



Online Firm Improves Performance, Customer Service with Mission-Critical Storage Solution

Overview

Country or Region: United States

Industry: IT services

Customer Profile

Based in Redmond, Washington, Microsoft adCenter is the division that provides support for customers who advertise through Microsoft online services. adCenter has more than 1,200 employees.

Business Situation

adCenter wanted to improve its data storage and replication systems and deliver data to its customers faster. It also wanted to give developers more time to create new system features.

Solution

adCenter implemented a new data storage solution based on EMC Symmetrix DMX enterprise storage array technology and Microsoft® SQL Server® 2005 database software.

Benefits

- Improves storage system performance
- Lowers costs by reducing power usage
- Increases scalability, availability
- Improves agility for developers
- Delivers faster customer response times

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Mike Anderson, Storage Architect, adCenter

Microsoft adCenter is the Microsoft division that serves the needs of customers who advertise through Microsoft online services. adCenter provides these customers with advertising interfaces and business intelligence data. To do this it must ensure system reliability and availability. As its data storage and replication needs grew, adCenter needed to find a better-performing mission-critical data storage solution. Several years ago, adCenter implemented such a solution, based on an EMC Symmetrix DMX enterprise storage array and Microsoft® SQL Server® 2005 database software. Since then, adCenter has boosted storage system performance and lowered its overall data storage costs, while gaining scalability and availability. adCenter developers now have more time to create new system features, and adCenter has improved its ability to respond to customers.

Situation

adCenter, a division of Microsoft, supports all online advertising for customers who advertise on Microsoft® online services such as Windows Live™ network of Internet services and MSN® Search. “We provide advertising and reporting on the advertising, as well as the interfaces that our customers use to sell advertising on our systems,” says Ben Russell, Infrastructure Manager for Microsoft adCenter.

adCenter also offers business intelligence data to its customers, so they can best target their advertising. “Because we’re in a very competitive marketplace, we need to get that data to them in the fastest way possible,” says Russell. “We have to meet their needs in order to garner more market share.” In addition, adCenter software developers regularly create new system features in response to customer requirements. “That’s another way we gain a competitive market advantage,” Russell says.

Another way in which adCenter serves its customers is through a group of call centers and automated systems that handle daily customer queries. For example, online transaction and billing processes take place through a mixture of automated systems and call centers. “Those are some of our most important data systems, because that’s where we make our money,” Russell says. “It is critical that any customer issues are resolved very rapidly, so those data processing systems need to be highly available, high-performing, and reliable.”

However, storing and replicating its massive amounts of data quickly and reliably were challenging mission-critical requirements for adCenter. Every night, it had to migrate about 120 terabytes of data from its servers to its business reporting system to stay in sync with production systems. “Our primary need is to move data between servers, and if we try to

do that using the servers, the network systems just aren’t fast enough to physically move the data in the time slot required,” Russell says. This was particularly problematic given that adCenter is committed to providing faster response times to customers.

Storage issues also presented challenges to adCenter developers, who spent their time on system performance and scalability issues instead of creating new system features. “We really wanted to find a way to have some of the storage load taken off our primary database servers,” says Russell. “That would free up our developers’ time, so they could work on new features. Again, that’s one of the ways in which we can gain a competitive market advantage.”

To solve these business challenges, adCenter decided to look for a new storage infrastructure that would help it speed up delivery of data and other services to customers and give developers more time to focus on creating new features. Initially, adCenter considered investing in costly solid-state data storage disk systems. “That was a big concern, because it was going to be very expensive to operate systems like that with the size and scale of data we’re dealing with,” says Russell. Instead, the adCenter team decided to look at other, more economical options.

Solution

After considering several storage solutions, adCenter decided to deploy a storage area network (SAN) based on hardware from EMC. adCenter used EMC CLARiiON SAN disk array machines for several years, and it decided to move up to the higher-performing EMC Symmetrix DMX enterprise storage array for its current needs.

On top of this hardware, adCenter implemented Microsoft SQL Server® 2005

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Don Boland, SQL Server Engineer, Microsoft adCenter

database software for the system's database functionality. “SQL Server is a great relational database management system that logs every customer transaction and rolls that information into the database,” says Russell. “However, in order to facilitate what we're doing, which is capturing an exact real-time copy, we have the challenge of synchronization between data in memory and data in disk, because our disk storage systems only see data in disks.”

That problem is solved by the SQL Server Virtual Device Interface (VDI), which gives administrators the ability to integrate SQL Server backup and restore functionality with storage system-based replication such as EMC TimeFinder. Utilizing the VDI mechanisms, administrators can significantly accelerate SQL Server backup and restore operations.

adCenter also implemented EMC Replication Manager, a software solution that manages EMC TimeFinder array-based replication technology and coordinates the entire data replication process. “Several years ago, we started cloning our databases so we could replicate our data among many servers,” Russell says. Replication Manager manages the cloning and snapshot mechanisms that integrate directly to SQL Server VDI, so adCenter can take a “point-in-time” hardware image and move it to another machine. “This means that we are able to get a consistent copy of the data as of that point in time,” adds Russell. “Then, we can let the database go back to its normal operation. All of this activity takes place almost instantaneously, in little more than one second. It also provides us with very rapid backup if we need it, so we also gain an excellent recovery point objective.”

