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Success Stories

BBM Canada Protects Critical Real-Time Ratings Data with NetApp



KEY HIGHLIGHTS

Industry
Media

The challenge

Protect mission-critical data in a real-time environment

The solution

NetApp® FAS systems, SnapMirror® technology, and FlexClone software

Benefits

- Enabled seamless, immediate failover for >99% data capture
- Eliminated need to purchase additional Oracle® licenses, saving \$50K each
- Increased hardware utilization from 30% to over 60%
- Doubled backup speed, improving data protection
- Reduced time to rebuild database from a week and a half to about 30 minutes

CUSTOMER PROFILE

BBM Canada supplies Canadian broadcasters and advertising agencies with viewer and listener numbers for television and radio stations. The organization, which has been operating since 1944, uses electronic measuring systems and diary surveys to gather data from hundreds of thousands of households and analyze it to help set advertising rates and measure viewer levels. (www.bbm.ca)

THE CHALLENGE

With only one chance to capture the data, system failure could be disastrous

How much is a 30-second spot worth? For Canadian TV and radio broadcasters and media agencies, there's one place to get that critical information: BBM. Tens of thousands of in-home and wearable devices across Canada automatically call BBM's systems nightly to deliver data about how many people were tuned in to a certain channel or radio station at a certain time. BBM captures this information, analyzes it, and by 3:00 p.m. the next day turns out reports on who tuned in to which stations when. Clients then use those reports to track the popularity of programs, adjust programming schedules, reconcile advertising rates, and offer make-goods to advertisers if fewer people tuned in than promised. Sometimes clients use the data

with BBM or third-party software to produce more detailed analyses tailored to their particular interests.

"Our clients are counting on us for timely, high-quality data," says Tom Saint, CIO of BBM. "We are an industry-sponsored organization funded by our customers. If we don't deliver what they need, they'll demand changes."

The biggest challenge BBM faced in meeting its mandate was protecting its nightly influx of data. "Data comes in quickly and, if we miss our window one night, we can't deliver ratings data the next day," says Saint. "We need valid data from 90% of our devices to ensure we have representative samples, which are key to the quality of our data."

But if problems ever occurred during data capture at BBM's primary data center in Toronto, data collected earlier that day would not be available at the backup location, because BBM's system didn't provide real-time replication to another system. Also, if the phone lines went down, BBM wouldn't be able to capture incoming data because it lacked near-real-time disaster recovery (DR) and couldn't fail over smoothly to its secondary data center in Vancouver. In fact, BBM often used its second site as a test environment, making it unavailable for DR.

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Ed Grassie

Director of IT Infrastructure, BBM Canada

BBM’s storage environment also was inefficient. The company had servers and direct-attached storage (DAS) for each version of its applications: production, development, testing, and DR. “We had too many boxes, and they weren’t connected,” says Saint. “We needed all that processing power, but only about 30% of the time. It was wasteful because we couldn’t reallocate resources to meet different demands.” With the company continuing to boost its survey sizes and variety of analytical offerings, Saint knew its infrastructure would increasingly become a liability.

THE SOLUTION

Seamless failover ensures consistent data capture

Back in 2002, BBM worked with RootCellar, a NetApp reseller, and developed a strategy to address business continuity and disaster recovery by creating reciprocal data centers (in Toronto, Ontario, and Richmond, BC) and leveraging NetApp’s high-performance storage environment. The company runs virtual applications under VMware®, using a NetApp FAS3020 for proprietary and business intelligence applications from Oracle and two NetApp FAS250s for the company’s Oracle database test and development environments.

Microsoft® Windows®-based servers write incoming data directly to a FAS3020 in Toronto. NetApp SnapMirror technology replicates volumes every five minutes to the reciprocal FAS3020 in Richmond. If the phone lines in Toronto go down, the system fails over and Windows machines in Richmond begin capturing incoming data. All data is stored in both Richmond and Toronto.

BBM uses a proprietary application that runs a variety of analytic processes to suit the requirements of its different clients. As soon as data is captured, BBM’s application begins the process of checking validity and the origin of the incoming data and ensuring a representative sample. At all its sites, BBM runs this and other applications as virtual applications and stores images of its virtual machines (VMs) on storage from NetApp. It stores all applications and Oracle databases on NetApp’s storage and replicates them to both sites using SnapMirror, so BBM can bring up entire VMs, with applications and data, at either location.

Now, if part of the system goes down, everything remains running at other locations. In fact, none of BBM’s VMware servers uses its local drive. Instead, the C drive is usually an iSCSI to one of BBM’s systems from NetApp. The speed of the connection keeps everything in synch.

“When we fail over, there’s no distinction between the capabilities of the two sites,” says Ed Grassie, director of IT Infrastructure at BBM.

