



## **AMD HELPS THE PHILADELPHIA STOCK EXCHANGE MAINTAIN COMPETITIVE ADVANTAGE WITH POWERFUL PROCESSING THAT REDUCES ENERGY CONSUMPTION AND COSTS**

*"AMD is defying the laws of physics. Usual rules dictate that the faster the chip, the hotter the room and, therefore, more electricity is needed to keep the data center cool. But with AMD64 we are able to process nearly five times faster while reducing both space and energy costs." — Gene Peters, director, Information Services, Philadelphia Stock Exchange*

### **Challenge**

- The Philadelphia Stock Exchange (PHLX) has always relied on IT infrastructure to provide a competitive advantage. But changing market conditions and rapid company growth would soon push the existing infrastructure past its limits.
- PHLX was searching for a powerful yet cost-effective solution that would deliver critical transactions per second (tps) while reducing energy consumption and server space in its crowded data center.

### **Solution**

- The Philadelphia Stock Exchange migrated its largest trading interface and critical trading applications to 2-way Dual-Core AMD Opteron™ processor-based HP ProLiant® DL385 servers.
- PHLX also implemented a virtualization solution running VMware® ESX Server™ on 4-way Dual-Core AMD Opteron processor-based HP ProLiant DL585 servers to power Web and Microsoft® Office applications.
- The company also migrated its high-end desktops to AMD Athlon™ 64 dual-core processor-based systems.

### **Impact**

- Upon implementing the AMD Opteron processor-based systems, PHLX saw performance increase five-fold with reduced energy costs. Additionally, AMD's CPU

utilization assured more headroom to support long-term growth as peak activity trading continued to rise.

- PHLX also regained some critical space in its data center as AMD64 technology allowed the company to run its applications with exceptional performance on fewer servers.
- Like the AMD Opteron processor, the AMD Athlon 64 dual-core processor delivered improved performance with a 15 percent cost reduction, allowing PHLX's developers to more efficiently trouble-shoot and create new in-demand applications.

### **Organizational Profile**

Founded in 1790, the Philadelphia Stock Exchange (PHLX) was the first stock exchange established in the United States. Today it trades 2,000 stocks, 21 sectors index options and currency options, 2,094 equity options and various future instruments. For more information about the PHLX and its products, visit [www.phlx.com](http://www.phlx.com).

### **Challenge**

Superior trading technology has historically given the Philadelphia Stock Exchange a competitive edge in the securities industry. But new challenges to established IT infrastructures constantly arise: ever-increasing amounts of information that are required to be disseminated and digested by investors; new stocks and securities to trade; and new divisions of currency to be managed (including the transition to penny increments from fractions). PHLX is determined to continue to remain ahead of the IT curve; as Gene Peters, director of Information Services for the Philadelphia Stock Exchange, said, "Improving technology is how we stay competitive."

As PHLX planned to maintain its visionary and competitive IT edge, the company needed an IT infrastructure that mapped to a specific budget, and was energy- and space-efficient because the company's data center was rapidly running out of headroom in terms of both power consumption and floor space. Additionally, the new system needed to be robust and highly available. Peters said, "Our system manages vast amounts of information throughout a 24-hour period but, with the new changes in the industry and our rapid company growth, we knew we would soon hit immovable roadblocks in terms of capacity and transactions per second. We needed a system that could process large

numbers of transactions simultaneously, support peaks during the day and batch processing at night — all with extremely large volumes of data.”

### **Solution**

The Philadelphia Stock Exchange migrated its largest trading interface and critical trading applications to 2-way Dual-Core AMD Opteron™ processor-based HP ProLiant® DL385 servers. Peters said heating was a factor when he chose the AMD Opteron processors “because we saw a 50 percent drop in computer power use for the same tasks that required 90 percent usage on a competing processor. This meant we could run the same applications with fewer servers and much lower power requirements.”

PHLX also implemented a virtualization solution running VMware® ESX Server™ on 4-way Dual-Core AMD Opteron processor-based HP ProLiant DL585 servers to power Web and Microsoft® Office applications.

The company also migrated its high-end desktops to AMD Athlon 64 dual-core processor-based systems. The new systems support the PHLX’s developer team, which run powerful and complex localized versions of applications like financial applications, IBM DB2 and IBM WebSphere development tools.

### **Impact**

The company was so impressed by the price/performance and performance-per-watt of the AMD Opteron processor, it migrated the vast majority of its trading platforms to the technology. Peters stated, “AMD is defying the laws of physics. Usual rules are that the faster the chip, the hotter the room, so that more electricity is needed to keep the data center cool. But with AMD64 technology we are able to process nearly five times faster while reducing both space and energy costs.”

AMD64 technology provided the significant boost in tps that PHLX required. The previous system could handle 60,000 tps at maximum capacity; the AMD Opteron processor-based servers deliver up to 120,000 tps. Additionally, AMD’s CPU utilization ensures more headroom to support long-term growth as peak activity trading continues to rise.

The virtualized environment also allowed PHLX to scale more efficiently with virtual machines on one box with the same or better performance. “Rather than pay for eight

expensive and underutilized physical boxes, we have one box with eight partitions,” said Peters. “This allows us to run seasonal applications like payroll with better scalability and flexibility, and an even better ROI.” Peters also stated that, like the trading platform, this environment generates far less heat than the company’s previous system.

Peters also elaborated on the space savings of the new system: “We realized these savings without having to take on massive environmental leaps like new space for a server room. We were at capacity in our server room, so the ten percent space savings per AMD Opteron processor-based server really adds up.”

Running more than 300 applications on the company’s AMD Athlon 64 dual-core processor-based systems, the Philadelphia Stock Exchange saw a dramatic improvement in performance, at up to 15 percent lower costs than its previous systems. According to Peters, speed is crucial because PHLX developers run approximately 300 memory- and resource-intensive applications on their desktops. “Our AMD-powered desktops are giving us an exceptional return on investment. With the AMD Athlon 64 processor, we’ve been able to achieve the highest memory possible with HP, delivering better performance with fewer costs. Migrating to, and sticking with, AMD for the long haul is a no-brainer,” Peters said.

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### **About AMD**

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