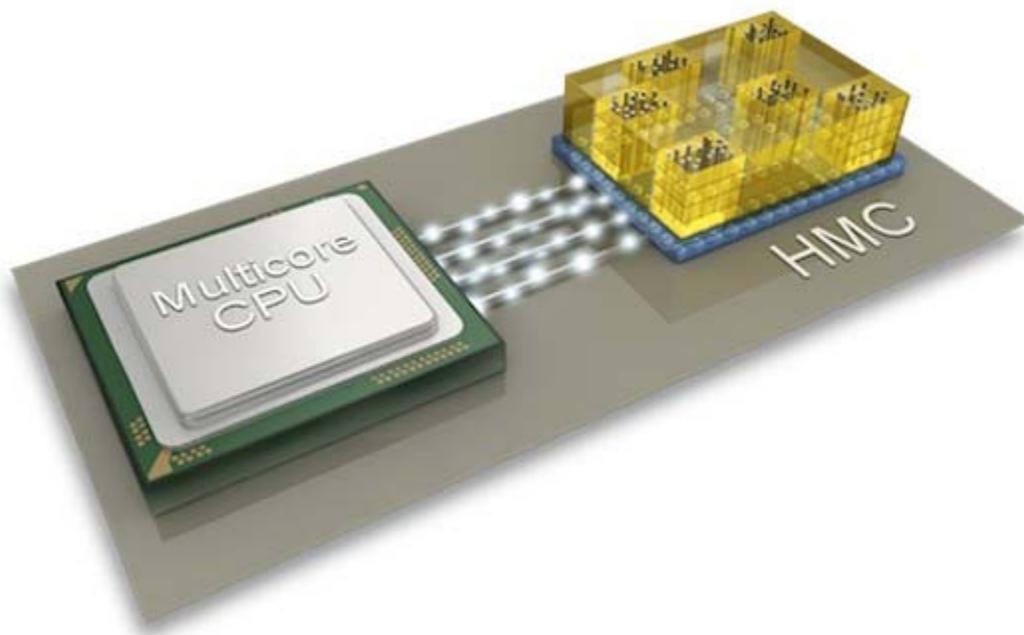QTRY

Hybrid Memory Cube receives its finished spec, promises up to 320GB per second

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The [Hybrid Memory Cube](#) Consortium has been almost too patient in developing a standard for for its eponymous technology -- efforts began 17 months ago -- but it at last has more than good intentions to show for its work. Its just-published HMC Specification 1.0 lets companies build platforms and RAM with 2GB, 4GB and 8GB chips incorporating the stacked, power-efficient technology, all without compatibility jitters from other supporters. The completed spec is a scorcher when living up to its full potential, too. With eight links, a memory cube can reach a peak 320GB/s (yes, that's gigabytes) of aggregate bandwidth -- more than a hair faster than the 11GB/s we often get from existing DDR3 memory.

The Consortium is teasing us with more. Although we'll have to wait until the second half of the year before HMC 1.0 products appear in earnest, the Consortium already has a next-gen blueprint due in early 2014 that should nearly double individual data link speeds (from 15Gbps to 28Gbps). While we'd like to see the group walk the

walk with real products before it talks more talk, there's still a chance that some memory performance bottlenecks could vanish for a good, long while.

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38 comments

▾ *livefyre* 🔥

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pankomputerek   7 days ago

Imagine what this technology might bring us in like 10 years. Man computers then will be amazing.

EDIT: Make that 15 years. Remember how long it took Intel to catch up with USB 3...

Like   Reply

GregHakes   7 days ago

What??? No they Don't. Why do you think your Hard Drive light is flashing when your playing a game??? And also most people have 6 to 8 Gigs of Ram so no there is no Hard Drive going to come remotely close to providing enough Data for this fast of Ram............

Like   Reply

ZeSchnoz   7 days ago

I'm a little confused about something. You say towards the beginning that it has 8 links; towards the end, you mention current speed at 15 Gbps per link. So that makes 15 Gbps * 8 = 15 GB/s. What am I missing?

Like   Reply

Glenwing   6 days ago

@ZeSchnoz 8 bits = 1 byte.

Like   Reply

ZeSchnoz   6 days ago

@Glenwing right. So if each link is 15 Gigabits per second, and you have 8 links, the total bandwidth would be 15 Gigabytes per second. Where did the 320 come from then?!

Like   Reply

Chuchi781   8 days ago

So does this mean laptops/tablets are getting fat again?

Like   Reply

SilasDG   8 days ago

@Chuchi781 "by allowing more memory into each machine and using nearly 90% less space than today's RDIMMs."

That's a nagatory.

1 👍 Like   Reply

Cloudjacker   8 days ago

nice, so what processes can actually take advantage of this, rendering jobs? protein folding? bitcoin mining?

Like   Reply

airbag888   8 days ago

@Cloudjacker integrated UHD graphics chipsets. For instance AMD/Nvidia won't have to package discrete gddr with their gpus on laptops or even desktops in some cases. Making mid range to top mid range graphic chips and even cards sold with just the GPU and a phat connection to the memory bus

Don't limit your thinking... there's tons more

1 👍 Like   Reply

mushroomphysics   7 days ago

@Cloudjacker bitcoin mining isn't memory intensive. The SHA256 algorithm only requires 128 bytes of memory. It is CPU intensive. Larger cache size can improve performance (improving

scaling), but faster memory will not.

Like   Reply

JIKjordan   8 days ago

How much will it cost?