BBM backs up its data according to the needs of the applications, using NetApp Snapshot™ technology to back up several times per day or after key processes complete. If someone made an unauthorized change, BBM can just restore the Snapshot copy in a few seconds and start over. Daily backups started at about 250GB in 2003, but increased to more than 2TB by 2008—partly due to the addition of other applications and partly due to data growth as BBM expanded its services.

BBM pulls data directly off the NetApp FAS3020 to back up to tape at the Richmond data center, so the backup doesn’t affect performance of the production system in Toronto. This backup procedure takes about half the time BBM’s previous procedure did. “Before, we could only back up half our critical systems during our backup window,” says Grassie. “But now we don’t have to back up from multiple different sources—it’s all NetApp. We can go twice as fast, so we back up all critical systems every night. This minimizes our potential exposure in the event of data loss.”

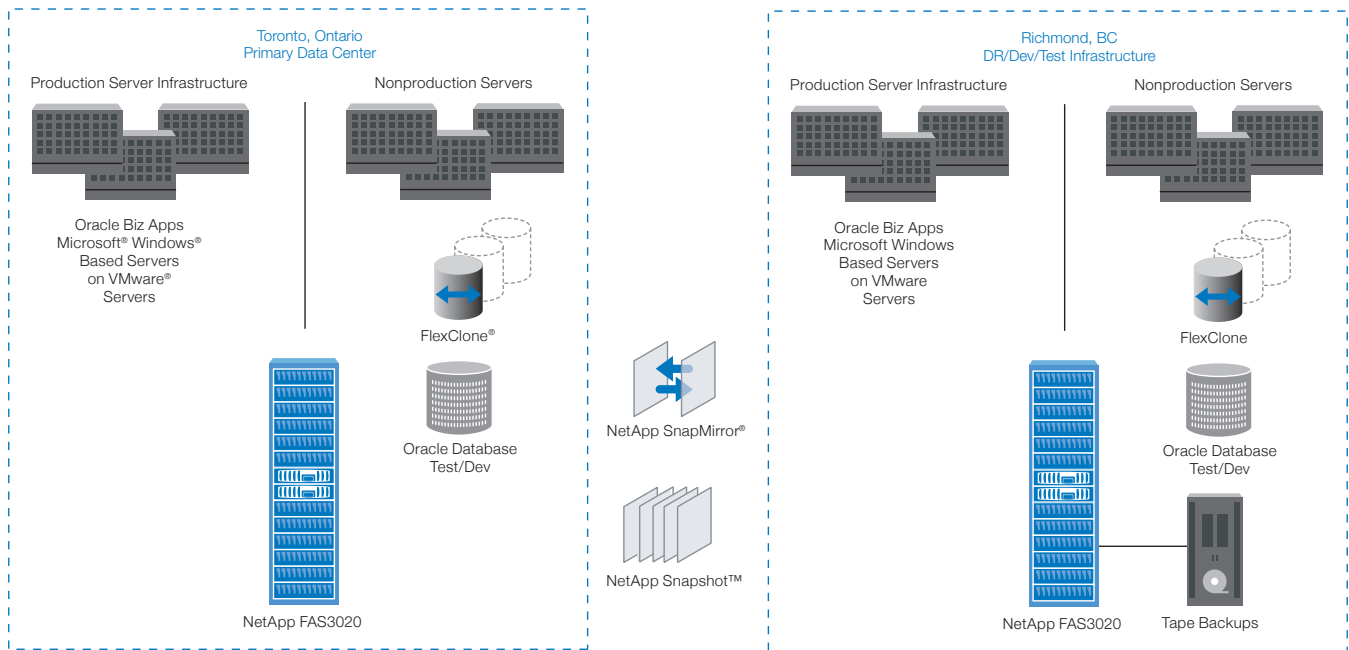


Figure 1) BBM Canada's business continuity and disaster recovery strategy is comprised of reciprocal data centers (Toronto and Richmond) running virtual applications under VMware, using a NetApp FAS3020 for proprietary and business intelligence applications from Oracle and two NetApp FAS250s for the company's Oracle database test and development environments. NetApp SnapMirror technology replicates volumes every five minutes to the reciprocal FAS3020 in Richmond.

For testing, BBM leverages FlexClone to establish new Oracle development and test environments in minutes instead of days. FlexClone takes a fraction of the storage space of traditional clones, saving on storage costs. This makes it easy for BBM to concurrently analyze outcomes for a variety of scenarios before placing them into production. For example, says Grassie, BBM can create FlexClone volumes of its Oracle 9i™ databases, upgrade those clones to Oracle 11i™, and see what happens—all without impacting production. FlexClone technology also enables BBM to maximize business use of its disaster recovery infrastructure in Richmond. Using flexible clones from the mirror copy for purposes including dev/test allows BBM to use that asset to provide business benefits beyond passive DR.

