

Archipelago

The market is open



Key highlights

Company

Archipelago

Industry focus

Financial services

Solution focus

Archipelago Exchange

Solution benefits

ArcaEx, the first totally open, fully electronic stock exchange

Transparency and equal access to equity markets

Price/time priority and open order book

Technology summary—software

Solaris™ Operating Environment

Custom software

Technology summary—hardware

Sun Fire™ 4800 servers

Sun Fire V880 servers



archipelago

“To achieve our goal of becoming a fair, efficient, and open marketplace for all investors, we need to provide an exchange platform that is reliable, scalable, and fast. It’s no secret that Sun has the expertise and systems to handle the volume that we get today and the volume we anticipate tomorrow.”

– Jerry Putnam, CEO of Archipelago

For those who caught Archipelago’s “The Open Show”—a series of 81 daily commercials chronicling the travels of two hapless guys looking for the right venue to signal the opening of Archipelago’s electronic exchange (ArcaEx)—the message is clear: This is going to be different—*really* different.

Chicago-based Archipelago began its long, strange journey as an electronic communications network (ECN). ECNs came into being in 1996, when the Securities and Exchange Commission began licensing them to handle orders for stocks electronically. By the next year, Archipelago was one of four SEC-approved ECNs trading Nasdaq stocks.

But Archipelago’s ambition didn’t stop there. After merging with REDIBook, a competitor ECN, in the spring of 2002, Archipelago’s position as a leading ECN was further solidified, enabling the company to grow marketshare to a level where Archipelago now handles approximately one in four Nasdaq shares traded.

But it was with the earlier purchase of the Pacific Stock Exchange’s equity-trading business that a new and powerful idea came to fruition: to become the first fully open, fully electronic stock exchange, dedicated to transparency and equal access to equity markets.

As an ECN, Archipelago has to adhere to the regulations of the market it participates in—primarily the Nasdaq. This puts the company in the position of competing with the Nasdaq while having to play by its rules.

But as an exchange, Archipelago can make its own rules (subject to Security and Exchange Commission approval)—and that’s where the company is differentiating itself from the other markets. For one thing, Archipelago’s first concern is price/time priority and an open order book: the Archipelago Exchange searches for the best price for all investors, giving everyone the same information at the same time—and doing it a lot quicker than other markets.

And that’s where the Sun/Archipelago journey begins.

In the market for the right technology

Archipelago had seen its share volume skyrocket from about 30 million shares per day in 1999 to 400 million shares today. But to achieve its objective Archipelago knew that the platform it was built on had to deliver on a variety of fronts.

“To achieve our goal of becoming a fair, efficient and open marketplace for all investors, we need to provide an exchange platform that is reliable, scalable, and fast. It’s no secret that Sun has the expertise and systems to handle the volume that we get today and the volume we anticipate tomorrow,” says Jerry Putnam, CEO of Archipelago.

“The three aspects that we think about in terms of making our system as good as it can be are functionality, speed, and reliability,” says Steve Rubinow, Archipelago’s Chief Technology Officer. “It has to do what our customers want it to do. It has to be very fast, because our most sophisticated customers measure response time in milliseconds—and they differentiate companies on small differences of speed. And it’s got to be up and available as close to 100 percent of the time as is practical with computer systems.”

Add to that list Archipelago’s need for scalability—after all, the company wanted a

platform that could handle a 300 percent volume increase without skipping a beat—and it’s obvious that ArcaEx’s computer platform had to be as bulletproof as it gets.

Archipelago’s listed exchange had always run in a Microsoft/Intel environment, but when the company was planning its OTC exchange, it faced a critical decision. “We felt that the cost and reliability that we were getting from our Microsoft/Intel platform wasn’t where we wanted it to be,” says Rubinow. “And it wasn’t clear how long it would take them to get to the price/performance we needed.”

This was after an extensive total-cost-of-ownership study the company undertook comparing the Sun™ UNIX® and Intel platforms. When Archipelago looked at a variety of features, including the cost of the servers, the people to run them, and the facilities to house them, it found that the overall cost of running a small number of larger Sun systems was dramatically less expensive than operating lots of small Intel systems.

“If I guessed the number of servers in our Intel environment, I’d say we have about a thousand, and to get the equivalent performance in the Sun environment we need about 20 servers. The staff and the complexity required to maintain a thousand servers—although each server itself is cheap—sets up a whole different dynamic than maintaining 20 systems. That was an indication that we should go in a different direction.”

But Archipelago only made its decision to go with Sun soon after the purchase in 2002 of another ECN, called GlobeNet. GlobeNet’s technology group had developed its system on Sun technology, and in terms of what Archipelago needed for the future, it seemed like a better way to expand.

Archipelago opted to run with Sun Fire™ 4800 and Sun Fire V880 servers, about evenly divided between the main market site in Chicago and the failover facility in New York

City. Rubinow expects these systems to deliver the superior reliability and performance that Archipelago’s customers—and the SEC—expect from a full-fledged exchange.

“I believe the New York Stock Exchange is at or near ‘five-nines’ availability—and that translates to about one minute of outages per year,” says Rubinow. “To be competitive, we have to be as close to that level of reliability as we can be. That’s our goal.”

“This is a great example of where Sun is delivering value to the industry’s most innovative companies” says David Littlewood, Worldwide Director Financial Services of Sun Microsystems. “Archipelago delivers a critical part of the securities value chain, and is another proofpoint that Sun is the established partner for the new financial services infrastructure.”

Archipelago expects these systems to accept and book 5,000 orders per second, accommodate up to 500 simultaneous connections, and handle up to 10 million trades per day—at full speed. As Rubinow explains it, “Between the time the order is submitted and enters our order book and the time it takes to respond, the whole round trip shouldn’t take more than 100 milliseconds. That’s pretty competitive.”

Of course, security is critical for any financial services organization, and Archipelago is no different—and that’s where the robust, proven Solaris™ Operating Environment comes into play. Rubinow appreciates the fact that the Solaris Operating Environment has held sway over the UNIX market for a number of years, and it’s had the opportunity to become more hardened. “Compare that with the Microsoft world, where every time a new virus is discovered, you wonder whether you’re going to be affected or not. In the UNIX world, you don’t worry as much—and that’s a big advantage for us.”

Sun and Archipelago: Two companies that connect

Over and above the technical considerations, the Sun/Archipelago relationship flourishes because the companies' cultures just happen to mesh well. "If you take the Big Three—HP, IBM, and Sun—you see that Sun has our entrepreneurial, fast-moving, no-holds-barred kind of culture," says Rubinow. "That's important for our business. The more traditional image of HP and IBM isn't as good a match. We just feel more comfortable with Sun."

"Archipelago required the type of availability that a traditional exchange would

require, and then to really win, they required an aggressive timetable. Nobody thought that Archipelago and Sun could get the system into production so quickly," says Scott McNealy, Chairman, President, and CEO of Sun Microsystems. "What they've done here is tighten their security, improve their efficiency, and maximize their readiness to grow. I like to think of Archipelago as a poster child for Wall Street."

And this was an implementation where things could definitely have gone wrong—but didn't. "Consider that this was an aggressive schedule just from a system-building stand-

point. Add to that the fact that we had to incorporate the Archipelago and GlobeNet teams and that we were moving to a brand-new technology for Archipelago—there were a lot of moving parts there, and a reasonable person might have said it would take longer than expected. But really, it went rather quickly. That speaks well of our talent—and our vendors."

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Printed in USA 2/03