Like   Reply

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j.a.seely   8 days ago

@JIKjordan Whoa, whoa, whoa. Whoa. Salient questions like that are best left for after the hype.

1 🖼 Like   Reply

metroidam11   7 days ago

@JIKjordan Don't expect to see this type of technology on consumer level for at least another two years.

Like   Reply

---

omikron   8 days ago

Aaahhh... memgasm :) Only bad thing is I want this now

3 🐷 👤 👤 Like   Reply

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tjken33   8 days ago

320GB/s Umm WHAT!?

1 👤 Like   Reply

SeanPickman   8 days ago

@tjken33 They've already had those speeds on GPUs for a couple of years. Glad to see that the rest of the PC is beginning to catch up.

Like   Reply

GregHakes   8 days ago

@SeanPickman The rest of the PC is not even close to catching up, The fastest SSD's that feeds the Ram are only reading and writting at 550 MB's per second, which is 640X slower.

Like   Reply

Husselang   8 days ago

@GregHakes @SeanPickman That is only relevant when starting programs, reading files from disk and similar. Once you got your data and code in memory it's the RAM to CPU speed that is interesting.

3   Like   Reply

cheebai   8 days ago

@GregHakes @SeanPickman for super-computing, you do not want to go to HDD or SSDs if you can help it. It's too slow.

Like   Reply

GregHakes   8 days ago

@Husselang @GregHakes @SeanPickman The Bottle Neck will still be the Hard Drive, No program or game loads the entire data into memory. therefore the PC will only load as fast as the hard drive can run. this memory will never be optimized for many years to come.

Like   Reply

GregHakes   8 days ago

@cheebai @GregHakes @SeanPickman This artical does not mention anything about Super Computers, It's about Future home PC's. I think it's great, but the Hard drive makers now have to catch up to make this relevant.

Like   Reply

SilasDG   8 days ago

@cheebai @GregHakes @SeanPickman Agreed. Have a co-worker rebuilding a 13TB raid array right now on a new performance server. ETA: 1 Month. All because he didn't set up cacheing before hand.

Like   Reply

Schmich   7 days ago

@GregHakes "No program or game loads the entire data into memory"

What? Yes. Do you think games load partially a map so it has to access the rest on the HDD?

Like   Reply

thomas.gillen   7 days ago

@GregHakes @Husselang @SeanPickman Yes they do. Every game will

load everything they need into memory before using it. They might then stream more content, so that it is loaded before it is needed. The game will not halt, waiting on the HDD to load something, unless the developer has very badly screwed up.

Like   Reply

GregHakes   6 days ago

@thomas.gillen @GregHakes @Husselang @SeanPickman Wrong.

Like   Reply

thomas.gillen   8 days ago

@SeanPickman GPUs have only been able to manage that at the expense of worse latency. Latency is usually more important than bandwidth for the CPU.

1 Like   Reply

vorador2   8 days ago

@SeanPickman Apples and Oranges. This is talking about memory.

For the record, GDDR5 works at a rate of 54 GB/s

Like   Reply

cheebai   8 days ago

@vorador2 @SeanPickman GDDR5 is pretty fast, but energy/bit is too prohibitive to be used in servers. the HMC is designed for servers in mind, with high bandwidth and low energy/bit.

Like   Reply

airbag888   8 days ago

@vorador2 @SeanPickman with relatively high latency though

Like   Reply

owned66   8 days ago

ram is already too fast that why people are buying SSDs since HDDs are the bottleneck

i think people will use this for high intense applications like media stuff but since the the highest available is 8GB then not sure :/

but it any way this is extremely impressive

nvidia will do something liek this with Volt if u didnt know yet here is a video

https://www.youtube.com/watch?v=IUTyNLCqlA0

but nvidia promised 1Terabyte per second

Like   Reply

SeanPickman   8 days ago

@owned66 If I'm picturing this right, this could be bottlenecked by PCI 3.0 possibly.

Like   Reply

owned66   8 days ago

@SeanPickman

no all the high intensive work is being done in the gpu

Like   Reply

g.carvlin   8 days ago

@owned66 Actually in the server world, while HDD and SSD throughput is an issue, if you were able to take advantage of this technology by doing a RAMDISK scenario with stuff like excahnge or SQL, you'd have some killer performance. Only thing we need now is a Intel or AMD chip to run it. AMD THIS IS YOUR CHANCE!

Like   Reply

owned66   8 days ago

@g.carvlin @owned66

hmm

if this is on die

then four opterons on a board would equal to 32GB with a total speed of 1280GB per second but.... AMD's only unique feature is its motherboard which are compatible with new CPUs im pretty sure AMD's G34 wont handle that much bandwidth ... maybe if they sacrificed the pci-e's

Like   Reply

g.carvlin   8 days ago

@owned66 @g.carvlin Yeah true, the Abu Dhabi's still don't have enough bandwidth on board to handle that amount of data. What I really meant is future chips incorporating this or the volta-style stacked memory controllers to

give Intel something to sweat.

Like   **Reply**

Husselang   8 days ago

@owned66 Unless you run out of memory you shouldn't need to access permanent storage very often. When doing heavy number crunching, or runnning games, you should run exclusively from RAM to increase performance.

Like   **Reply**

jygsaw   8 days ago

excitement vomit

1 **Like**   **Reply**

PhillyDaBoss323   8 days ago

aye mami! ...now thats memory!

2 **Like**   **Reply**

efsyxyw

wyfwgwfizreww

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