

Internet Medical Registries run Oracle RAC on Red Hat Linux Powered by FlashDisk

With the rapid and continuous advances in the treatment and management of disease, the biopharmaceutical industry is increasingly challenged to evaluate the latest medical protocols to treat patients. Rising to the challenge, Outcome Sciences, Inc. (OSI), a healthcare data management software company located in Cambridge, Massachusetts pioneered a fast, efficient, and user-friendly web-based application that allows pharmaceutical sponsors and hospitals to track the latest treatment protocols and likely patient outcomes. The application also provides visibility into the data for evaluating or tracking performance against benchmarks. Using an ASP (application service provider) platform, Outcome Sciences makes it easy for end users to access and use the application. All that is needed is a browser and an Internet connection; special software is not required.

High Availability Cluster Needed

Since the company's beginning in 1997, Outcome Sciences has been growing in both the number of Phase IV trials and patient registries, as well as the number of users who access the company's applications. With such growth demands, OSI's Chief Technology Officer Bob Collins began to see the need to move to a storage-area-network

(SAN) to give the company one repository of data that multiple cluster nodes could access.

Using Red Hat Advance Server 2.1, Outcome Sciences had been running Oracle 8i without using its clustering capability. Collins and his IT staff were reluctant to use Oracle's clustering technology because reports suggested that it was not stable or reliable. Then, just last year, the company upgraded to Oracle 9i to leverage its improved clustering technology. Even though Oracle claimed that it had solved the performance, reliability and stability issues of earlier versions, Collins and his staff wanted to test the reliability of Oracle's RAC (Real Applications Clustering Platform) in conjunction with a SAN before making a purchase.

“Test Before You Buy” Option

Initially, Collins and his team considered “the usual suspects” - EMC, IBM, and Dell - but they could not justify the \$50,000 price tag until the team was convinced that the Oracle database would be 100% reliable using SAN architecture. When it

became apparent that neither EMC nor Dell offered

any flexibility with regard to testing the system before purchasing it, Collins decided to research other data storage companies. One of the companies was Winchester Systems. After researching the company and speaking with some satisfied users, Collins concluded that Winchester Systems' SANs were recognized for their performance, reliability and stability. But the clincher was when Winchester Systems offered to lend the company a SAN to evaluate before purchasing it. Collins recounts: “Winchester Systems was willing to lend us a system, help us implement the clustering option, and go through the testing and benchmarking, comparing the cluster environment with the non-cluster environment.”

SAN-in-a-Box Speeds Oracle RAC Applications

Testing Oracle RAC clustering on the Red Hat Linux platform using Winchester Systems' SAN-in-a-Box consisted of running intense queries over sets of medical data, checking the integrity and internal consistency of the data, identifying whether there may be missing data or duplicate



patient records. Running a full set of queries took about 45 minutes on a stand-alone server. Collins and his team found no drop in speed when running a single node in a cluster mode, so they knew there was no additional overhead burden. When running over two nodes, it took exactly half the time. Benchmarks were used to measure the time it took to pull up forms and save forms. The IT staff found that there were no significant differences between a single node in a cluster and using two nodes. The degree of improvement with a cluster depended on the particular application. Failover was tested by knocking out one of the nodes while inputting data. No data was lost in the process. Everything worked correctly.

Switchless SAN Is More Reliable

Although it was widely believed that Oracle RAC required a Fibre Channel connection, Winchester Systems' experienced team debunked that perception and connected the SAN directly to Outcome Sciences' web servers using a SCSI interface. This was possible because the

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Bob Collins
Chief Technology Officer

SAN-in-a-Box includes up to twelve built-in SCSI ports that allow up to 12 servers to connect to the storage pool. Using a direct SCSI connection also reduced failure because it eliminated the need for two additional switches that would have been required by Fibre Channel to maintain the degree of redundancy that Outcome Sciences demanded. Collins explains: “We required fewer components using the Winchester System configuration, so we reduced the number of potential failures. We didn't have to get the Fibre Channel array or switch for everything to plug into and then have to deal with the potential failure of that component. Even if the price had been the same between EMC and Winchester Systems, we like the simplicity of the Winchester solution

from a reliability standpoint, and it offers us more flexibility in terms of scalability.”

SAN-in-a-Box Meets Critical Redundancy Need

The new configuration has a level of redundancy at the data level, so that if one of the database servers goes down, the application server will still be up and running. According to Collins, Outcome Sciences no longer needs to have a “live standby,” which would take a couple of minutes to switch over before it can take up a failure.

Expanding to Other Locations

Collins sums up his experience with Winchester Systems. “We are very pleased with Winchester Systems on two levels: Not only did Winchester give us an incredible system, but the support the company provided during the testing and installation process was unbeatable. Over the course of the next year, we are looking to migrate our other co-locations to the same technology when we make major updates to the applications.”

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