

Solid State Drives (SSD) Markets and Applications Quarterly Series: 4Q 2009

2009 – 2014

Report Number

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Executive Summary

The first quarter 2009 report is the yearly SSD Market and Applications Report. This is a comprehensive report that covers all aspects of the SSD market with forecasts to 2014. Each subsequent quarter, selected topics of the SSD market are covered in depth to highlight developments in the industry and also provide an update of aggregate quarterly shipment and revenue data of the SSD suppliers.

The second quarter report focused on enterprise PCIe SSDs, examining this class of product and comparing them against “Legacy SSDs” which are SSDs that have the same form factors and interfaces as hard disk drives. PCIe SSDs are configured on expansion cards which plug into expansion card slots on the mother board of a server or workstation. Details on this class of SSD and architecture was covered in the 2Q 2009 quarterly series.

The third quarter report analysed both the client and enterprise applications. The enterprise portion covered SSDs, DRAM, Flash modules and DRAM systems used to accelerate the enterprise storage system in data centers. The report examined DAS, NAS, and SAN enterprise architectures and illustrated what hardware, and where in the enterprise, performance can be accelerated and also relieve bottlenecks which may occur. The client portion of the report examined in detail PC platforms as a whole and its segmentation of Desktops, Notebooks, Netbooks, Smartbooks, Nettop, and Mobile Internet Devices (MID). In each of these platforms the various storage options of SSDs and hard disk drives were assessed along with forecasts and pricing for each storage technology.

This fourth quarter report focuses on the SSD market dynamics for the year ending 2009. Despite the economic down turn, SSD adoption continued albeit slower, resulting from NAND price increases in 2009.

There are approximately 150 SSD suppliers in the market today. The hype of the market has brought in new players seeking opportunities to capitalize on this alternative storage technology to magnetic media for enterprise, client and commercial applications. The number of players today is not sustainable for the long term. This market will go the way of the hard disk drive industry where there were over 100 players in its infancy. The continuing evolving, maturing, consolidation and competition have now brought number of HDD suppliers to a hand full of five.

The same is expected of the SSD industry. There will be consolidation, some suppliers will fall off the technology curve eliminating them, others will not have the capital investments to remain competitive, and the erosion of product pricing will eliminate others from being profitable. The dynamics of the market with these factors will greatly reduce the number of players in the long run.

The rapid decline in NAND Flash pricing in 2007 and 2008 helped make SSD's more affordable for applications when viewed with respect to the total cost of ownership. In 2009 NAND flash prices increased resulting in a slowing of SSD adoption in the client space. This price increase was a result of NAND flash suppliers reducing their production output and delaying investments for building additional FAB capacity. NAND flash price declines are expected to be modest in 2010 following with higher declines in 2011. SSD adoption rates will reflect NAND pricing dynamics. MLC 3bits/cell NAND Flash is now in the consumer marketplace and will eventually find its way into SSDs for PC client platforms in the future as SSD controller technology continues to evolve; further enhancing the value proposition of SSDs in client platforms.

With the economy in recovery, and as investments for increasing FAB capacities are made, we will see increased demand and pricing dynamics that will fuel continued growth of the SSD industry.

This 4Q09 report quantifies the results of the SSD industry for 2009 and provides an updated forecast to 2014. The updated forecasts shows and increase in revenue for the forecast period compared to the 1Q09 report forecast. NAND flash price decline forecasts will be less aggressive for the forecast period translating to higher SSD unit prices across all applications. Although this will slow adoption rates in some applications such as the PC and consumer space in the early part of the forecast period, other applications such as the enterprise and commercial segment will not be affected as much due to the application requirements and performance these sectors require.

Analysis and Reporting Methodology

This report analyzes the potential of the semiconductor storage technologies, in conjunction with the magnetic storage technologies. The report also assesses future developments of the storage industry and quantifies the different aspects of market growth from 2009 through 2014. It takes into consideration the major social, political, economic, and technology changes underway; and the impact these changes will have on the economy, on the storage industry in general, and on solid state technologies in particular.

Because of the growing complexity and scope of the data storage industry and markets, there is a need to put the qualitative and quantitative aspects of the development trends into a broader perspective. Therefore, this report considers the technological, commercial, and application development aspects of the storage industry. In particular, it explores, in general terms, the evolution of storage needs and requirements in the computing, communications and consumer industries.

Relevant primary data and information were collected from discussions with industry and company representatives. Secondary data and information have been obtained from public sources, such as company documents, press releases, annual reports and industry statistics, as well as from the existing Web-Feet Research database. Historic data have been crosschecked and correlated with industry statistics. Forecast data and their interpretation are based on analyses and assessments of Web-Feet Research.

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About Web-Feet Research

Web-Feet Research (WFR) offers a full complement of technology consulting services, management consulting services and market research for nonvolatile memory, solid state storage technologies and mobile hard disk drive products. Special emphasis has been focused on the development and growth of Flash memory, Flash cards and SSD markets.

The company has consistently identified the emerging trends in the electronics industry and has been the first to forecast their impact in the Flash and nonvolatile memory markets since its inception in 2000. Some of WFR's firsts are in the following areas: SSD, Flash cache/Hybrid Flash, Embedded Flash Drives, Ultra Low Cost PC, Mobile storage, MP3, NAND MCP, USB Drives, Flash SIM cards, micro Flash cards, 3-bit/4-bit per cell NAND, serial NOR Flash and Storage Class Memories.

The subscription services offered by Web-Feet Research concentrate on the Non-Volatile Memory and Storage Portfolio, which is segmented into three services: Manufacturing / Technology, Storage Systems, and Memory Components.

The company also organizes annual public and on-site presentations, the NVM conferences, which supplement the consulting and research services. These conferences focus on technology evolution, product development, storage markets and industry / economic trends.

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