Flash Memory SUMMIT

The Case Against NVDIMMs

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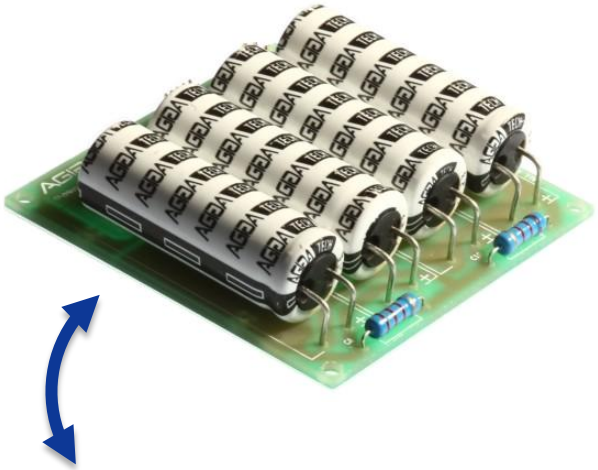
AGIGA TECH®

A CYPRESS SEMICONDUCTOR COMPANY

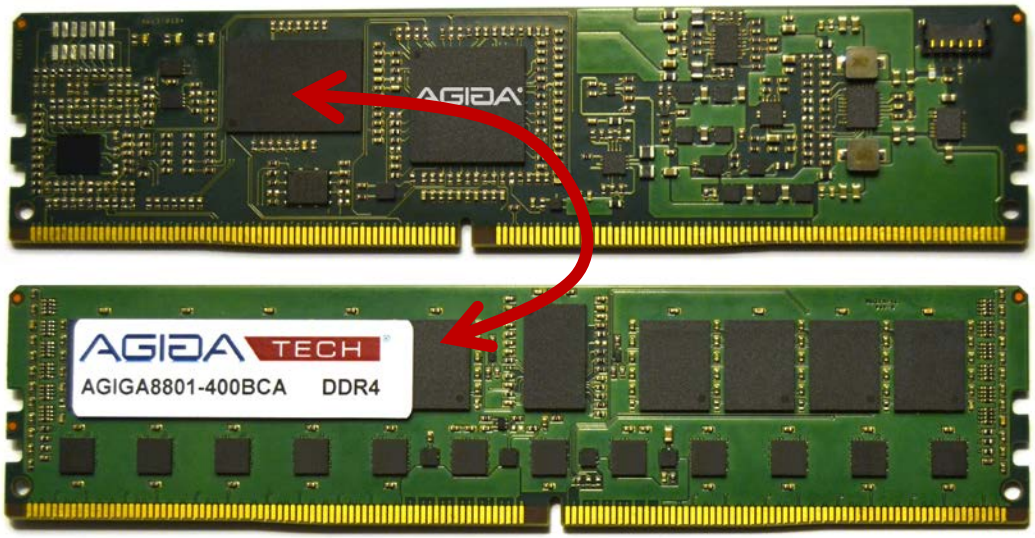
In Case No One's Covered It Yet

Looks Like DRAM, Acts Like Flash



Ultracapacitors

- Provide Power During Backup
- Fast charge time
- High reliability
- Environmentally safe



NVDIMM

- Moves DRAM contents to NAND Flash during power loss
- Restores data on system recovery
- Fits in std JEDEC DIMM socket

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Reason #1

- NVDIMMs are just an “experiment”

6 Things to Expect at Flash Summit

Hybrid cards and sockets

Rick Merritt

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5. Expect more experiments with hybrid DRAM/flash cards that plug into PCIe or DDR buses. Jim Handy of Objective Analysis tells me Cypress/Agiga, Viking, and Micron already offer a class of non-volatile DIMMs that plug flash into the memory bus.

- NVDIMM technology has been shipping in volume for several years

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Reason #2

- I really like my batteries! More batteries!
- Said no IT professional ever
- Supercaps/Ultracaps are a perfect fit for NVDIMMs
  - High energy storage
  - Low ESR
  - Wide temp range
  - Fast charge/discharge
  - Reliable & predictable
  - No safety issues

supercaps

VS

batteries

Reason #3

- NVDIMMs are proprietary
- Well, individual implementations may be, but consider this:
  - JEDEC has standardized the hardware interface (for DDR4)
  - Intel has provided BIOS support
  - More work needs to be done on the application interface (NVDIMM SIG formed within SNIA/SSSI)

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Reason #4A-4C

4A: Flash is Fast Enough For My Application

What if you could get 1000x faster?

4B: But Don't NVDIMMs "Break" The Channel?

No

4C: NVDIMMs are Unrealiable, SSDs Have Extensive Reliability "Hooks"

SSDs employ a similar concept to NVDIMMs

NVDIMMs: A Complementary Technology

- NVDIMMs can complement Tier 0
- Ultra-Fast Writes
- Improve SSD Wear-Out