



EDUCATIONAL TESTING SERVICES ACHIEVES HIGHEST MARKS WITH RED HAT

FAST FACTS

Company	Educational Testing Service (ETS)
Industry	Education
Geography	International
Business Challenge	Roll out new, competitively priced educational products and services more swiftly while cutting costs. Build applications on a base of infrastructure software technology that will position ETS for evolution into cloud models.
Migration Path	Vertically scalable platform to commodity software and hardware platform and proprietary application server technology to Open source technology
Software	Red Hat Enterprise Linux, JBoss Enterprise Application Platform, JBoss Enterprise Web Platform, JBoss Developer Studio, Red Hat Consulting
Hardware	Intel x86 systems
Benefits	<p>Reduce costs and boost competitiveness by moving to a stable, secure x86-based platform for developing and delivering new assessment products to market more quickly.</p> <p>With Red Hat products, ETS achieves the following benefits (metrics are based on the current server-hardware and OS support service cost at ETS):</p> <ul style="list-style-type: none">• Cost savings (approximately 40 percent)• Improved efficiency (approximately 30 percent)• Improved technology management and standardization• Improved leverage of development resources• Better positioned for adoption of cloud computing and virtualization technologies



BACKGROUND

ETS advances quality and equity in education for people worldwide by creating assessments based on rigorous research. The nonprofit organization serves individuals, educational institutions and government agencies by providing customized solutions for teacher certification, English-language learning and elementary, secondary and post-secondary education, as well as conducting education research, analysis and policy studies.

Founded in 1947, ETS develops, administers and scores more than 50 million tests annually – including the TOEFL® and TOEIC® tests, the GRE® test and The Praxis Series® assessments – in more than 180 countries, at over 9,000 locations worldwide.

BUSINESS CHALLENGE

ETS is widely recognized as the world leader in creating and administering academic assessments that are both rigorous and fair. But in the early 2000s, ETS management realized that limitations in its IT infrastructure were impeding its ability to compete in an increasingly crowded and price-sensitive global educational market. ETS's dependence on proprietary hardware and software, in particular, was standing in the way of its ability to maintain its position as the premier educational assessment organization.

"A lot of new companies with new technologies have entered the market in recent years, offering solutions that were very aggressively priced against ours," said Harikumar Rajappan, Enterprise IT Architect for applications at ETS. "We knew we needed to embark upon a different technology strategy to compete effectively."

ETS had previously used platform were costly and non-portable (the software enabled with vertically scalable features as well as the proprietary hardware required to run them), and also prevented ETS from bringing competitively priced products and services to market in a timely manner.

ETS wanted to heavily move to a service-oriented architecture (SOA) that would enable it to combine reusable modules of functionality to quickly create new products and services. It also wanted to be able to easily port its applications from one hardware platform to another. "We're particularly interested in the opportunities offered by cloud computing and virtualization as a way of bringing costs down while improving the scalability, portability, performance, flexibility and reliability of our applications," Rajappan said.

Additionally, having an utterly stable platform for its mission-critical applications was one of ETS's top priorities, he added. "ETS wanted to stay with highest quality and hence design our applications to perform with no error," Rajappan said.

ETS has developed applications that designed to enable instructors to grade tests in a standard manner to ensure fairness. More recently, it has introduced tests that students can take via the Web. "These applications must be high available due to the nature of ETS services and" Rajappan said.

For example, if a system crashes while a student is taking an online test, the student risks losing all of his or her work. "This would be unacceptable," he said. "From the students' perspective, there is no room for error," he said. "Wrong test score, or missing a score reporting deadline can negatively impact someone's entire academic career." Likewise, ETS has developed applications that enable instructors to grade tests in a standard manner to ensure fairness.

More recently, it has introduced online tests that students can take over the Web. "These applications must be up at all times, because the ramifications if they fail are severe," said Rajappan. For example, if a student is taking an online test, and the system crashes, then the student risks losing all of his or her work. "This would be unacceptable," he said.

SOLUTION

ETS decided to move from vertically scalable platform to horizontal scalable Linux platform, primarily for reasons of cost, and portability. It chose Red Hat Enterprise Linux because the open source operating platform was established as one of the most stable and reliable Linux distributions on the market at that time.

"We performed extensive in-house performance testing, talked to industry analysts and considered all other aspects of the operating system and application server, including the quality of support, market share and the software and hardware ecosystem," said Rajappan. "Once we took all these things into consideration, Red Hat was the most viable choice."

Although ETS initially tested the open source waters using the JBoss.org community version, the company today mandates that all developers use JBoss Enterprise Middleware to gain access to Red Hat's stellar support resources.

ETS is in the process of migrating a majority of its applications from vertically scalable platform and proprietary technologies to Intel x86 boxes running Red Hat Enterprise Linux and JBoss Enterprise Middleware.

ETS has also migrated J2EE applications to JBoss Enterprise Application Platform and JBoss Enterprise Web Platform. In addition, the company plans to pilot JBoss Operations Network (JON) as a monitoring and administering tool for J2EE application servers to improve real-time monitoring and proactive resolution capabilities.

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- Harikumar Rajappan, Enterprise IT Architect
for applications at ETS



BENEFITS

Thanks to its new Red Hat-based strategy, ETS is positioned to compete aggressively in the rapidly evolving educational assessment marketplace. In addition to dramatically reducing its upfront investment in hardware and software, ETS is in process of using the Red Hat products to construct an SOA that will speed time to market of new products and services.

ETS has also achieved its performance goals with Red Hat products. When benchmarking Oracle databases running on Red Hat Enterprise Linux and x86 machines compared to Oracle databases on SPARC stations running Solaris [Sun SPARC(4 CPU , 1.2 GHz) to Intel (2 CPU Dual Core, 3.2 GHz)], “we found that Oracle running under Linux on Intel machines delivered required performance and that the cost was substantially lower based on the support service cost at ETS,” Rajappan said.

Thus far, ETS’s management has been very happy with the stability of Red Hat Enterprise Linux due to the fault tolerance capabilities of the platform. “When you are running your application on a single 8-CPU Sun machine and it fails, you are in trouble,” he continued. “But if you are running it on four Intel x86 machines, even if one crashes, your application stays up.”

And given ETS’s interest in virtualization and cloud computing, Red Hat was the optimal solution. “It would be very difficult to move vertically scalable systems into the cloud, or into virtual machines,” Rajappan said.

Since ETS standardized its J2EE application development IDE to JBoss Developer Studio, the company has experienced improved resource management, application portability, security monitoring and patch updates. Since ETS migrated its J2EE applications to JBoss Enterprise Application Platform and JBoss Enterprise Web Platform, it has also found it much easier to manage application configurations, application deployments and changes in technology lifecycles.

“We have potential opportunities to increase our capacity with the same resources necessary to support deployment and production environments,” Rajappan said. “Now we can better leverage our existing development teams as the applications are becoming more portable within different development teams.”

ETS has also experienced improved technical support and cost savings through Red Hat Global Support Services and Red Hat Consulting, and is very pleased that Red Hat treats it like a true collaborator. “Red Hat representatives have briefed us on upcoming solutions, allowed us to tour their facilities, and provided insight into their product roadmap,” Rajappan said.

This knowledge makes Rajappan feel confident that ETS’s J2EE application architecture vision is aligned with Red Hat’s strategic direction. “Thanks to Red Hat, we feel we are on the right path to the future,” he said.

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