

Solid-State Storage Meets the Data Center - IO



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Solid-state-storage is already found in USB memory sticks, smartphones, media players and a variety of other devices. Before long, you may also find solid-state drives (SSDs) performing key tasks inside your data center.

While hard drives aren't yet ready to join the endangered species list, SSDs can help data centers keep pace with speedier servers and applications. Here's what you need to know about this emerging data center technology:

What is Solid-State Storage? Also known as flash memory, solid-state storage is a non-volatile, removable storage medium that uses integrated circuits (ICs) rather than magnetic or optical media.

Why is It Needed? As server CPU speeds keep accelerating, hard drive access times are struggling—and increasingly failing—to keep pace. This bottleneck can be felt in a number of areas, including database and caching applications, particularly when they are offered as a service or hosted within a cloud computing environment. SSDs can bring speedier access times to data center storage systems that hard drive vendors and users can currently only dream of.

Enterprises may also want to adopt SSDs to take advantage of the technology's other benefits, including low power consumption, low heat generation, non-volatility, enhanced reliability and compact form factor characteristics—all appealing attributes in a colocation or general data center environment.

How Much Does It Cost? This is perhaps the biggest question. It's widely known that solid-state storage is far more expensive than magnetic storage technologies, although the price-gap is getting smaller over time. In-Stat, a semiconductor industry research firm based in Scottsdale, Ariz., reports that flash prices have dropped an average 60 percent per year over the past three years. Nevertheless, SSDs remain far more expensive than equivalent-capacity hard drives (and it's important to remember that hard drive prices are falling dramatically, too). In a nutshell, the price per gigabyte ratio

between SSDs and HDs currently stands at between 10:1 and 20:1, depending on device capacity and quality.

Who Offers It? Nearly all server vendors already offer SSDs in one or more of their systems, either as the primary storage device or as an add-on unit. Storage system vendors, meanwhile, are marketing various types of SSDs as direct replacements for existing server hard drives and for use in storage area networks (SANs). Some companies are also building SSD technology into data access appliances targeted at high-demand database customers.

Who Will Benefit Most From the Technology? Basically, any enterprise that needs to run applications requiring high-speed data location and/or retrieval, including credit card transactions, video on demand and search engines.

When Will We Be Able to Get Rid of Our Hard Drives? Not at any point in the foreseeable future. In fact, data center hard disk eradication is a task your successor (or his or her successor) may face. In-Stat forecasts that by 2013 SSDs, will account for only 5.4 million of all enterprise mass storage device shipments (compared to 42.7 million hard drives). Interestingly, Gartner, the Stamford, Conn.-based technology research firm, sees cloud-based storage as a more serious and immediate threat to data center hard drives than solid-state storage.

Over the long haul, however, time and technology favors SSDs. In-Stat projects that SSD shipments will grow at a compound annual growth rate of 154.8 percent between the years 2007 and 2013 (as opposed to just 4.8 percent for hard drives). With such disparate growth rates, it appears highly likely that SSD deployments will likely one day catch up with and overtake hard drive installations.

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