BETONSOFT

BetOnSoft Doesn't Play Games with Its Microsoft SQL Server System

Online gaming platform company uses Fusion ioMemory™ ioDrive® cards to drive performance, simplify infrastructure, and improve availability.

Solution Focus
- Microsoft SQL Server
- Software-as-a-Service (SaaS)

Summary of Benefits
- Improves user experience by eliminating maintenance impact on performance
- 10.8x faster Check DB jobs
- 9x faster backups
- 10x workload support per server
- Offloads tasks with SanDisk® powered readable mirror (SQL Server)
- 200-millisecond average replication speeds
- 14-second failover on SQL Server

The Challenge

Global gaming software leader, BetOnSoft, provides gaming operators a robust turnkey online gaming solution that includes games such as slots, video poker, blackjack, craps, roulette, and more.

BetOnSoft's website traffic had more than doubled over a 12-month period, and that growth trajectory was likely to continue. In addition, the company's products continued to deliver ever-richer functionality, much of which depended on complex data analysis to produce results in real-time.

The development team's challenges included the following:
1. Scaling into the future. BetOnSoft was taking on new operators at a rapid pace, with each operator running multiple casinos. Thomas Pullen, the project DBA said, "We had to make sure the database and server could rapidly scale."
2. Evolving the product architecture. BetOnSoft needed a system that could continue to deliver best-in-class performance while adding features that were increasingly more data intensive.
3. Achieving the highest level of availability. Since BetOnSoft's customer base is international, there are players online 24/7/365. Any downtime is to be avoided at all cost.

The SanDisk® Solution

Not Playing Games with Performance

"Before upgrading to the Fusion ioMemory solution, we were hesitant to run Check DB jobs because resource contention could result in application timeouts, negatively impacting the user experience," said Pullen. "This left us exposed to corruption."

Upon switching to a SanDisk-powered Microsoft SQL Server system, Pullen saw an immediate improvement. "On a 900GB database, we ran Check DB in only 25 minutes, and with very little impact on application performance. When we did manage to run it on the old SAN-based system, it took four and a half hours. I now run Check DB every week and know our database is free of corruption without affecting the user experience. That's a massive benefit to me."

SanDisk®
a Western Digital brand

But that wasn't the only benefit BetOnSoft realized. Pullen told us, "I can also run backups anytime to do work like synchronizing different groups without having to schedule for low-traffic periods or warn people."

Check DB Run Times

With SanDisk	25 minutes
Without SanDisk	4.5 hours

10.8X FASTER

Pullen added that the SanDisk-powered system also reduced backup times from four hours to just 25 minutes.

Backup DB Run Times

With SanDisk	25 minutes
Without SanDisk	4 hours

9.6X FASTER
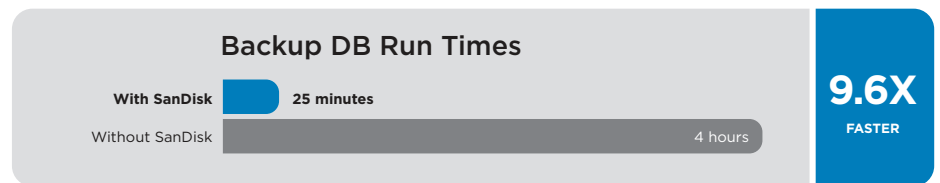
A Sure Bet for Real-Time Results

"Typical data architectures for e-Commerce applications involve a high-throughput OLTP database from which data is fed into a downstream data warehouse," says Devan Govender, Chief Software Architect on the BetOnSoft project. "Data analysis is then usually run on the warehouse, which can be several seconds or even minutes behind. Even small delays are not tolerable in the market-leading gaming products we are building."

The Fusion ioMemory ioDrive cards allowed BetOnSoft to forego the data warehouse entirely, and implement real-time analysis on their primary OLTP system. Pullen said, "The ioDrive cards provide such significant performance that we were able to consolidate our OLTP database with a reporting warehouse service, and run reports directly against the OLTP database without affecting the user experience."

The switch to SanDisk freed up disk capacity that BetOnSoft now uses to store backups and archive data for its Playback function, which allows end users and operators to review their entire gaming history. "We've balanced Playback data for optimal performance, storing the most recent Playback data on the ioDrive cards, as they receive a lot of writes, while archiving the continually growing Playback data to disks," explained Pullen. "We also now have performance headroom to cover our growth strategy for the next couple of years as we take on more operators, with more customers, playing more games."

The project's senior developer Andrew Baker added, "The adoption of ioDrive cards adds huge value to the development team. We previously spent a lot of time on performance considerations, but the ioDrive cards have enabled us to focus our time on delivering ground-breaking new features for our players."

