



Halifax Bank of Scotland CASE STUDY

Challenge

- Maintain a position as the UK's largest mortgage and savings organization by providing customers with a consistently good user experience with bank's services

Solution

- Virtual Instruments NetWisdom SAN I/O Intelligence

Benefits

- Proactive problem resolution keeps the SAN architecture optimized and eliminated major problems from affecting banking operation
- The ability to design optimal SAN storage that can be easily scaled over time

Halifax Bank of Scotland (HBOS)

Halifax Bank of Scotland Uses Virtual Instruments' NetWisdom Monitoring Tools to Help Manage its Ever-Expanding Storage Area Network (SAN)

The Halifax Bank of Scotland (HBOS) was formed through the merger of Halifax and Bank of Scotland on September 10, 2001. HBOS has assets of more than £400 million and is the UK's largest mortgage and savings provider. As one of the UK's leading financial organizations, HBOS has a huge presence in the community not only through the products and services that it provides to individuals, but by employing more than 67,000 people.

With more than 22 million customers, HBOS has a relationship with two out of every five UK households. And HBOS takes its customer relationships very seriously. It prides itself on its ability to deliver new products and customer support services that are second to none. Part of this commitment entails a massive information technology infrastructure that helps ensure that customers have access to all of the information and banking services they might be seeking—available 24 x 7.

In other words, system downtime is not acceptable. And that is no easy task when you consider that HBOS has more than 67,000 users accessing everything from Microsoft Exchange Servers to Oracle and SAS business intelligence and data warehousing applications. Hundreds of transactional systems and back office systems support the HBOS retail banking operations.

LARGE SAN

In its production storage area network (SAN) computing environment, HBOS maintains over 3,000 SAN ports split across two data centers in West Yorkshire, England with more than 300 Sun E15K servers running Solaris, 149 Brocade switches, and 250 Terabytes of Hitachi Data Systems Lightning 9900 V Series and Thunder 9500 V Series modular storage systems maintained in a split fabric configuration. In addition to the Sun servers, HBOS also utilizes IBM p6 90 Regatta servers running AIX and HP Integrity SuperDome servers running HP/UX. Veritas' volume management software is used across platforms.

And that's just the HBOS production environment. HBOS also maintains a scaled down version of the main SAN fabric that is virtually identical to the production environment—down to the split fabric configuration where all new releases and products are put through rigorous interoperability verification testing. The test environment alone includes 142 servers.

“We greatly lessen the chance of a problem working its way into the production system if we have performed testing and analysis in a virtually identical pre-production environment,” said Simon Close, Technical Team Leader, Storage Management Services, Halifax Bank of Scotland Group Technology. “It has proved to be a key part of our overall IT successes.”

“It is a huge undertaking to efficiently operate a SAN of this size and complexity,” Close continued. “Even though we have worked hard to standardize on certain technologies across the enterprise, the reality is that to optimally run a banking operation of our scope requires supporting a diverse heterogeneous computing environment running a multitude of operating systems and a wide variety of applications,” Close said, who in his role at HBOS is responsible for developing and championing the adoption of SAN best practice and service improvement initiatives.

“Application changes, operating system patches, or simply adding servers or storage modules are just a few of the reasons SAN performance can be impacted,” said Richard Briggs, Senior Technical Infrastructure Developer within Storage Management Services who was Technical Lead on the initial SAN implementation at HBOS which took place in 2000, and currently serves as Chairman of the Brocade UK User Group. “With the size and complexity of our SAN fabric, we often see problems that others have not seen before, so it is important that we have our own SAN performance monitoring and analysis solution in place to help diagnose hard to find problem areas.” “One of the biggest challenges we face today is the perceived performance issues related to our SAN,” Close said. “Give us a hardware problem any day, because they are relatively simple to isolate, diagnose and fix. It is the problems where a user tells us his or her ‘application is slow.’ Other than checking the application itself, the possibilities are endless as to where the source of the problem might be.”

“None of the tools that we had been using to monitor our SAN’s performance could get us to the root of the problem, and some problems—in the early days—went unsolved,” admits Briggs. “With the monitoring and analysis tools bundled with each product, we weren’t able to dive deep enough into the problem area, so we used a ‘process of elimination’ method which we recognized was not an effective way to handle these issues.”

DETAILED VIEW OF NETWORK TRAFFIC

That’s when HBOS went looking for another SAN monitoring solution, and once it saw Virtual Instruments’ NetWisdom SAN I/O performance and analysis solution in action, the purchasing decision was not far behind. Virtual Instruments’ NetWisdom is a real-time monitoring solution that enables SAN managers to view critical data about their networks and increase performance and reliability. “NetWisdom allows us to turn our storage service around from being reactive to proactive,” said Close. “Whenever performance issues are encountered it is always the SAN that is highlighted as the problem by our customers. NetWisdom enables us to provide evidence to either support or refute the claim, which was not possible before. Furthermore, NetWisdom allows us to design more efficient storage solutions,” Close said. “We have recently been able to demon-

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strate that SAN response times are well within the thresholds that have been dictated and that the problem most likely was within the application itself,” Close added. “Armed with that information, groups can evaluate their application design and redevelop or tune the application accordingly.”

“Everything used to be the SAN’s fault,” joked Briggs. “But now we have documented plenty of cases we have been able to identify a bad application or bad coding as the source of the problem, not the SAN. But wherever the problem lies, we are committed to finding it quickly and getting the problem resolved.” Briggs added that HBOS now initiates support calls to the appropriate vendor complete with a trace that details the issues to be dealt with. “It really helps jump-start the support process,” he said.

TRACKING PERFORMANCE LEVELS OVER TIME

According to Close, HBOS is starting to baseline the performance of its systems while they are in preproduction so the company can measure the performance of the system before it is deployed into the production SAN. HBOS can then benchmark the system again once it is brought on line as well as six months later so the organization continually can monitor not only current overall performance, but also historical performance levels of individual SAN components. “By doing this, we are much better able to track performance over time, which often can give us a clue that a server, disk or switch might be starting to malfunction, but not enough to take down the system,” Close said. “By identifying these potential problem areas early in the process, we can proactively move to resolve a potential major problem before it occurs.”

According to Close, the NetWisdom solution goes a long way in helping us with HBOS’ storage capacity planning and load balancing as well. “Using our best practices, we want to design systems that are optimal and that will scale and be robust,” Close said. “We work to spread the load across storage ports and subsystems so we can optimize our performance in these areas.” “From the storage management perspective, NetWisdom allows SAN managers to isolate issues quickly and resolve them in a timely manner,” commented Neil Collier, technical director, GCH Test &

Computer Services Limited, a Virtual Instruments’ value-added reseller (VAR) working with HBOS. “This enables them to spend more time tuning the SAN and less time fighting fires.” “We are striving to be the group of choice for storage solutions within HBOS,” concluded Close. “To accomplish this, we need to continually demonstrate the value and benefits that we can provide. Virtual Instruments’ NetWisdom helps us quantify and measure the services we provide to the organization. NetWisdom is paying for itself multiple times every day as we are constantly being contacted about various issues that we can quickly identify and respond to in an intelligent manner. It has been a powerful and vital addition to our SAN infrastructure.”

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100 Enterprise Way, Suite C-3
Scotts Valley, CA 95066
Phone: 831-439-4000

Sales Information
sales@virtualinstruments.com
Phone: 831-439-4080

Customer Support
support@virtualinstruments.com
www.virtualinstruments.com