With this new solution in place, adCenter was able to improve storage system performance and increase developer agility. “Basically,

EMC provides us with the hardware and software to get at all of our data,” Russell says. “On top of everything, SQL Server helps us concentrate on managing and analyzing the data.”

Benefits

With its new data storage and database management solution, adCenter has been able to greatly improve storage system performance while reducing operational costs. adCenter has also boosted the scalability and availability of its systems and has increased developer agility, which has directly contributed to better customer response times.

Improves Storage System Performance

The new EMC Symmetrix DMX and SQL Server solution has significantly boosted the adCenter storage system performance. “When we first started this, we were getting performance rates that we had never seen before,” says Mike Anderson, adCenter Storage Architect. “We discovered that by moving to EMC enterprise-class storage, it was like putting a super computer in front of a bunch of disks. It was the first storage system we had ever purchased that actually had the computing capacity to handle the amount of I/O loads that we were going to throw at it.”

By using the solution's cloning technology, adCenter was able to move its performance requirements off the primary disk systems and primary servers. “We really lowered the load on those primary database systems,” says Russell. “Having increased performance on the arrays has especially helped us in replicating the data in our advertising clearinghouse. A year ago, we were supporting two million transactions per day on that system. Today, we support 100 million transactions, on the same server. We accomplished that by combining the SQL Server engine with the advanced

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performance capabilities of the arrays, which gives us the ability to do more I/Os.”

Lowers Costs by Reducing Power Usage

Cost savings is another advantage made possible by the new adCenter storage solution. “We’re under significant pressure to reduce power and cooling footprints, and so we’re always aggressively pursuing technologies that allow us to pack more into less space using less power,” says Anderson. “By consolidating data storage into the larger enterprise arrays, we actually noticed a significant power usage reduction versus going with a comparable distributed system.”

As a result, adCenter saves money related to its data center operations. “We don’t have to buy as many controllers as we would have previously, and we save power in the data center because we get much better usage out of the power supplies in the array,” Anderson says. “We can also squeeze more equipment into the physical space. Data centers can cost hundreds of millions of dollars each, so if we can defer building a new one even for six months, that’s a major cost win.”

Increases Scalability, Availability

Because the new solution is based on SQL Server 2005, adCenter has much more scalability and availability than it had previously. “SQL Server 2005 is an immensely scalable architecture. The key is being able to match those transaction rates that adCenter is running in their production systems with an equally scalable storage subsystem that can support that rate,” says Txomin Barturen, Senior Engineering Manager for EMC.

The fact that SQL Server seamlessly works with Replication Manager and the other EMC technologies also helps boost availability. “We have a solid storage system with EMC technology as the foundation, and solid servers on top of that,” says Anderson. “Then,

SQL Server integrates so well with everything, so we can use all of these technologies together. And on top of everything, Microsoft clustering technology with SQL Server gives us failover capabilities and high availability, which translates into very good uptime for our customers.”

Improves Agility for Developers

The combination of a high-performing system with solid storage gives adCenter developers much more agility throughout the development cycle. “Our developers now have phenomenal performance available to them, which helps them focus primarily on features and technologies,” says Don Boland, SQL Server Engineer for adCenter. “We now have the opportunity, because of SQL Server and EMC technologies, to be able to replicate databases for the purposes of cloning and recovery, as a key part of our service model, and developers do not have to spend as much time on those things.”

With that improved agility, developers are now spending the majority of their time working on new adCenter technologies and applications. “Developers do not have to worry about scalability issues anymore,” Russell says. “In terms of their time, this technology basically gave them back a year of new feature releases. Our business is based on how many features we can get out the door in a year, so we really gained a very large competitive advantage in the marketplace by giving our developers more time.”

Delivers Faster Customer Response Times

The adCenter storage service is more available and more efficient than before, because of the storage usage tracking features in SQL Server 2005. Combined with increased system performance, these advantages give adCenter much faster customer response times. “As a result of

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these new capabilities, we were able to give our customer support organization the ability to do real-time ad hoc database queries to solve business issues and customer support problems," says Anderson.

Because of an increase in agility, adCenter developers have also been able to give these customers a significantly higher number of features. "That was possible because of the way this technology works together behind it all."

Microsoft Server Product Portfolio

For more information about the Microsoft server product portfolio, go to: www.microsoft.com/servers/default.mspx

Microsoft SQL Server 2005

Microsoft SQL Server 2005 is comprehensive, integrated data management and analysis software that enables organizations to reliably manage mission-critical information and confidently run today's increasingly complex business applications. By providing high availability, security enhancements, and embedded reporting and data analysis tools, SQL Server 2005 helps companies gain greater insight from their business information and achieve faster results for a competitive advantage. And, because it's part of the Microsoft server product portfolio, SQL Server 2005 is designed to integrate seamlessly with your other server infrastructure investments.

For more information about SQL Server 2005, go to: www.microsoft.com/sqlserver

Software and Services

- Microsoft Server Product Portfolio
 - Microsoft SQL Server 2005

■ Technologies

- EMC TimeFinder
- EMC Replication Manager

Hardware

- EMC Symmetrix DMX
- EMC CLARiiON