

Industry

- Media, Entertainment, and Cable

Business Issues

- Consolidate and lower power consumption across an expanding server infrastructure
- Increase computing density for the main database and across the main Web-server pool
- Improve disk storage and speed for data storage

Solution

Last.fm implemented a Sun server and storage solution that introduced high-density computing with low power consumption and promises significant server consolidation and energy efficiencies.

Business Results

- Increased database capacity substantially using Sun server and storage solution
- Delivered maximum compute density while lowering power consumption
- Launched program that consolidates Web servers by 80% and reduce power usage 40%
- Created 48 TB of disk capacity in 4U of rack space to maximize storage capacity

Products/Services/Solutions

- Sun Fire X4450 server
- Sun Fire X4500 server
- Sun Blade X6250 server module
- Sun Blade X6450 server module
- Sun Blade T6320 server module
- Sun StorageTek 6140 array
- Solaris 10 Operating System
- Solaris ZFS
- MySQL database
- Sun UltraSPARC T2 processor
- Sun Startup Essentials program

URL Reference

sun.com/customers

Last.fm (www.last.fm) is a free global music Web site that offers music fans millions of tracks in every genre for free on-demand and radio streaming. Its 25 million users worldwide can also share their music preferences by linking their media player to the Last.fm database. As a result, Last.fm can intelligently recommend songs, artists, local concerts, and even introduce members to one another. The company is based in London and was acquired by CBS in May 2007.

Success at a glance

Community Web sites and the whole social networking scene are creating new business models where consumers are the innovators. Social-music platform Last.fm is at the forefront of this worldwide phenomenon, giving people the opportunity to share their musical tastes with a global audience.

According to research company comScore, Last.fm has seen a 208% year-on-year increase in total minutes spent on the site and a 20% rise in unique visitors. The secret of the site's success is simply that it understands the popularity of discovering and sharing music online.

At the center of the Last.fm operation is a Web infrastructure that handles all music streams, members' profiles, and data on upcoming music events. The hardware is located offsite in hosted datacenters around London. Last.fm reached a point where it had to decide the best way to scale the infrastructure over the long term as traffic continued to spiral upward and energy consumption grew. "To give you an idea of our development, the site has seen a 163% increase in streaming traffic in the space of eight months," says Mike Brodbelt, director of technical operations and infrastructure at Last.fm. "What with new services coming

online and relaunching the Web site recently, we expect that rate of increase to continue."

Brodbelt, who joined Last.fm in December 2007, had the task of redesigning the infrastructure, which comprised 100 Web servers and a central database connected to a storage array enclosure. At this point, Brodbelt wanted to approach Sun Microsystems, because he had worked with its technology in his previous role. He says, "I'd found that Sun systems are well engineered and well supported." Brodbelt joined Last.fm at about the same time that it was approached by Sun to join the Sun Startup Essentials™ program, which has been a hit with many Web companies because of the discounts and support it provides for Sun technology. "The Startup Essentials program was a great opportunity to start a conversation around installing Sun systems," remembers the director.

Through the program, Last.fm bought two Sun Fire™ X4450 servers and four Sun StorageTek™ 6140 arrays to support the database. The company also bought two Sun Fire X4500 servers for catalogue storage. Brodbelt says, "The Sun Fire X4500 server's combination of 48 TB of disk storage in 4U of rack space and Solaris ZFS make a fantastic open-storage system." Next, Last.fm obtained two Sun

Blade™ 6000 Chassis and a number of Sun Blade X6250 and X6450 server modules, running on Intel® Xeon® quad-core processors. Because of his past experience with Sun technology, Brodbelt was interested in Sun's UltraSPARC® T2 processor, which offers up to eight cores, so Sun loaned him some Sun Blade T6320 server modules to test as Web servers.

By adding the new Sun systems to the infrastructure's database, Last.fm increased capacity and throughput significantly, according to Brodbelt, and was able to offload some of the existing machines' read loads. "There is nothing available in the market comparable with the Sun Fire X4450 or Sun StorageTek 6140," says the director. "The major advantage for us with the Sun Fire X4450 is the high-density computing with four quad-core processors per machine and 128 GB of memory for our PostgreSQL database software. The StorageTek 6140 arrays provide great disk space and dedicated cache, so storage speeds should be a lot faster."

Configuring databases to run optimally can be challenging, so Brodbelt wanted some support. Thanks to the Sun Startup Essentials program, a Sun engineer worked alongside him throughout this complicated task. "This was just the kind of support I was looking for from an IT vendor. These systems can be complex, so having this kind of expertise on hand is invaluable," Brodbelt comments. The advanced integrated lights out management (ILOM) that is embedded in Sun servers is making a difference in day-to-day working practices. "With a lot of companies, these kinds of systems are optional, but with Sun it comes as standard," he says. Today the

company routes access to Sun ILOM over a dedicated management network with serial access as a safeguard.

Although it uses PostgreSQL as its main database, Last.fm also employs Sun's MySQL™ database on secondary applications. "It is interesting to see Sun acquire MySQL, and it was a positive move," comments Brodbelt. "I've seen some preliminary MySQL performance optimization on UltraSPARC architecture that could be interesting to us in the future." The director is intently watching the development of MySQL and is testing MySQL 5.1 on a pair of databases. "We are looking closely at the new XML database replication capabilities," he adds.

Last.fm is using the Sun Blade X6250 server modules to support a new recommendation service on the site and the Sun Blade X6450 server modules as application load balancers for all Web traffic. "The Sun Blade X6450s support one of the most critical parts of our infrastructure — if they break, everything fails," says Brodbelt. "The Sun Blade X6450 machines are unique in terms of core and memory density. They also boot from CompactFlash for better security and less power consumption." He adds, "The Sun Blade X6450 servers provide Last.fm with substantially expanded load-balancing capabilities."

In October 2008, Last.fm purchased 10 additional Sun Blade X6450 servers featuring the new Intel Xeon L7455 (Dunnington) processors. Each blade contains four Intel Xeon L7455 CPUs and offers 16 GB of memory. The company also bought an additional Sun Blade 6000 Chassis to

"The Sun Blade T6320 server modules with their UltraSPARC T2 processor technology could reduce the energy consumption on our Web-server pool by 40%."

Mike Brodbelt

Director of Technical Operations and Infrastructure, Last.fm

house the servers. Brodbelt says, "The main drivers for buying the new Sun Blade X6450 servers with Dunnington processors are the compute density, scalability, and power efficiency. In total, we get 240 cores in a single chassis, which I think is the best density achievable on the market. I don't think other IT solution providers can compete with that kind of performance."

In addition to the Sun Blade X6450 servers helping reduce power consumption, early indications are that the Sun Blade T6320 server modules will cut energy usage across the Web-server pool by up to 40%, according to the director, who is currently working with Sun engineers on testing the blades. "Using the Sun Blade T6320 servers would reduce our Web-server pool by 80%," comments Brodbelt.

He is working with Sun toward optimum throughput and latency on the Sun Blade T6320 server modules running the Solaris™ 10 Operating System and Apache Web-server software. The servers deliver outstanding Web-scale performance with up to 64 threads and a large memory and I/O footprint. "I think we can get more throughput from the blades," says the director.