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For VC, Chip Storage No Flash In The Pan

By JAMES DETAR, INVESTOR'S BUSINESS DAILYPosted 09/14/2009

Will flash drives soon replace hard-disk drives in many devices?

Carl Amdahl, a partner in venture capital firm DCM, sees things heading that way. And he's putting DCM's money where his mouth is. It's invested in SandForce, though neither DCM nor SandForce are saying how much. SandForce is developing a new type of chip for flash drives.

SandForce has found a fix for a big problem with flash drives, Amdahl said. The more times a user writes to — or saves — any data on a flash drive, the sooner the drive wears out. SandForce had come up with a controller chip that cuts the number of times a flash drive erases data, which happens as users write to the drive. Less erasing means the drive lasts longer. It will start selling this chip to flash drive makers this year, Amdahl says. SandForce's rivals include Samsung and Toshiba.

Amdahl's credentials in technology stem in part from being the son of Gene Amdahl, who founded Amdahl in 1970. The iconic Silicon Valley firm made IBM (IBM)-compatible mainframes. Fujitsu bought the company in 1997.

Carl Amdahl

- DCM
- General partner
- 57 years old
- B.S., electrical engineering and computer science, University of California, Berkeley; M.S., business, Stanford University
- Son of entrepreneur and Amdahl Corp. founder Gene Amdahl

But Carl Amdahl has founded or co-founded several companies and holds numerous patents in his own right.

Carl Amdahl (he usually went by Carlton earlier in his career) recently spoke with IBD about the market for flash drives, also called solid state drives, and prospects for newcomers like SandForce.

IBD: How did you end up at DCM?

Amdahl: I completed all my master's degree course work as an undergraduate at UC-Berkeley. Then my adviser said, "We have a spot for you in the Ph.D. program." So I just flipped into the Ph.D. program.

I did everything but my dissertation there. I found I just didn't like to write very much. So I started my first company, Magnuson Computer, around 1980. I took that one public. Then I joined with my dad to found Trilogy, which wasn't a financial success, but technically it was a very challenging project. ... I joined DCM in 2001. I started as sort of the technology specialist.

IBD: What's the main attribute of SandForce?

Amdahl: In flash memory, every time you write to it, it degrades a little bit. Its lifetime goes down. SandForce has developed a technology in the flash drive controller that manages the flash for ways to reduce the number of writes that have to occur.

When it writes to that flash chip, then it's also erasing earlier stuff. It's the erasing that causes the damage. If you do that fewer times, then you increase the lifetime of that flash memory.

IBD: Is SandForce planning an IPO?

Amdahl: Not yet. We are sampling the product in drives now to a wide variety of vendors. It's still very early. You're going to see them more in the news over time.

IBD: In general, what are the advantages of flash drives?

Amdahl: I think the thing to recognize here is that we've gone through an era for over 50 years now where rotating magnetic storage (hard-disk drives) has been the mainstay of bulk storage in computing systems.

Of course they have now come down to the small form factors you might expect in laptops and other things. But these are electromechanical devices. So performance is dominated by how fast you can move something — a platter — physically. And of course that leads to a lot of performance limitations.

IBD: So flash drives are more reliable than older hard-disk drives?

Amdahl: Yes. Speed is another advantage. In the world of enterprise computing in particular, this (the hard-disk drive process) has built up a great deal of stress. The disk drive has not been able to keep up with new processors, in terms of the number of accesses per second that you can make.

With a hard disk, if you want to go to a different random location on that hard drive, you have to move the actuator (an arm that moves the read-write device) to a new location, wait for the platter to spin to the right spot and then retrieve the data. (But there are no moving parts in flash drives.)

IBD: What are typical speeds for flash drives vs. hard drives?

Amdahl: Hard-disk drive access times are typically measured in milliseconds (thousandths of a second), but that's like a glacial time frame compared to nanoseconds (billionths of a second) or picoseconds (trillionths of a second) in flash.

IBD: What products will use flash drives?

Amdahl: Think of a spectrum with low-cost consumer applications at one end and demanding enterprise business applications on the other end, and in the middle you'll have laptops and desktop computers.

The places where flash drives are going to have the greatest impact are at the two opposite ends of the spectrum, working toward the middle.

Virtually everything today in the world of semiconductors is driven by consumer electronics. It's the volume of consumer electronic devices that drives the cost down.