



Driving Down Power Consumption in Data Centers

A Micron/Egenera Case Study

Egenera, Inc.

Vern Brownell is the visionary behind Egenera, Inc. Over the course of his 11-year career with Goldman Sachs and in his capacity as their Chief Technology Officer, Brownell acquired unique insight into the complexity and increased costs of legacy server deployments. Convinced that nothing short of a totally new approach could solve the data center and data networking issues he'd managed at Goldman Sachs, he founded Egenera in 2000 and transformed his data center virtualization concepts into reality.

The Ongoing Energy Consumption Challenge

Traditionally, data centers have had to purchase and maintain enough servers to support applications at peak demand, plus enough additional servers to ensure high availability and disaster recovery capability. This approach has created a legacy of complexity—data centers filled with underutilized servers, dedicated to specific applications and supported by multiple layers of hardware and software.

The Egenera® BladeFrame® virtualization system changes all that because it creates dynamic pools of processing, storage, and networking resources that

can be applied as needed, when needed. Based on the patented Processing Area Network (PAN) architecture, Egenera® PAN Manager™ software transforms many common hardware components into software, eliminating up to 80% of the components used to support data center infrastructure. By dramatically simplifying the data center, Egenera has come a long way in reducing the complexity that causes so many of today's power and cooling challenges.

A New Angle on Energy Efficiency

In the spring of 2007, Egenera was designing a 4-socket Processing Blade (pBlade™) module for its BladeFrame system when their long-time memory supplier, Micron Technology, came to them with a lower-voltage memory solution. Egenera's pBlade modules are stateless, meaning they contain only processors and memory. And since those are the only two components that use power, memory typically accounts for a high percentage of the blade's total power consumption.

After some serious number crunching, Micron's Marketing Engineer, Brett Williams, was certain that Micron's new low-voltage parts could significantly reduce Egenera's system power consumption and, at the same time, provide the high memory capacity needed to support the powerful processors used in their virtualized environments. "We've had a longstanding relationship with



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Egenera, providing them with high-density FBDIMMs. The lower-voltage part was a great opportunity for us to demonstrate why we were the best fit for their needs.”

Micron’s low-voltage 1.5V DDR2 FBDIMMs didn’t require any major redesign on Egenera’s part. And functionally, they were transparent to Egenera’s system. The timing and other operating requirements were identical to 1.8V FBDIMMs; the 1.5V parts just consumed considerably less power. And because they’re reduced chip count (RCC) modules, they can deliver the same performance and memory capacity with half as many components. Fewer modules means less heat generated and less power consumed, which helps drive Egenera’s already low cooling and consumption costs even lower.

When Micron provided benchmark data to Egenera for the 1.5V alternative, the power calculations spoke for themselves. They confirmed Product Manager Dick Csaplar’s belief that memory solves a lot of problems. “From an energy-consumption perspective, there’s an inordinate benefit we can pass on to customers by using Micron’s low-voltage memory.”

The Ultimate Energy-Saving Server Solution

Micron was able to offer a forward-looking product that aligned with Egenera’s efforts to provide the most efficient server solutions possible. Micron’s DDR2 FBDIMMs are designed into Egenera’s 4-socket pBlade module family based on the Quad-Core Intel® Xeon® Processor 7350 series. These pBlade modules include 16GB–96GB memory configurations—Egenera’s largest memory offering to date. And Egenera continues to use its standard 1U form factor for all new blades, including the 96GB pBlade. Server customers can have it all—density, performance, form factor—and energy efficiency. Egenera is starting to make it all available in their 2-socket pBlade modules as well.

Egenera is now calculating the savings they can pass on to their customers, and data center managers like what they’re seeing—an energy-efficient solution that can dramatically lower their total cost of ownership.

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