

Flash drives are making a big splash

The Boston Globe

By Hiawatha Bray, Globe Staff | January 21, 2008

Those little flash memory cards you plug into your digital camera are starting to grow up.

Just ask the engineers at Apple Inc. The iconic computer maker's new MacBook Air laptop will be available in a \$3,100 version that uses a solid state flash memory drive, or SSD, instead of a mechanical hard drive.

And despite Apple's reputation for leading-edge technology, the company is following others who have deployed flash as a faster, more efficient alternative, less susceptible to shocks and vibrations.

For months, stodgy old Dell Inc. has been offering SSDs as a \$900 option in its laptops. Asustek Computer Inc., of Taiwan, already sells the Eee PC, a \$400 laptop with a measly 4 gigabytes of flash memory instead of a hard drive; at the recent Consumer Electronics Show in Las Vegas, Asus showed off an upcoming high-priced notebook with a 32-gig SSD drive.

Flash is also making a splash in the world of heavy-duty enterprise computing.

Last week, [EMC Corp.](#), of Hopkinton, the leader in "big iron" data storage systems, said it would begin offering flash drives as an option in its flagship Symmetrix line of storage arrays.

David Donatelli, president of EMC's storage division, said that because SSDs are all-electronic, they will give customers much faster access to critical data. "Over time, flash will take over more and more and more of the storage in our arrays," Donatelli said. "This is the beginning of one of the most fundamental shifts we've seen in a long time."

The hard-drive technology that has served us for half a century is in no danger of disappearing. Hard drives offer a combination of massive data capacity and low price that flash memory chips can't touch. According to the research firm IDC Corp., of Framingham, a gigabyte of hard-drive storage cost 45 cents last year; the same amount of flash storage cost \$18, or 40 times as much.

"On a per-gigabyte basis, flash is never going to compete with hard-disk drives," said an IDC analyst, Adrienne Downey.

Yet flash is narrowing the gap.

"A gigabyte of flash 10 years ago cost \$3,000. Right now you can go into [Best Buy](#) and get a gigabyte for about 12, 15 dollars," said Richard Heye, senior vice president of the SSD group at [SanDisk Corp.](#) of Milpitas, Calif., one of the leading makers of flash memory. IDC says that flash prices fell 60 percent last year, and will drop by 50 percent in 2008.

As prices fall, flash's advantages over hard drives become more attractive.

SSDs are well suited to laptops because they weigh less than hard drives, and are unfazed by physical shocks and vibrations that would destroy a hard drive. SSDs also use less power than hard drives, which means lower electric bills at big data centers and better battery life for laptops.

Flash is good for high-performance computing tasks because the cards can respond to data requests in a millisecond. Hard drives need several milliseconds to access information, because a mechanical arm must look up the data on the spinning disk. As a hard drive fills up, this search process takes longer and data through-put becomes slower, while a flash-based drive delivers fast performance even as it fills up.

EMC's Donatelli said that his customers run Symmetrix systems with the hard drives partially empty. This keeps the data moving faster, but wastes much of the array's storage capacity. Now users will be able to store their most time-sensitive data on flash drives and get good performance, while stuffing their mechanical drives with less-critical data. This will mean lower operating costs, despite the use of higher-priced flash drives, Donatelli said.

Flash's biggest drawback, apart from price, has been limited lifespan. The chips eventually lose the ability to store new data. A hobbyist's digital camera will probably never take enough pictures to wear out its flash chips. But computer drives must constantly store new data, hastening the day when the flash drive wears out.

Yet flash makers say they've licked this problem with software that spreads data across the millions of memory cells inside each flash chip. This ensures that the constant data rewrites are spread across many cells, thus extending the life of the entire drive.

SanDisk says its SSDs on average will run 2 million hours before failing, compared to about 300,000 hours for mechanical hard drives.

At today's prices, only the most affluent consumers will be buying full-featured laptops with SSDs. But Heye said corporate buyers will welcome the durability, higher performance, and longer battery life of flash-based laptops. IDC predicts that by 2011 flash drives will supplant hard drives in 20 percent of new laptops.

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Correction: Because of a reporting error, an analyst quoted in a story about flash memory in Monday's Business section was misidentified. Adrienne Downey works for Semico Research Corp. in Phoenix. ■

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Hybrid HD DVD/Blu-ray Products to Debut



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LG has announced its plan to offer a hybrid HD DVD/Blu-ray player, and Warner Bros. said it will release a dual-format disc. "These products are an attractive option for consumers who have been on the fence and are wondering which way to go," Adrienne Downey, senior analyst and Web manager with Semico Research, told TechNewsWorld.

The Blu-ray versus HD DVD battle is headed to Las Vegas, with new high-definition products rolling out at International CES (Consumer Electronics Show) next week. However, at least two manufacturers are extending an olive branch, of sorts, in the form of hybrid products.

[LG Electronics](#) on Wednesday said it plans to sell a DVD player that will play both high-definition formats of DVDs. [Warner Bros.](#) followed in those footsteps with news that it would launch a hybrid disc that works in both Blu-ray and HD DVD players.

Both new formats -- HD DVD and Blu-ray -- offer resolutions exponentially higher than standard-definition DVDs, along with more vibrant contrast and color, crisper sound and higher levels of interactivity.

"These products are an attractive option for consumers who have been on the fence and are wondering which way to go," Adrienne Downey, senior analyst and Web manager with Semico Research, told TechNewsWorld. "Hybrid options like the LG player and the Warner Bros. disc help increase momentum for the high-definition blue laser standard in general."

LG Goes First

LG's attempt to manufacture a hybrid DVD player has been an on-again, off-again effort. The company initially planned to launch the product last year, then withdrew in what Downey figured were production delays. [Toshiba](#) faced similar delays with its initial attempt at an HD DVD player last summer.

Despite the delays, LG can claim first-to-market status with its hybrid player. The LG unit will be officially revealed at CES, along with details on pricing and availability.

The South Korea-based electronics manufacturer said it expects its dual-format player to "end the confusion and inconvenience of competing high-definition disc formats."


Hoping for Hybrids




Downey has her own expectations. She predicted other hybrid players would emerge on the scene while the world waits for consumers to choose a victor in a long standards battle that is reminiscent of the Beta versus VHS wars of the 1980s.

"There are probably a lot of electronics manufacturers with hybrid players in the works," she speculated. "They are going to wait and see what type of success LG has with this product. I think this will be a popular product because consumers won't have to worry about which high-definition disc they buy."


Warner Bros., which backs both high-definition formats, hopes its hybrid disc will make it even easier for consumers. Dubbed the "Total HD" disc, Warner will show off its [new technology](#) at CES.

Hedging HD Bets

Technology analysts have been hedging their bets on which of the two new high-definition formats will ultimately win the war. Blu-ray maker [Sony](#) (NYSE: SNE)  is going head-to-head with HD DVD champion Toshiba for a share of the high-definition marketplace.

[Matsushita Electric Industrial](#) (NYSE: MC) , maker of [Panasonic](#) , sides with Sony, along with most of the Hollywood studios. [Microsoft](#) (Nasdaq: MSFT)  is aligned with Toshiba.

At stake is control over a media [storage](#) market that research firm In-Stat expects to grow from approximately US\$33 billion worldwide in 2004 to \$76.5 billion in 2009.

"This battle is far from over," Downey insisted. "It's going to be a long time before anything gets resolved. However, these hybrid options will be beneficial to the overall market for high-definition television." 

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