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MetaRAM Bets on High-Capacity Memory Breakthrough

New company debuts with high-capacity DRAM using cheaper, low-capacity chips.



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By Andy Patrizio: [More stories by this author.](#)

A Silicon Valley startup says it can deliver a 90 percent reduction in the cost of a decked out server by a breakthrough in memory technology.

MetaRAM, founded by Fred Weber, a former chief technology officer at AMD, is going public today with its MetaSDRAM. The technology doubles the memory on a memory stick by using cheaper memory components. The company doesn't sell memory chips or sticks or have a fabrication plant. Instead, it makes an interface chip that does the real work.

Weber noted that as memory goes up in capacity, the price increase is not in parity with the memory increase. A quick check of memory prices on [Pricewatch.com](#), which specializes in looking for hardware bargains online, bears this out.

A 1GB memory stick for a Compaq ProLiant is \$44, a 2GB costs \$132 (3x the price for 2x the memory), a 4GB stick is \$259 (a near 1:1 increase), an 8GB stick is \$841 (3.2x the price of the 4GB) and a 16GB stick is a ridiculous \$10,920, almost 13 times the price for twice the memory.



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The reason for this, said Weber, is that the higher capacity memory sticks use higher density DRAM chips, which cost more to make and have a higher failure rate. So memory makers pass on that cost. The 1 gigabit chips that comprise a memory DIMM are the mass-market chips that can be made in large quantities and cheaply, while 2 gigabit chips are much more expensive.

"There's not nearly as much competition in the two gigabit space because it's so expensive and very few vendors can make them. So it has a high price and high mark up," Weber told *InternetNews.com*. "So our solution was to take one gigabit DRAM, which sells for two bucks, and allow people to use that standard DRAM to build much bigger DIMMs than they normally could."

The MetaSDRAM chipset is a controller that sits between the chips on a DRAM stick that enables up to four times more mainstream DRAMs to be integrated into existing DIMM stick without the need for any hardware or software changes. As a result, 8GB and 16GB DRAM sticks are possible for a fraction of their normal price.

"We haven't changed the DRAM. We use off-the-shelf 1 gigabit DRAMs and our chip fits between the DRAMs and the edge connector acts like a buffer. We figured out how to let them put more of their DRAMs onto a single DIMM," said Weber.

High-powered backing

The idea certainly has some high-powered supporters. MetaRAM's first round of funding comes from heavyweights in the Silicon Valley like Kleiner Perkins Caufield & Byers, Khosla Ventures, Storm Ventures and Intel Capital.

There is one caveat for Intel servers: MetaSDRAM is a DDR2 memory design, so it will only work on a Xeon motherboard that uses registered DIMMs, which at this



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point is Intel's low power 5100 chipset that's just coming to market now.

The vast majority of Intel servers use fully buffered DIMM (FBDIMM), which is not known for energy efficiency. AMD Opteron servers, however, are fully in the clear as they use DDR2 memory.

The MetaSDRAM chipset is optimized for low power use, with features like WakeOnUse power management, a dynamic command scheduler that makes it compatible with the JEDEC DDR2 protocol, compatibility with existing memory controller designs and a split-bus stacked DRAM design that enables flexible access of the multiple DRAMs in a stack.

The company is launching with two controllers: the MetaSDRAM MR08G2 chipset for 8GB DIMMs and the MetaSDRAM MR16G2 chipset for 16GB DIMMs. The 8GB controller will be available for \$200 each in lots of 1,000 while the 16GB controller will be available for \$450 in lots of 1,000.

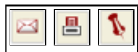
Bob Merritt, an analyst with Semico Research, said there have been other attempts at this type of memory density that failed, but this could work. "If they can provide the ability to go into some higher densities without having to change the operating system and structures of the hardware designs, then that is a real benefit," he said. "In essence, the consumer gets the benefit of extra memory but doesn't have to pay for high priced memory."

He added that OEMs have a ratio of how much they want to spend between the memory and the processor. When DRAM prices go down like they have in the past year, OEMs have to choose between lowering their system cost or adding more memory. "Traditionally, they add more memory," he said.

Weber estimates that by 2010, 2GBit DRAMs will be available in mass quantities just as 1GBit DRAMs are available now. At that point, MetaRAM can produce 16 and 32GB memory controllers for roughly the price of the 8GB and 16GB products it will produce now.

Memory maker Hynix has 8GB samples available now while SMART Modular Technologies is offering 16GB samples. Hynix has not disclosed prices but the SMART product will go for \$1,500.

TAGS: chips, AMD, Intel, server



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