



ARM TechCon 2015 NOV 10-12 2015 SANTA CLARA CONVENTION CENTER CALL FOR PROPOSALS Deadline: June 8, 2015

BREAKING NEWS

NEWS & ANALYSIS: Intel, Altera: Math in Question




ARM TechCon 2015 NOV 10-12, 2015 SANTA CLARA CONVENTION CENTER CALL FOR PROPOSALS Deadline: June 8, 2015

designlines MEMORY

News & Analysis

JEDEC Announces Support for Hybrid NVDIMM Modules

Gary Hilson

6/2/2015 10:00 AM EDT Post a comment

NO RATINGS LOGIN TO RATE

Like 6 Tweet 1 Share 1 +1 2

TORONTO — JEDEC Solid State Technology Association has approved the first standards for support of hybrid DDR4 memory modules.

The standards work is being done by JEDEC's JC-45 Committee for Memory Modules, which developed the non-volatile DIMM (NVDIMM) taxonomy in collaboration with Storage Network Industry Association's NVDIMM Special Interest Group (SIG), a sub-committee of SNIA's Solid State Storage Initiative.

The new standard defines hybrid DDR4 memory modules as those that plug into standard DIMM sockets and appear like a DDR4 SDRAM to the system controller, yet contain non-volatile memories such as NAND flash on the module. These hybrid module families may share the memory channel with other standard DDR4 DIMMs. Publication of the standard is expected later this year, said Bill Gervasi, co-vice-chair of the JEDEC JC-45 Committee for DRAM Modules, in an interview EE Times.

The JEDEC standards cover two versions of hybrid modules: the NVDIMM-N, which combines DRAM and NAND flash where the flash provides backup and restore of all DRAM for reliable data persistence in the event of a power failure; and the NVDIMM-F, which provides directly addressable NAND flash that is accessed as a block oriented mass storage device.

Gervasi said these modules are supported in new DDR4 Serial Presence Detect (SPD) codes to be released later this year. In addition, new standard DDR4 DIMM labels are in the review process for release in 2015 as well, although he could not provide specific time frames. JEDEC has also defined specific signals on the DIMM connector to facilitate plug-and-play implementation of NVDIMMs on standard platforms.

When the SNIA SIG initially formed, NVDIMMs already met the mechanical dimensions defined by the JEDEC MO-269 specifications for a DDR3 DIMM module, but Gervasi said vendors were still pretty much on their own — there was a lot of infrastructure work being handled "haphazardly" by different suppliers. He said the DIMM labelling will make it easier for end users to support what they have purchased.



ARM TechCon 2015 NOV 10-12 2015 SANTA CLARA CONVENTION CENTER CALL FOR PROPOSALS Deadline: June 8, 2015

Navigate to Related Links

- Micron Bullish On Coming Year
- Cypress Eyes ISSI
- AMD Preps GPU, DRAM Stack
- FRAM's Slow, Unending Journey to Dominance
- Diablo Memory Channel Storage Architecture Gains Traction



CALL FOR PROPOSALS Deadline: June 8, 2015



TAIYO YUDEN MCOIL™ Metal Power Inductors

- AEC-Q200 Qualified and Small Footprint Options Available
- High Current Ratings and Best-in-Class DC Bias Characteristics

LEARN MORE

Most Recent Comments



TonyTib Well, I wonder if Altera's support for OpenCL played a role. Also, although it probably won't happen, what would be the impact



Viking's ArxCis-NV DDR3 NVDIMM.

For JEDEC, it's a demonstration of how the association is now working with the entire computing architecture and not just memory modules, said Gervasi, and the JEDEC framework is flexible enough to allow for a variety of memories to be included. "NAND flash may not be the media on the other side," he said.

Although the standards work for NVDIMM is still in its early days, there are already products available. In April, Netlist updated its NVvault product line with the introduction of its EXPRESSvault EV3 PCI Express 3.0 Non-volatile RAM, [telling EE Times it was a natural extension of its NVDIMM technology](#), providing an alternative to flash-only options or ULLtraDIMM technology that is not dependent on the memory bus technology.