In addition to helping BBM put better-tested applications into production, FlexClone makes it easy for BBM to do test runs in advance of final processing when time frames are very tight to ensure quick delivery of data to customers. For example, BBM annually mails survey diaries to people so they can record their time listening to radio stations or watching TV channels over a week. In some sweeps periods nearly 100,000 completed survey diaries come back over several weeks. BBM can troubleshoot and perfect its processes for handling this

deluge of information by setting up FlexClone volumes and testing processes that use up-to-the-minute versions of BBM's data and applications—all the while enabling staff to keep entering incoming survey information to the production system.

"Once we're happy that everything's working right, we can just make the clone the primary system and it can tap right into the new production data that we've been entering while fine-tuning the clone," says Grassie.

BUSINESS BENEFITS

Innovative practices deliver reliability—and save money

According to Saint, BBM simply couldn't have kept up with data growth using its old system. "In the past, when business services exceeded their storage capacity, we would buy new servers at \$60,000 each," says Saint. "Now we just add new drives at \$1,000 each—and with our consolidated, virtualized storage, we make much better use of our capacity. We've increased utilization from about 30% to over 60%."

Although BBM's systems have grown in volume and complexity, the company has not had to increase its number of IT administrative staff. Saint estimates that without its new NetApp-based system, it would have had to hire two or three new full-time employees to keep up with the growth.

Multiprotocol support is part of the reason. "We can mount the same file on either NFS or iSCSI and share it with users and applications across the system," says Grassie. "We don't have to spend a lot of time copying data to multiple systems."

NetApp's DR solution has already proved its value to BBM. Once, 48 telephone lines into the Toronto data center went down, but incoming calls were automatically redirected to BBM's alternate site in the Vancouver area. The site already had a current replica of the data and analytics applications, so data gathering continued seamlessly and the outage didn't affect reporting to clients. Without this solution, BBM clients could have experienced a delay of 24 hours or more in getting their data.

BBM tests its DR capabilities every three months. Its consolidated, virtualized, and mirrored storage infrastructure reliably delivers near-instantaneous failover. There's no need to reload tape or rebuild a server. "If we need to do a restore at one of our locations, we can bring everything back in about 15 minutes," says Grassie. "All the while, the system continues to run elsewhere and capture our incoming data. We don't skip a beat." In 2006, a virus crashed a 1.2TB database, and it took BBM about a week and a half to rebuild it. "If that were

to happen today, we could recreate it from FlexClone volumes and rebuild it within about 30 minutes,” says Grassie.

By using VMware and NetApp products together, BBM feels that it has the best of both worlds. “NetApp’s solutions supply the data storage power while VMware enables us to distribute data and processing the way that we want,” says Grassie. BBM found it could accomplish this because it could read and write its VMware data faster to NetApp’s system than to the local drive. “When we moved data off an HP UNIX®-based system that had a local-attached drive on to NetApp’s system, we still used that same HP system as the processor, but our run times were cut in half—from about two hours to just under an hour,” says Grassie. “This provides extra time so we can either deliver the data earlier to customers or we can recover from other issues or problems along the way.”

Virtualization also saves BBM hundreds of thousands of dollars in Oracle licenses. Oracle license fees of approximately \$50,000 must be paid per processor, not per VM. “If I have 4 processors running a total of 12 VMs, I pay for 4 licenses, though I get all the benefits of 12,” says Grassie. “I could put 100 VMs on those processors, essentially running 100 distinct Oracle systems for the cost of running 4.” Because creating additional Oracle test environments costs BBM nothing but additional disk space used by the FlexClone volumes, the company can now afford to thoroughly test all its processes and applications in an Oracle environment.

BBM also saved on the cost of additional database licenses by choosing to implement replication using SnapMirror. “When we’re mirroring the data with SnapMirror, we’re not taking another server across; we’re just moving a virtual Oracle server,” says Grassie. “We save approximately two to three man days not doing Oracle exports and imports when we replicate the Oracle data using SnapMirror. Not rebuilding the Oracle server itself but just creating a replica of the virtual machine saves an additional three to four man days in server set-up times.”

BBM is using NetApp’s solutions in ways that it hadn’t imagined when it first decided to change its storage infrastructure. “Once we had NetApp’s solutions in place and began to realize its capabilities, we’ve been coming up with time-saving, money-saving, and business-enhancing ideas on how to leverage them,” says Grassie. “We learn new things about our NetApp solutions almost every day.”

SOLUTION COMPONENTS

NetApp Products

NetApp SnapManager® for Oracle
NetApp SnapManager for Windows
NetApp SnapMirror
NetApp FlexClone
NetApp Snapshot
NetApp Data ONTAP® 7G
NetApp FAS3020
NetApp FAS250

Protocols

CIF
NFS
iSCSI

Environment

Microsoft Exchange (VMware migration for Exchange underway, from 2000 to 2007)
Oracle 9i and 10g™ standard editions
VMware VI
SQL Server™ 2005
Windows Server 2000, Windows Server 2002, and Windows Server 2003
Linux®
IBM LS21 blade servers in the VMware environment
Proprietary, home-grown solutions for niche market

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