. FalconStor’s thin disaster recovery leverages thin provisioning, thin mirroring and thin replication volumes that delivers a thin, end-to-end disaster recovery infrastructure. The new solution is known as FalconStor’s Thin DR technology, which utilizes the IPStor platform and delivers heterogeneous storage replication and MicroScan technology with built-in de-duplication and compression.

4/14/08: HP Strengthens Desktop Virtualization Portfolio with Support for Citrix XenDesktop

HP announced that it plans to support Citrix XenDesktop across the HP ProLiant server and HP Compaq thin client product lines. Citrix XenDesktop is due out in May and is a comprehensive desktop delivery solution that allows companies to virtualize Microsoft Windows desktops in the data center. This announcement also builds on HP's recent introduction of HP ProLiant iVirtualization powered by Citrix XenServer. This allows for HP customers utilize Citrix's full application and desktop delivery solutions, making IT infrastructures more efficient. Furthermore, HP Business Service Automation and HP Insight Dynamics – VSE software provide management solutions for virtual and physical server environments and by running Citrix XenDesktop, the applications can provision, patch and inventory client systems. We continue to monitor Citrix/XenSource momentum in the desktop virtualization market as a competitive dynamic relative to VMware, and therefore, EMC.

4/14/08: Extreme Networks Announces Core, Edge, and Wireless Solutions

Extreme Networks has announced a broad range of new network solutions for edge, aggregation, core and wireless applications. The new offerings expand options for consistent edge connectivity, protect existing investments in modular switches, and lower enterprise-grade wireless LANs. The company also announced "Widget Central", a web resource for company and community-sponsored network extensions, and a new Software Developer's Kit. Below is a quick summary of the new products that have been released:

- **Summit X350 Series Switches** – The Summit X350 series switches are fixed configuration gigabit switches and are available in 24 and 48 port models. They utilize the ExtremeXOS operating system with advanced Layer 2 switching functionality and edge security capabilities. The X350 provides high speed desktop availability and runs the same software image as all other ExtremeXOS-based Summit edge switches.
- **BlackDiamond 8800 "c" Series Modules** – The blades are backwards compatible with older versions of the BlackDiamond 8800 family and can deliver scalability and density for gigabit and 10GB ports and field-upgradable Power over Ethernet (PoE) support. The CLEAR-Flow rules engine allows for integrated security capabilities, which allows for integrated intrusion detection with a modifiable rules-based security capability.
- **Summit WM20 and Access Points** – Extreme Networks has extended its wireless LAN product family with new products for higher speeds, outdoor coverage, and economical small site support. Users can install a new set of Access Points, with 802.11n standard, can be installed with standard PoE on a single cable. The new WM20 wireless LAN controller is designed for voice over wireless applications at smaller sites.
- **ExtremeXOS 12.1** – This is the newest release of the ExtremeXOS modular operating system and is designed to improve expanded automation capabilities and network operations. The Universal Port capability allows for event-driven switch automation, which can be used to configure edge ports when devices connect or to conserve power and enhance security with planned PoE outages.

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