SanDisk officially [started shipping its ULLtraDIMM SSD](#) with select enterprise servers at the beginning of last year. The ULLtraDIMM SSD leverages Diablo Technologies' memory channel storage (MCS) architecture and connects NAND flash directly to the CPU through a server's memory bus; the ULLtraDIMM can be integrated into an existing DIMM slot, and additional SSDs can also be added to available DIMM slots.

Viking's ArxCis NVDIMM can be slotted into servers and RAID controllers as an alternative for battery backed-up memory modules, using supercapacitors to write to NAND flash. They can also be paired with SSDs to extend their life and performance. Meanwhile, Micron, one of the earliest participants in the SNIA NVDIMM SIG, offers NVDIMMs for use in server RAID storage, storage cache tiering, data logging, de-duplication, data logging and metadata persistent storage, as metadata must be accessed frequently and quickly in big data applications, such as data warehousing, data mining, and data analytics. The company had [announced plans in early 2013](#) to place NAND flash along with DRAM on memory modules that ride the DDR4 bus.

SNIA created the NVDIMM SIG to foster their adoption, envisioning them as the early building blocks of computing architectures that combine storage and memory as a single entity. Launched during the 2014 SNIA Annual Members' Symposium, the NVDIMM SIG is an open community. Part of the NVDIMM SIG's mandate is to educate system vendors on incorporating NVDIMMs into their servers and platforms and to communicate industry standards to foster NVDIMM adoption and evolution in the ecosystem.

—Gary Hilson covers memory and flash technologies for *EE Times* and is the editor of *Memory Designline*.

Related Articles:

- [Netlist Extends NVDIMMs with EXPRESSvault](#)
- [Group Forms to Drive NVDIMM Adoption](#)
- [Non-volatile memory development gathers steam](#)
- [SanDisk Ships Enterprise-Grade ULLtraDIMM SSDs](#)
- [Flash will ride DRAM bus in 2014, says Micron](#)



Join over 2,000 technical professionals and embedded systems hardware, software, and firmware developers at [ESC Silicon Valley](#) July 20-22, 2015 and learn about the latest techniques and tips for reducing time, cost, and complexity in the embedded development process.

[Passes for the ESC Silicon Valley 2015 Technical Conference](#) are available at the conference's official site with discounted advance pricing until July 17, 2015. The Embedded Systems Conference and EE Times are owned by UBM Canon.

6/2/2015
2:25:37 PM

if Intel opened up a bit (e.g. opened the FPGA...

Most Commented Most Popular

- 103 What's the Worst Album/CD Ever?
- 56 TI Obsoletes FPGA
- 56 Is This the Most Disturbing Science ...
- 47 Star Trek (The Original Series) New Episodes!
- 45 Electricity, Energy, and Global Warming By ...
- 37 Friday Quiz: Capacitors
- 35 Do You Have a Whey With Curds?
- 34 Sensor-Heavy Capriciously Cunning Chronograph
- 33 Can TI Obsolete FPGAs?
- 32 Last Man on Earth: How Would You Behave?

Flash Poll

Which communications buses do you use in your lab or in production?

- RS-232/422/485
- GPIB
- USB
- Ethernet/LXI
- The old parallel port
- PCI/PCle
- PXI/PXIe
- VXI/VME
- Other

Submit

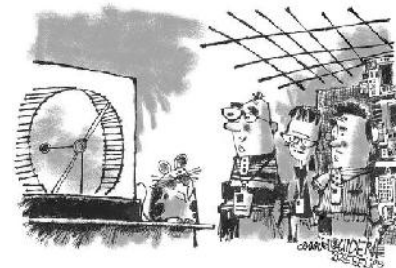
ALL POLLS

[DataSheets.com](#)



Cartoon Contest

April 2015 Cartoon Caption Contest: The Mighty Hamster



Of all the exhibits in the Pre-Apocalypse Era Museum, Brek was always in awe of the unearthed details and true-to-scale reproduction of a technological creation space that the long gone humans had once inhabited.

