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## Energy Efficiency & Solid Performance

FatTwin™ SuperServer® Builds On Supermicro Innovation

AS THE SAYING GOES, greatness begets greatness. Case in point is the new Supermicro 4U FatTwin SuperServer architecture that is a direct descendant of the company's patented Twin SuperServer architecture.

Like previous Twin SuperServer systems, the FatTwin platform integrates multiple, independent nodes into a single high-density chassis that enables companies to share resources such as PSUs, cabling, and fans and cut costs. The 4U FatTwin systems complement the 1U and 2U Twin systems by significantly expanding storage and compute capacities to produce better performance while also lowering power consumption, a scenario that improves TCO and produces a quicker ROI.

"The FatTwin architecture is based on the highly successful and widely followed Supermicro-originated, multi-node Twin family designs, featuring shared power and cooling resources to reduce costly components and cabling, resulting in optimized airflow and maximized energy utilization," says Charles Liang, Supermicro president and CEO. Factor in the use of Supermicro's redundant Platinum Level high-efficiency (95%) digital switching PSUs, Liang says, and the FatTwin platform provides "maximum compute density and energy efficiency for today's most demanding supercomputing needs."

Beyond being well-suited for such application spaces as storage and Hadoop, the FatTwin architecture is also "displaying the potential to be optimized for almost any type of application as a universal server solution," Liang says.

### Fattened Up

Available in 8/4/2-node hot-plug configurations with both front- and rear-access options, all FatTwin configurations include support for standard 19-inch rack cabinet installations (with no customization required); Server Management via Onboard IPMI 2.0 through a dedicated LAN port; and dual Intel Xeon E5-2600 Series CPUs per node, adding power management, virtualization, security, and other advanced features to the FatTwin architecture.

Recent 8-node (SYS-F617R3-F Series) and 4-node (SYS-F627R3-F Series) Front I/O configurations added to the FatTwin lineup sport designs that make tackling service and maintenance tasks quick and easy. The front I/O configuration "also makes design, installation, and maintenance easier from the 'cold' data center aisle rather than from the 'hot' aisle and allows for cost reduction due to reduced complexity," Liang says.

Depending on the FatTwin configuration, other system features include support for up to 512GB DDR3 memory; up to six 2.5- or up to eight 3.5-inch hot-swappable SAS/SATA hard drives per 1U; an optional LSI 2208/2308 SAS controller; hardware and software RAID options; PCI-E 3.0 x16 and Micro-LP PCI-E 3.0 x8 slots; dual Intel 82574L/i350 GbE controller; GPU support; Backup Battery Power (BBP) option; and more.

### Eye On Energy

San Jose, Calif.-based Supermicro has become known for its expertise in implementing server designs and thermal-management technologies that heavily focus on enhancing energy efficiency. Liang says the company emphasizes not only "the highest performance in our HPC solutions, but also the overall energy efficiency and optimal PUE (power-usage effectiveness) of our complete systems."

The highly efficient, shared-cooling architecture that the FatTwin



uses enables FatTwin systems to operate under high ambient temperatures in free air-cooled environments, thus decreasing cooling infrastructure costs. A Data Center Optimized 4U FatTwin configuration, for example, incorporates an airflow-optimized design that enables the platform to use 135W CPUs operating at 35 degrees Celsius and 130W CPUs operating at 47 degrees C. The result is the FatTwin outputting "maximum performance while effectively eliminating costly air-conditioning to dramatically reduce TCO," Liang says. Customers can use those savings to budget more resources toward mission-critical computer performance, he says.

"Versatile configurations allow the FatTwin to be optimized for many different environments," Liang says. "The FatTwin independent node design and distributed architecture reduce single-point-of-failure issues and dramatically increase system reliability. In addition, individual nodes can now be purchased for onsite spare backups." The company also offers BIOS, firmware, and power management tools via its SSM and NMView software.

### Leading The Pack

Currently, Liang says, no Intel Sandy Bridge-based product is available that can compare to the FatTwin, a fact that again makes Supermicro "first to market with the most

innovative server architectures" and demonstrates the company's advanced technology and market leadership, as well as a "proven, effective stewardship of our environment through the development of advanced energy-efficient server solutions." Competitors seeking to easily copy the FatTwin architecture, he says, will find it difficult, in part due to the various unique innovations FatTwin implements, including the Backup Battery Power units that eliminate the need for bulky UPSes, less than 30-inch depth models and standard 19-inch rack support with all models that enables easy installation and maintenance, the support for free air-cooling, support for up to 12 GPUs per FatTwin system, and more.

Although the FatTwin platform is currently optimized to process intensive database-driven applications, including Big Data and Hadoop analytics, gas and oil exploration, HPC, computational finance, search engines, design and modeling, and simulation, Liang says, new models expected early in the third quarter will include systems optimized for GPU supercomputing and other uses. Overall, Liang says, "The FatTwin is the best architecture for data center managers to flexibly choose configurations, yet it is easy to maintain." ■

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