



## **SUSQUEHANNA INTERNATIONAL GROUP (SIG) BETTER SERVES CUSTOMERS BY LEVERAGING AMD64 PERFORMANCE, ENERGY AND PRICE BENEFITS**

*"We execute hundreds of thousands of trades per day — volume that could tax a sub-par infrastructure. We use AMD Opteron™ processors and AMD Athlon™ processors because they offer competitive advantage through price, performance and energy efficiencies. Since implementing AMD's innovations, we have experienced up to a 90 percent increase in performance and a 40 percent reduction in energy consumption in our servers, workstations and desktops — all at significantly less cost than our previous systems."*  
— Rich Cappellano, global head of infrastructure, Susquehanna International Group (SIG)

### **Challenge:**

- The advent of electronic trading has dramatically increased the amount of market information produced and consumed by firms like Susquehanna International Group (SIG), as well as transaction volume. This offers immense opportunities for trading firms with one caveat: they need leading-edge infrastructures that can quickly handle the massive amounts of data and transactions in order to remain competitive in the market. SIG decided to capitalize on the opportunity.

### **Solution:**

- SIG is running its various compute-intensive applications on more than 200 IBM® eServer 326 servers running AMD Opteron™ processors and 100 HP ProLiant® 385 servers running AMD Opteron processors. Microsoft® Windows® Server 2003 and SUSE® Linux® Enterprise Server 9 from Novell® are the operating systems that power the company's applications: "Our experience indicates that both [operating systems] run very well on the AMD Opteron processor," said Cappellano.
- For desktops and workstations, SIG is using HP Compaq® Deskpro® Desktop PC 5150s powered by AMD Athlon™ processors.

### **Impact:**

- The AMD Opteron processor has offered SIG a substantial increase in performance compared to a single core CPU. "Speed is a crown jewel of electronic trading and with the bandwidth provided by AMD Opteron processor-based systems we can

conduct more than 60 million transactions per day and more rapidly deliver results to our customers,” said Cappellano.

- Both the AMD Opteron processors and AMD Athlon processors have alleviated SIG’s power requirements by 40 percent while delivering increased performance.
- Additionally, SIG is reaping the performance and energy benefits of the AMD Opteron processors and AMD Athlon processors at a significant cost reduction.

### **Organizational Profile**

The Susquehanna International Group, LLP (SIG) organization of companies is a highly regarded institutional brokerage/research provider and market maker, providing liquidity and differentiated research and market intelligence to professional investment managers. Formed in 1987, SIG is active in the world’s major equity, fixed income and derivative markets. SIG’s operations include:

**Research and Institutional Sales & Trading** – providing actionable research, investment ideas, and execution services to the investment management community in equities, ETFs, and derivative products. Institutional sales and research are provided by SIG’s affiliate, Susquehanna Financial Group, LLP (member NASD).

**Market Making** – SIG and its affiliates collectively are one of the most sophisticated market making firms on Wall Street, offering liquidity provision and execution quality in a variety of financial products on exchanges and over-the-counter markets in the US, Europe and Asia.

For more information on SIG, visit [www.sig.com](http://www.sig.com).

### **Challenge**

The advent of electronic trading has dramatically increased the amount of market information produced and consumed by firms like Susquehanna International Group (SIG), as well as transaction volume. This offers immense opportunities for trading firms with one caveat: they need leading-edge infrastructures that can quickly handle the massive amounts of data and transactions in order to remain competitive in the market. SIG was determined to capitalize on the opportunity.

Speed is an essential component for trading firms like SIG: stock quotes and prices change quickly (in milliseconds) so transactions must occur rapidly so customers can be

assured they are buying or selling stocks at a desired price. Any delay in transactions can mean the difference between a win or a loss — and customers will not tolerate the latter.

### **Solution**

SIG is running its various compute-intensive applications on more than 200 IBM® eServer 326 servers running AMD Opteron™ processors and 100 HP ProLiant® 385 servers running AMD Opteron processors. Microsoft® Windows® Server 2003 and SUSE® Linux® Enterprise Server 9 from Novell® are the operating systems that power the company's applications: "Our experience indicates that both [operating systems] run very well on the AMD Opteron processor," said Cappellano.

"Our applications are analytically-based and require a lot of memory. The AMD Opteron processor's exceptional memory utilization capabilities satisfy our needs and allow SIG to continue to secure the best execution for our customers," Cappellano added.

For desktops and workstations, SIG is using HP Compaq® Deskpro® Desktop PC 5150s powered by AMD Athlon processors. "The new desktops help our traders review information more efficiently than our previous system at approximately 30 percent less cost," said Cappellano.

### **Impact**

The AMD Opteron processor has offered SIG a substantial increase in performance compared to a single core CPU. "Speed is a crown jewel of electronic trading and with the bandwidth provided by AMD Opteron processor-based systems we can conduct more than 60 million transactions per day and more rapidly deliver results to our customers," said Cappellano.

Both the AMD Opteron processors and AMD Athlon processors have alleviated SIG's power requirements by 40 percent. "Our data center needed to process ever-growing amounts of information thus placing increasing demands upon our IT power and cooling needs," Cappellano said. "The AMD Opteron processors dramatically reduced the power consumption of the data center, which had a significant effect on our energy bill."

"It is also telling that since we implemented the AMD Opteron processor over a year ago we have not needed AMD technical support once. Not only was the initial purchase of AMD64 affordable but so is the maintenance of the technology," Cappellano added.

*"We execute hundreds of thousands of trades per day — volume that could tax a sub-par infrastructure. We use AMD Opteron processors and AMD Athlon processors because they offer competitive advantage through price, performance and energy efficiencies. Since implementing AMD's innovations, we have experienced up to a 90 percent increase in performance and a 40 percent reduction in energy consumption in our servers, workstations and desktops — all at significantly less cost than our previous systems."*  
— Rich Cappellano, global head of infrastructure, Susquehanna International Group (SIG)

### **About AMD**

Advanced Micro Devices (NYSE: AMD) is a leading global provider of innovative microprocessor solutions for computing, communications and consumer electronics markets. Founded in 1969, AMD is dedicated to delivering superior computing solutions based on customer needs that empower users worldwide. For more information visit [www.amd.com](http://www.amd.com).

**AMD, the AMD Arrow logo, AMD Athlon, AMD Opteron, and combinations thereof, are trademarks of Advanced Micro Devices, Inc. Linux is a registered trademark of Linus Torvalds. Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other jurisdictions. Other names are for informational purposes only and may be trademarks of their respective owners.**