



Borsa Italiana Sees its Stocks Rise with AMD



AMD technology helps the Italian stock exchange meet the demands of increasing trading volumes and a growing business

THE CHALLENGE

- The exchange's IT systems must be able to keep up with growing business and volume of trading. Includes rapidly evaluating and settling complex transactions, increasing clearing efficiency, and financial cross-referencing of large trade volumes.
- Decrease TCO by lowering heat output and energy consumption and enable a cost-effective upgrade path to future server platforms.
- Increase server density to best leverage the existing server space and further increase system performance within the datacenters.
- Increase server cluster stability and reliability.

THE SOLUTION

- Borsa Italiana acquired HP ProLiant BL blade servers, powered by Dual-Core AMD Opteron™ processors to resolve these challenges. Borsa Italiana currently has 130 ProLiant BL blade servers in production and several other servers are being used in test environments.

THE IMPACT

- Because the AMD Opteron processor-based HP blade servers generate very low heat, Borsa Italiana has been able to put more servers in the same space. A total of 64 blade servers could be fit into each rack, up from less than 30 servers in the same space previously.
- Maximum performance obtained from machines using 64-bit architecture, Windows® 2003 64-bit edition, and Red Hat Linux® Enterprise operating systems.
- New AMD Opteron processor-based system allows the IT team to deploy, remotely manage, and replicate servers on a large scale across three datacenters and the Italian stock exchange itself. Improved manageability including batch processing as well as faster and automated system backups free up time to support internal customers.

- The AMD Opteron processor's native support for both 32- and 64-bit codes, as well as its native multi-core architecture, give Borsa Italiana the choice of how and when to migrate to more advanced technologies, as next-generation applications become available.
- Cost savings include hardware, housing space rental, heat production with machines operating AMD Opteron processors, software installation and operations (including OS), and on the overall cost on automatic case openings to repair hardware faults.
- Upgrade from Dual-Core AMD Opteron processors to Quad-Core AMD Opteron processors will be as easy as updating the server BIOS, unplugging the old processors, and plugging back in the new ones. This will lead to extended platform longevity and flexibility across the server platforms while being able to scale performance as business demands it.

In an effort to keep up with ever increasing trading volumes while keeping a lid on high energy costs, the Italian stock exchange, Borsa Italiana, needed to consolidate its server systems. IT director Alessandro Pelosi was faced with the challenge of keeping the company's back-office systems up to date and fully reliable. His choice of Hewlett-Packard (HP) blade servers running on state-of-the-art AMD Opteron processors provided an industry-leading combination of high performance, low maintenance, and flexibility for future growth, which led to a significant decrease of the total cost of ownership. The new system has also paved the way for an easy upgrade to AMD's upcoming native Quad-Core AMD Opteron processors.

“I could see straight away that the new blade server system would address my need to control energy and air conditioning costs. It would also offer me flexibility because most of the time my team would be able to handle management even in remote locations.”

— Alessandro Pelosi, IT Director, Borsa Italiana

Borsa Italiana: Italian stock exchange

Borsa Italiana S.p.A. is responsible for the organization and management of the Italian stock exchange. Founded in 1997 following the privatization of the exchange and operational since January 2, 1998, Borsa Italiana is responsible for defining and organizing the functions of the markets; defining the rules and procedures for admission and listing on the market for issuing companies and brokers; managing and overseeing the market; and supervising the listed companies' disclosures.

Borsa Italiana organizes and manages the Italian stock market with the participation of nearly 130 domestic and international brokers who operate in Italy or from abroad through *remote membership*, using a completely electronic trading system for the real-time execution of trades. In addition, it performs organizational, commercial, and promotional activities aimed at developing high value-added services for the financial community.

Since 1994, all the markets managed by Borsa Italiana are electronic and order-driven. IT is essential to the Italian stock exchange and its technology has to keep up with the growing trading and business demands. The Italian stock exchange is a full service stock exchange with both stocks and futures. Borsa Italiana has all platforms on technological devices, which are all fully integrated and all based on servers, according to IT director Alessandro Pelosi. The trading volumes are always growing and Pelosi's job is to follow those trends to keep the IT systems running apace.

For example, in May 2006, Borsa Italiana introduced a new version of the trading platform used by its derivatives market, IDEM, that the exchange expects will encourage market participants to use more complex trading strategies such as spreads and straddles. The new platform, Click 18.2, allows users to create what Pelosi describes as tailor-made combinations of futures and options that are simultaneously executed when suitable market conditions are achieved.

The new platform has already been driving traffic and boosting demand on the IT systems. In March, Borsa Italiana achieved a new record for daily turnover on share trading (€9.983 billion in a single day) and number of contracts (510,090).

