LRDIMM answers the enterprise compute and communications systems call

Sameer Kuppahalli, Inphi Corporation

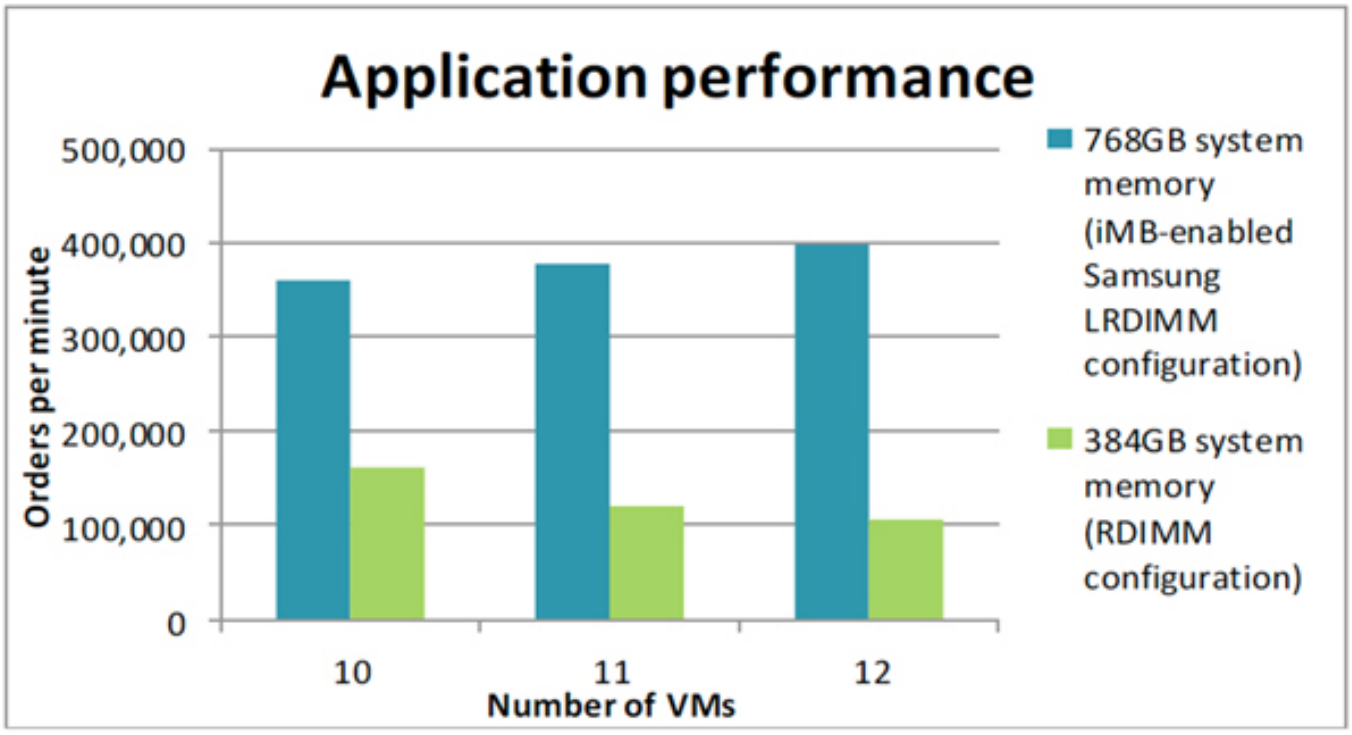
Among the myriad technology sectors looking to boost performance efficiently, the enterprise segment poses a unique challenge to communications and other system makers. While servers can be deployed in any number of environments — and scaled to meet applications' specific needs — enterprise servers have to factor in scalability of the infrastructure specifically for memory capacity. However, what all servers have in common is that they can take advantage of new developments in memory that, according to recent benchmarking tests, can double capacity and boost performance by nearly 150 percent.

At the heart of this significant performance gain is load-reduced dual-inline memory, or LRDIMM, technology that uses buffers that both expand capacity and increase the read/write speed of memory modules. Unlike traditional registered DIMMs, or RDIMMS, that limit the amount of server memory that can be installed due to their loading profile, LRDIMMs replace the register with an isolation memory buffer to reduce the load. This enables server and communications systems' memory to be easily scaled upward, with more and higher-density DRAMs on each module. As a result, both capacity and speed are boosted while using the same motherboard real estate as an RDIMM.

Principled Technologies, a leading independent technology-assessment service, recently conducted benchmarks that delivered some highly impressive results. Using an IBM server based on the latest generation of Intel processors – the IntelXeon E5-4600 –and four memory sockets, the system "drove" ten virtual machines to compare memory configurations. The server was first configured with 384GB of standard RDIMM to determine overall application performance. The server's RDIMMs were then replaced by Samsung LRDIMM modules enabled with Inphi's iMB buffer, doubling capacity to 768GB of system memory in the very same slots as the RDIMMs. (The server actually could accommodate 1.5TB of iMB-enabled Samsung LDRIMMs, whereas its maximum capacity of RDIMMs is just 768GB.)

The system configuration with 12 VMs and 768GB system memory, using 32GB

Samsung LRDIMMs, processed data 3.75 times as compared with the system configured with 384GB of standard memory.



(Source: Principled Technologies)

These benchmark results validate LRDIMMs and confirm what several memory and system makers have known about the technology for some time – that something as simple as adding a buffer to standard memory can boost capacity without additional slots, while significantly increasingly performance. Further, the benchmarks reflect how systems of all kinds can take advantage of LRDIMM technology to expand and enhance applications in communications, the cloud, data centers and other enterprise applications.

The often-overlooked approach to memory can mean the difference between maximizing system resources and underwhelming them, to the detriment of an organization's bottom line. Fortunately, system makers and users alike are now recognizing that LRDIMM technology delivers amazing performance and capacity advantages that older memory schemes can't match.

Sameer Kuppahalli is director of product marketing at Inphi, a leading provider of high-speed, mixed-signal semiconductor solutions for the communications and computing markets.