

13 June 2008

By: Ionut Arghire, Hardware Editor

## [Storage Industry Is Moving Towards SSDs](#)

*In time, SSDs will be cheaper and will offer such performance that it will make them a first option*



San Disk SSD  
blogs.guardian

This year's Computex has been torn by all kinds of discussions regarding the transition from old HDDs (hard disk drives) to the new SSDs (solid state drives), which are gaining more and more market share. Although opinions expressed here were both pro and con, there was a general consensus that the SSDs would be highly used in the high-end enterprise servers and the low-cost notebooks. The memory module industry agrees that a special role in the performance of an SSD is the controller and, as the NAND flash makers are rapidly moving towards more advanced geometries, that influence on performance and stability will grow even further. According to Ray Chu, general manager at Transcend Information MBU, the penetration of SSDs on the notebook market is getting stronger, especially due to the fact that prices will narrow in time, as the geometry will steadily advance among chipmakers. The cost differences per GB between SSDs and HDDs will no longer be a problem. **The SSDs can be tailored to fit an application** Today, the costs represent a great issue, but we still have the 40nm-class NANDs which have the cost advantage over other geometries, said Kingmax Digital president Lawrence Chang. He also pointed out that the leading NAND flash manufacturer's roadmaps show the present transition from the 50nm class to 40nm-class SSDs. The memory makers stressed that the costs should not be the main concern, especially regarding SSD applications. The market has already been tapped with different form-factor SSDs and Chang said that the PCI Express (PCIe) interface SSDs had the greatest potential, as there was no need for system upgrades to use them with notebooks. The actual benefits of the SSDs are not entirely known to consumers, which also have second thoughts when it comes to their prices. Yet, Chang is confident that, starting with the second half of 2008, PCIe interface SSDs will gain good market share. The SSDs do not have a "standard" form-factor, Transcend's Chu said. There is virtually no limitation to SSDs when it comes to form-factor, which only presents a combined form of NAND flash chips, controllers and a printed circuit board (PCB). He also said that the mobile market could highly benefit from the SSDs, by creating devices that feature flash memory and a controller bundled together, a solution that could be embedded into products like handsets.[admark=1] Another great feature of SSDs is their capability of being tailored for the required application. Kingmax's Chang agreed that module makers have a low entry barrier on the SSD market, but the margins are highly probable to be easily maintained, mainly because embedded solutions will need high levels of customization. He also unveiled the fact that many customers that expressed their wish to purchase embedded SSDs that can be used for applications like ATM machines, points-of-sales (POSs), and more. **HDDs have more experience in the storage field** Considering the latest achievements in the area, the storage market should be able to offer more stable performance, as the challenges both for controller designers and for flash makers have increased along with the transition to more advanced process nodes that made SSDs cost less. Marvell has recently extended its controller business from HDDs to SSDs and stated that controller design had never been easy, but the opportunities in the SSD area were increasing for companies that could afford it. According to Roawen Chen, vice president of manufacturing operations, Marvell is quite different from all those Taiwan-based controller IC design houses that dominate the controller market. Chen stated that, while all these companies focused on USB flash drives or similar devices, Marvell had a history in the HDD area. He believes that customers would rather not choose USB drives to store their valuable data, but keep it on an HDD. LSI Logic CEO Abhi Talwalkar said the same thing, stating

that controller designers coming from the HDD field had the necessary experience and IP (intellectual property) portfolios that would enable them to provide the required stability for the SSD devices. The high-end storage market has been identified both by Marvell and LSI as the segment offering the greatest penetration potential. According to Chen, Marvell plans to deploy SSDs in low costs PCs and enterprise, while LSI sees enterprise as a key market segment. Chen also said that, since in the enterprise area costs are not a problem, endurance and reliability would not be either. The unusable devices will be simply replaced. On the other hand, the performance will be an issue in the enterprise area. **Controller IC design houses watch over compatibility issues** Phison Electronics, a leader in controller market for USB drives and SSDs used in ASUSTeK Computer's Eee PC and Intel's Classmate PC, believes that SSDs have great opportunities, especially because flash makers are migrating towards more advanced process nodes. Ekron Hsu, Phison senior project manager, said that there were also some great challenges. While NAND flash advances to the next generation process nodes, the design of such devices becomes more and more difficult, which requires more complicated controller designs for IC design houses. Also, these companies need to come up with products compatible with all available NAND flash chips, as different memory makers use different process technologies. As NAND flash makers constantly speed up their technology advancements, controller IC design houses need to keep up too. The ties between the two areas are constantly getting tighter. The tightening of these connections makes NAND flash makers speed up their product development cycle and bring new features and new technologies. An advantage in the NAND flash industry is the fact that there are no compatibility issues with host controllers to worry about, as the controller IC design houses are those who have to deal with that.