

# NYSE Euronext Powers the Exchanging World with Zend



## CUSTOMER:

NYSE Euronext is the world's leading and most liquid equities exchange group.

## CHALLENGE:

NYSE Euronext sought to replace and sunset its existing Web sites with new sites supporting its goals to drive business value online. A new Web application development platform and processes were needed for rapid Web development and deployment, efficient scale up and management, and high availability. Tough guidelines demanded improved productivity, and reduced infrastructure and downtime costs.

## SOLUTION:

NYSE Euronext chose Zend PHP application development solutions and Drupal. Zend Studio IDE is used for application development, debugging and profiling. Zend Server runs the Web sites, performs proactive monitoring and automates troubleshooting and optimization. Zend Server Cluster Manager supports easy scalability in multi-server environments.

## BENEFITS:

Using Zend and Drupal CMS, NYSE Euronext developed and launched a series of 40 business-critical Web sites within 18 months — a fraction of the time spent just in designing their previous Web application platform. Streamlining and automating key application development and management processes reduced troubleshooting and maintenance burdens while improving time to market, reliability and availability of the company's Web sites. The new PHP-powered Web platform delivers on-demand scalability to changing business needs, improves resource utilization, and helps reduce application development costs.

## Creating a Superior Online Experience

NYSE Euronext provides more than 4,000 of the world's leading companies with access to the global liquidity they need to collaborate, compete and grow. When the 2007 merger of NYSE Group and Euronext NV brought together multiple business entities with disparate IT systems and Web assets, the organization was driving a massive global Web experience. By 2009, it was clear that more was needed from the organization's Web sites to meet customer expectations for online community and meet NYSE Euronext goals to drive more business value online.

The new organization's mandate included reaching key constituencies with a superior online experience of the NYSE Euronext brand, tailored to individual audience needs. At that time, Robert Kerner came on board as VP of Technology for the company's Global Web organization to help consolidate and revitalize key Web technologies. It was time to replace and sunset existing Web sites and rigid Web infrastructure with more modern, dynamic Web applications on a flexible and open Web infrastructure.

An assessment of the existing web redevelopment project revealed to Kerner a number of areas needing major improvement. Developers on that project did not have visibility into the production environment, they were dealing with more than a dozen unresolved critical issues a day, and they lacked the necessary tools for productive collaboration.

Kerner's Global Web organization needed an application development platform and agile processes that could support rapid Web development and deployment, with efficient scale up and management as well as reliability and high availability. A technology overhaul of this scope was justified with tough guidelines for improved productivity along with reduced infrastructure and downtime costs, and PHP became an integral part of the solution.

*"We needed a truly agile Web platform with growth potential to support the NYSE global community contributing to it, so we chose PHP, Zend and Drupal."*

**Robert Kerner, VP of Technology, NYSE Euronext Global Web Organization**

NYSE Euronext began using PHP in 2008 for a market data reporting application, and quickly found that the PHP platform offered flexibility, ease of use and efficiencies across the application life cycle. Zend provided a mature, commercially tested and supported PHP solution that would enable NYSE Euronext to leverage the significant benefits and agility of open-source PHP and the wealth of libraries contributed by the PHP community within a framework of consulting, training and support services.

### NYSE Euronext Boosts Application Performance with Zend Server

- Optimized site performance by more than 200%
- Full-page caching led to a 280% increase in speed (Drupal page loads) without changing application code
- Increased maximum code dump file size from 1MB to 10MB to accommodate large call stacks in Drupal
- Achieved ROI in Zend PHP solution in less than five months

## Rapid Application Development in PHP

Initially, the Global Web organization chose Zend Framework, a lightweight PHP application framework, along with the Zend Studio IDE. Soon after, they brought in the Zend Server Web application server and Zend Server Cluster Manager. "Zend provided a complete, enterprise-ready PHP stack allowing us to start small, make rapid changes and scale up in a disciplined and structured fashion in order to successfully meet short-term milestones," said Kerner.

In less than three months, the Global Web organization had established a new PHP-powered Web platform, with Zend Studio IDE and Zend Framework on Windows and Mac OS X in the development environment, and Zend Server on Windows and Red Hat Enterprise Linux in production. Along with PHP-based Drupal for content management, MySQL and Oracle were used for data management within a VMware virtualized environment. At the back end, Kerner's team used tier 2 Java and JBoss enterprise middleware from Red Hat.

Zend Studio's code editing, combined with the open source Zend Framework, allowed Kerner's team to jump-start development and rapidly deliver quality code. Zend Studio integration with Zend Server helped them to pinpoint issues quickly, eliminate a lot of trial and error, and save time by using Zend's Code Tracing and remote debugging capabilities.

According to Kerner, "Zend Server gives us real-time visibility and control in the production environment. It proactively monitors the application, and code tracing acts like a flight recorder, providing root-cause diagnostics so we can resolve issues quickly and definitively. In one example, Zend Server helped us resolve a problem related to SSL in our replicated environment that might otherwise have gone undetected. Within three days of our first site launch, Zend helped us optimize performance by more than 200 percent."

"Zend Server enabled us to configure our platform to fit NYSE's customized Web environment, monitoring application-level issues using our default monitoring rules, and capturing additional details without requiring changes to Drupal CMS. For instance, Zend allowed us to increase maximum code dump file size from 1MB to 10MB to accommodate large call stacks in Drupal. Zend Server Cluster Manager helped centralize configuration of all Zend Server instances, and aggregate events."

"With Zend Server, we were able to optimize Drupal application performance and avoid false alarms without limiting Drupal's flexibility. In one example of improved performance, the addition of Zend Server's full-page caching support to a new NYSE Web site led to a 280 percent increase in speed (Drupal page loads) without changing the application's code."

## Innovation and ROI Go Hand in Hand

"Our developers don't need to spend hours building and updating the stack now that we're using Zend PHP; they can focus on high priority projects." Even as the first Web sites were launched, Kerner's team had already begun the process of sunsetting and replacing its largest sites, NYSE.com and Euronext.com, building out 40 new sites for market data reporting, technical blogs and more, in just 18 months.

*"The COO asked if my team could reduce what was then a 2-year Web development cycle," said Kerner. "Working with Zend and PHP helped us deliver iteratively to production on a 2-week cycle."*

"We are tapping into PHP's vast open source libraries and envision becoming a contributor to the Zend Framework open source project in the future. Engaging Zend consulting services for a security audit saved us time and helped us meet compliance requirements. We are also capitalizing on Zend training and PHP certification to foster innovation and help our developers continue to improve productivity."

The investment by NYSE Euronext in Zend PHP solutions paid for itself in less than five months, and the Global Web organization has targeted a 400 percent return on investment over the next three years.

Among the first web sites completed using the Zend PHP platform were: NYSE MoneySense, a consumer resource for understanding and managing personal finances; NYSE Connect, which promotes online community-building and information exchange among CXOs of listed companies, their partners, and exchange experts; LatencyStats, addressing one of



the foremost issues in exchange trading today; Bonds, which highlights NYSE Euronext bond market product and service offerings; Exchange Traded Products, a site featuring related product and trading information; and Indices, which provides information regarding NYSE Euronext index offerings to furnish investors, asset managers and structured products issuers with tools that match their needs with market trends.

As Kerner tells it, "With a tough economy in which IT must be agile and efficient, bringing Zend PHP solutions on board was instrumental in our ability to launch customized, scalable Web applications at a fraction of the time and cost it would have taken with the previous technology platform, and to drive business value with an improved customer experience and satisfaction with NYSE Euronext Web properties."