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Split-Second Securities Trading at Wachovia

By Gary Anthes, Computerworld, 5/21/ 2007

Securities trading is one of the few business activities where a one-second processing delay can cost a company big bucks. And the growing competitive push toward instantaneous trading is something that Wachovia Corporate and Investment Bank is addressing with a comprehensive systems overhaul.

In a project that has cost more than $10 million so far, Wachovia is tearing down its systems silos and replacing them with an infrastructure that stretches seamlessly across the firm's many investment products and business functions. It's effectively an information-processing utility for end users, who can dial up the capacity they need, when they need it.

And in the IT shop, the grid infrastructure allows application developers to concentrate on understanding and optimizing business functions. They can hand off the technical chores of product selection, configuration, operations and optimization to another group.

Tony Bishop, Wachovia Corporate and Investment Bank

Tony Bishop, a senior vice president and head of architecture and engineering, leads that other IT group. He explains the rationale for the bank's new Service Oriented Enterprise Platform this way: "Competitive advantage comes from your math, your workflow and your processes through your systems. Straight-through processing is the utopian challenge for Wall Street firms."

The first step in the project, Bishop says, was to prepare a matrix that cross-referenced every major function (such as research, risk management, selling, trading, clearing, settlement, payment and reporting) to each major product (debt and equity products, asset-backed finance, derivatives and so on). The project team then had to take a hard look at the existing systems in each cell. Some, such as clearing and settlement, were deemed commodity functions that could be satisfied by commercial software packages. Others, such as risk management and trading, needed a custom approach built on the most advanced business processes and technologies.

Says Bishop, "We looked at the current systems and said, 'Where can we build standardized frameworks, components and services that would allow us to, instead of building it four different times in silos, build it once and extend it into one common sales platform, one common trading platform and so on?'"

The resulting Service Oriented Enterprise Platform includes clients built around the Microsoft .Net Framework and a business and data-execution services framework running Java- standard components, including the JBoss application server. The service-oriented architecture uses IBM WebSphere DataPower SOA Appliances (a combination of hardware, firmware and software) and WebSphere Enterprise Service Bus for XML Web services security, performance, routing, integration and transformation. The whole thing is connected to a 10,000-processor grid using GridServer and FabricServer from DataSynapse Inc.

In its data centers, Wachovia brought in Verari Systems Inc.'s BladeRacks with quad-core Intel processors. The blade racks use a unique kind of vertical cooling that Bishop says reduces energy consumption by 50%.

Bishop says he's creating a "data center in a box," because Verari also makes storage blades that can be tightly coupled with processing blades in the same rack. The processing load at the bank involves a great deal of reading and writing to temporary files, and the intimate linkage of computing and storage nodes makes that extremely efficient, he says. The efficiency of the blades, the power of the IBM DataPower Appliances, plus other optimization and streamlining techniques have boosted the performance of certain mission-critical functions as much as 50 times, Bishop says. "We now do pricing in milliseconds, not seconds, for either revenue protection or revenue gain," he says.

The advanced infrastructure has tripled processing capacity at one-third the cost, for a ninefold financial return, Bishop adds. Report generation that used to take 16 hours is now done in 15 minutes. "This is where IT becomes the enabler to new business capabilities," he says.

"They definitely have an advanced architectural approach," says Donna Scott, an analyst at Gartner Inc. "What's different is that most organizations buy hardware whenever they have a new project. But Wachovia has created a shared infrastructure, so they can do aggregate capacity management. It's a little like a mainframe, where you can dial up and down capacity for applications."

Buying new hardware for each project was just what Wachovia used to do, says George Vega, managing director of capital markets technology and head of application development. Vega says the heads of equity, sales, research and so on used to come to IT saying, "'I need, I need, I need.' Then someone like me would have taken all the money and put in some tactical, silo solution."

"Now we actually have a provisioning strategy, a service strategy, so developers spend more time focusing on the business solutions and logic," Vega says. He says his application developers have boosted their productivity by 40% because they no longer have to deal with nuts-and-bolts technical issues every time they start a new project.

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While Vega and Bishop are quick to point to the benefits that come from the new grid infrastructure, it clearly required a huge amount of analysis and planning. "Every application and infrastructure component has a life cycle associated with it, and they have thought this through from the beginning to the end," says Scott. "That's not an easy thing to do. But once they went through the hard work, now they get the benefit, because now they can develop things much quicker."