150 comments

ALL CARTOONS

[EMAIL THIS](#) [PRINT](#) [COMMENT](#)

Sponsored Content



Configure, Integrate & Prototype IP in Minutes
 With the increasing hardware and software complexity in today's SoCs, designers need more from their IP providers to help meet their project schedules. Delivering IP blocks alone is no longer adequate to address their growing SoC design and integration challenges. Designers require solutions that ease IP configuration and integration into the

ov...

Sponsored by Synopsys

More Related Links

- [Micron Bullish On Coming Year](#)
- [Cypress Eyes ISSI](#)
- [AMD Preps GPU, DRAM Stack](#)
- [FRAM's Slow, Unending Journey to Dominance](#)
- [Diablo Memory Channel Storage Architecture Gains Traction](#)

Comments

VIEW COMMENTS: [NEWEST FIRST](#) | [OLDEST FIRST](#) | [THREADED VIEW](#)

Be the first to [post a comment](#) regarding this story.

Like Us on Facebook

EE Times
Like

13,105 people like EE Times.

Datasheets.com Parts Search

185 million searchable parts
 (please enter a part number or hit search to begin)

powered by DataSheets.com

SEARCH

EE Times on Twitter

follow us

EET **EE Times** @eetimes 31 May
 USB Oscilloscopes from Pro to Hobbyist ubm.io/1KxeDAH
Show Summary

EET **EE Times** @eetimes 27 May
 SoC From Russia With MIPS ubm.io/1dxLTgW
Show Summary

EET **EE Times** @eetimes 27 May
 On Control-S ubm.io/1FOuVoV
Show Summary

EET **EE Times** @eetimes 26 May
 Waving the Flag ubm.io/1JU6dol
Show Summary

EET **EE Times** @eetimes 24 May
 Test Equipment Changes With Moore's Law ubm.io/1PGJCRg

Top Comments of the Week

- Yoko Ono and SERE military survival training:** Easy one: Yoko Ono's Season of Glass with her smash hit single "No, No, No", which consists of her screaming and shrieking at the...
KurtShuler on [What's the Worst ...](#)
- Re: Everyone to his own taste:**
 @Betajet...thanks for that bit of pedantry gem of information. My dad used to use your way, "Chacun a son goût", but on my...
David Ashton on [April 2015 Cartoon ...](#)
- Curious....:** This merger seems a bit fishy. Usually the acquiring company puts its name on the merged entity and installs its top executives to run the newly...
Alan Patterson on [A New Broadcom: The ...](#)
- Re: Avago and Broadcom:** @lonecowboy. Yep. If the tax holiday is what's driving deals like this one, why not Avago takes over Intel? Well put.
junko.yoshida on [Avago-Broadcom Deal: ...](#)



Broadcom R&D cuts coming: Check out the investor presentation here. <http://investor.broadcom.com/> Avago currently has 15% R&D expense. Broadcom has R&D of 23%. They... moronda on [A New Broadcom: The ...](#)

● [Sign up for EE Times newsletter](#)

GLOBAL NETWORK [EE Times Asia](#) | [EE Times China](#) | [EE Times Europe](#) | [EE Times India](#) | [EE Times Japan](#) | [EE Times Korea](#) | [EE Times Taiwan](#) | [EDN Asia](#) | [EDN China](#) | [EDN Japan](#) | [TechOnline India](#) | [ESC Brazil](#) | [ESC India](#)



FEATURED UBM TECH SITES: [EE Times](#) | [EBN](#) | [EDN](#) | [DataSheets.com](#) | [Design News](#) | [Embedded](#) | [TechOnline](#) | [Planet Analog](#)

OUR MARKETS: [Business Technology](#) | [Electronics](#) | [Game & App Development](#)

Working With Us: [Advertising Contacts](#) | [Event Calendar](#) | [Tech Marketing Solutions](#) | [Corporate Site](#) | [Contact Us](#) / [Feedback](#)

[Terms of Service](#) | [Privacy Statement](#) | [Copyright © 2013 UBM Tech, All rights reserved](#)