Choosing the solution

Increased volumes and growing demand were creating some strains on the previous server farm. When the IT system was running at 100 percent, servers would sometimes freeze, keeping Pelosi and his team from controlling the operation of the system. This problem was potentially disastrous, as millions of euros of trades are at stake at any given moment and had to be resolved as quickly as possible.

As part of Borsa Italiana's growing daily business, power consumption would only continue to increase as would the cooling demands made on its air conditioning systems.

Pelosi and his team wanted to be able to do more with servers that could be easily deployed and managed. At the same time, he needed to address the increasing cost of high energy consumption, air conditioning, and rent on the space for server farms. “We either had to keep buying more and more room to house more servers or go for higher integration,” Pelosi explains. “We also needed complete control of the infrastructure.”

By 2005, Pelosi began looking for a new IT vendor and turned to HP. The representatives at HP showed him blade servers powered by AMD. When Pelosi saw in demonstrations how the AMD Opteron processor-based solution requires relatively little power and produces very little heat, he was immediately impressed.

“I could see straight away that the new blade server system would address my need to control energy and air conditioning costs. It would also offer me flexibility because most of the time my team would be able to handle management even in remote locations,” says Pelosi. “I would also need less people to control the servers.”

The setup was completed by six people in less than a week with 78 servers installed across the three server farm locations. Pelosi believes that with a traditional architecture, it might have taken considerably longer — perhaps as much as a month — to do the same thing.



A consolidated enterprise platform

Heat and density. The increased density of the datacenter with the new blade servers was considerable. A total of 64 AMD Opteron processor-based blade servers could be fitted into each rack, up from less than 30 servers in the same space previously. Now all of the servers could fit onto two racks.

Previously, it had been difficult to fill all of the racks because of a general energy consumption limit of 2 kilowatts in every rack. Because the new AMD Opteron processor-based HP ProLiant blade servers produce low heat and consume less power than the previous installation, the servers could be mounted closely together. Not only could Pelosi fit all servers in two racks, he was also able to actually reduce the need for air conditioning units for the server room.

Performance. AMD Opteron processors feature AMD's Direct Connect Architecture, an integrated memory controller, and HyperTransport™ technology, providing additional memory bandwidth, high speed, low latency, and superior scalability. Borsa Italiana is also taking advantage of the AMD Opteron processor's 64-bit processing, and both performance and efficiency have improved dramatically.

Most important, according to Pelosi, the system no longer experiences freezes or bottlenecks. "The AMD Opteron processor-based solution responds much better under strong server loads. When we need 100 percent of power, the servers still react, and there is no lag in server response time. It's a difference you can not only see but feel is real."

IT support. Possibly the most measurable impact of Borsa Italiana's back-office overhaul has been on the reduction of IT maintenance and installation time. With fewer servers, a more efficient backup process, and a consolidated, less-complex technology platform, the IT team can devote more attention to its internal customers and less to its servers.

"The savings we made on the installation process alone — with system engineers needing to work fewer hours to complete the project — have contributed to a high return on investment for the entire hardware infrastructure," Pelosi says.

Cost savings. With the new AMD Opteron processor-based systems, Borsa Italiana has experienced across-the-board IT cost savings. Pelosi estimates the migration to AMD Opteron processor-based HP ProLiant blade servers has substantially reduced costs in the following areas: hardware costs; housing space rental costs; heat producing costs with machines operating AMD Opteron processors; software installation and operations (including OS); and the overall cost on automatic case openings to repair hardware faults.

Future proof. Pelosi and his IT team at Borsa Italiana are so happy with the current consolidated enterprise platform that plans are already in place to upgrade to AMD's upcoming native Quad-Core AMD Opteron processors (codenamed "Barcelona") within the next year. Since AMD has designed "Barcelona" to be pin and power compatible with existing AMD Opteron processors, the upgrade to the new native Quad-Core AMD Opteron processors could not be simpler. It is a matter of replacing the processors and updating the BIOS.

In addition to the performance advantages that native Quad-Core AMD Opteron processors are expected to offer, AMD's enhanced micro-architecture will enable new power- and thermal-management techniques, strengthening the performance-per-watt that AMD Opteron processors currently deliver today.

"Borsa Italiana is a clear example of a leading-edge technology user where the advantages of AMD's processors have a direct impact on productivity and total cost of ownership," says Francesco Torricelli, AMD's worldwide HPC manager. "Borsa Italiana's needs are key drivers for AMD and HP in developing common solutions to address growing demand for High Performance Computing."

"I'm expecting further heat reduction and more power with 'Barcelona', even as our server stress loads increase," Pelosi says. "The decision was easy, and we believe Borsa Italiana will be ready to deal with any volume of traffic, well into the future."

For more information, visit www.amd.com

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