SPIN SYSTEMS CHOOSES RED HAT JBOSS MIDDLEWARE FOR DOD CLIENT HEALTHCARE SYSTEMS

Solution reduces costs, improves security and collects more than 1.2 billion records per day

Asked to develop a healthcare data collection and aggregation system by the U.S. Department of Defense client, Spin Systems used Red Hat platform and middleware solutions to build a system that today has collected more than 1.2 billion records a day from medical diagnostic devices, electronic medical records, information kiosks, and a broad range of other sources. In addition to reducing costs and improving efficiency, the DoD client professionals can now access health-care records in minutes, rather than weeks or months.

SOFTWARE

Red Hat Enterprise Linux

Red Hat JBoss Middleware

HARDWARE

Dell blade servers

Hitachi storage area network (SAN) storage

Sterling, VA ●

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GOVERNMENT

CUSTOMER SINCE
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> WAEL ALI
> PRESIDENT AND CEO, SPIN SYSTEMS, INC

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NEEDED: ABILITY TO SECURELY COLLECT AND PROCESS MEDICAL RECORDS IN NEAR-REAL TIME

Back in 2002, the United States Department of Defense Client approached Spin Systems, a product and technology solutions provider, to build a data-collection and aggregation system for healthcare records. The DoD client set out a list of requirements. The system had to be capable of processing a huge volume of records—ultimately, billions of records daily—and to do so in an efficient and cost-effective manner. Given the nature of the data involved, the system would have to be very secure. And it would have to integrate easily with existing systems so it could collect data from a broad range of sources, from electronic medical records (EMRs) to diagnostic machines. And all this had to be accomplished in near-real time.

RED HAT JBOSS MIDDLEWARE: A FLEXIBLE, SCALABLE SOLUTION

The team at Spin Systems put together a quick prototype of a system that could accomplish all this. Initially, before the enterprise service bus (ESB) was part of the Red Hat® JBoss® Middleware portfolio of products, Spin Systems customized the Spin Military Data Aggregation and Collection Application (MDACA) by using Red Hat JBoss Middleware, Apache, and Java solutions deployed in withRed Hat JBoss Enterprise Application Platform to come up with a two-pronged approach to the challenge.

First, Spin Systems built a standalone, lightweight Java application engine, which would go out to the various DoD client Medical Treatment Facilities (MTFs), automatically 'sniff' for patient information, and collect it. The second part of the solution was a Red Hat JBoss Middleware server, which was able to accept all these feeds from the engine via a secure SSL channel, process them, and generate metrics and reports. The metrics and reports were then saved into an Oracle Real Application Clusters (RAC) repository.

This prototype was initially deployed to 100 sites. But even with this limited number of sites, the volume of data kept increasing, and performance became an issue. So Spin Systems upgraded the Red Hat JBoss Middleware server to a two-node cluster. "And that worked very well for us, because it increased the horsepower and added load balancing and failover as well," said Wael Ali, president and chief executive officer at Spin Systems.

Spin Systems evaluated Oracle Application Server, but quickly realized it wasn't able to handle the load. "With the volume of data we were getting, it was much more efficient—and cost-effective—to use Red Hat JBoss Middleware," said Ali.

The vast amount of information available on the Internet about Red Hat JBoss Middleware development also helps make the process of building these systems easier. Ali said, "There's a wealth of information out there on how to integrate and implement Red Hat JBoss Middleware solutions. With other proprietary solutions, you need to buy such advice or hire consultants to get it. But the open source nature of Red Hat JBoss Middleware information made the whole process go a lot more smoothly."

REDUCING COSTS, DRAMATICALLY IMPROVING ACCESS TO CRITICAL DATA

Today, the Red Hat JBoss Middleware-based system performs large-scale data collection, transmission, and aggregation of health data—upwards of 1.2 billion records a day. The data comes from widely dispersed MTFs worldwide using MDACA. And not only the volume of data, but the type of data is diverse, ranging from data collected from many medical instruments, such as check-in kiosks with health surveys, to multiple brands of paperless chart recorder (PCR) diagnostic equipment.

The system is running on VMware-virtualized Dell blade servers under Red Hat® Enterprise Linux®. Initially, the operating system had been Windows Server, but, "after too many crashes, freezes, and other problems, we switched to Red Hat Enterprise Linux, and haven't looked back," said Ali.

One of the biggest benefits realized by the U.S. DoD client was the speed at which data becomes available, a crucial factor for critical healthcare decisions. "The speed at which we can deliver data has been enormously valuable to DoD client users," said Ali. "They now have access to data within minutes or even seconds of it being created. Before, it would be two to three months before the data was available."

And all of this is being done in a cost-effective manner—an essential goal in government systems. "We met all the business requirements, as well as the requirements for interoperability with other systems," said Ali. "As far as the ease of configuration, the ease of setting up installations, thanks to Red Hat JBoss Middleware, everything was extremely cost-effective."

The MDACA feeds a large-scale medical data warehouse containing health data from multiple systems, including laboratory, radiology, ambulatory diagnostic, pharmacy, non-DoD client network care claims, and appointment and cost center systems.

"We achieved a low dollar-to-delivery path and helped the U.S. DoD client manage data and keep it safe within the security constraints the Department of Defense (DoD client) has established," said Ali.

One reason Spin Systems was able to accelerate delivery of these projects is that shortly after it began work on the first project in 2002, Red Hat JBoss Middleware was certified by the US government as secure—a process that can take upwards of two years. This means that it can be deployed on systems connected to military networks.

The administration has put forth a mandate for the DoD client to move to open source, and "here we already have a production system in the DoD client, which is quite a feather in its cap," said Ali.

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WAEL ALI
PRESIDENT AND CEO, SPIN SYSTEMS

ABOUT SPIN SYSTEMS

Spin Systems is the product and technology solutions provider that brings data to life. Through collaboration with clients and partners and a focus on technology, people, and processes, Spin Systems maximizes the value of enterprise information and transform the way decisions are made. Spin Systems provides a wide array of innovative products, technical services, and solutions for government agencies such as the DoD client, for which it develops multi-functional healthcare informatics tools.

ABOUT RED HAT

Red Hat is the world's leading provider of open source solutions, using a community-powered approach to provide reliable and high-performing cloud, virtualization, storage, Linux, and middleware technologies. Red Hat also offers award-winning support, training, and consulting services. Red Hat is an S&P company with more than 70 offices spanning the globe, empowering its customers' businesses.

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