Stacking the Deck with Microsoft SQL Server AlwaysOn and Readable Mirror

Always innovating, BetOnSoft's project team recently upgraded from SQL Server 2008 to SQL Server 2012 as part of the Microsoft Technology Adoption Program. This improved BetOnSoft's gaming platform in several ways.
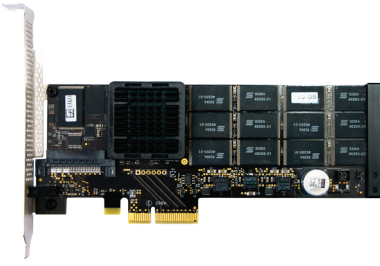
SanDisk®
a Western Digital brand

First, SQL Server 2012's readable mirror allows BetOnSoft to offload real-time reporting and maintenance tasks to optimize system resource utilization. "The ioDrive card's performance had previously enabled us to run OLTP and reporting jobs off a single database," Pullen explained. "But SQL Server 2012's readable mirror improves system efficiency even more. We can now offload reporting and maintenance onto the failover server, ensuring OLTP queries, reporting jobs, and maintenance tasks all have more dedicated system resources. Meanwhile, we still only have to maintain a single database."

Second, SQL Server's AlwaysOn feature enables server-oriented replication and failover schemes—functionality that ioDrive cards have been shown to significantly improve for many customers. Pullen said, "Even with 10 times our current load, replication speeds averaged about 200-milliseconds on loads of 20,000-30,000 batches/second. Failover speeds were similarly impressive. We set a bar of two minutes, and the actual failover took only 14 seconds."
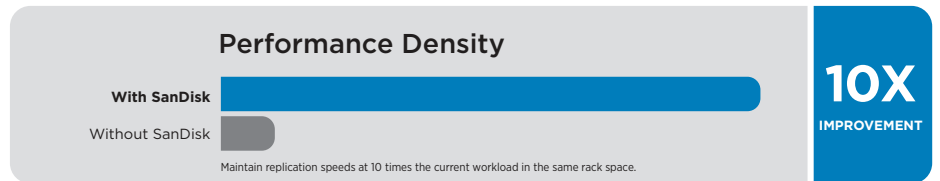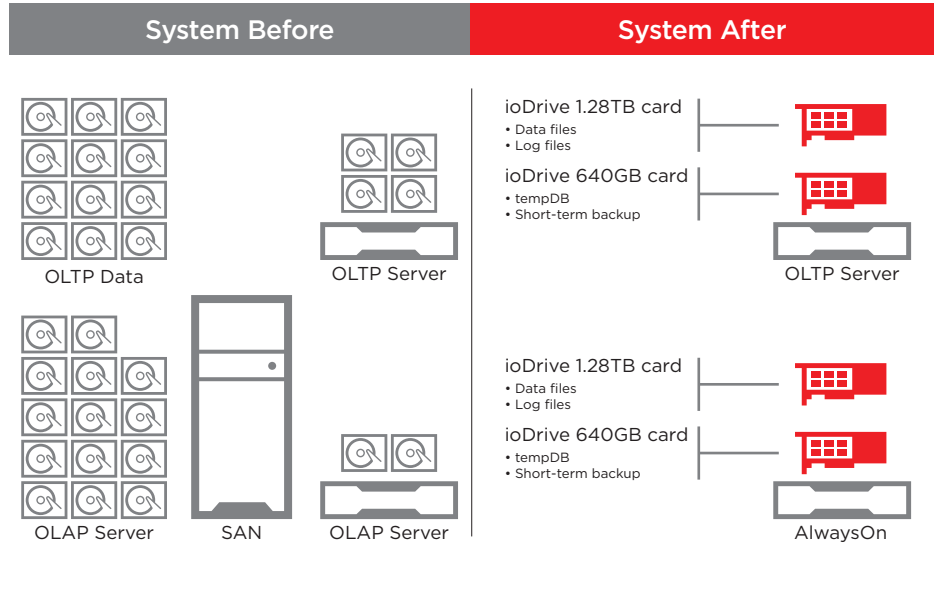
Third, BetOnSoft ensured high performance of each node by placing all high-usage SQL Server data files and log files on one Fusion ioMemory ioDrive® Duo card and by placing tempDB files on another local ioDrive Duo card.

System Overview

Database System Before	Changes to Database System

OLTP Database Server
• 2U Dell 2950 server, 3GHz Intel Xeon processors, 8 cores, 32GB RAM
• OS: Windows Server 2008 R2 Enterprise
• Application: SQL Server 2008 R2 Enterprise
• Log files on 4 x local SAS disks 15K RPM, RAID 10
 	
OLAP Database Server
• 2U Dell 2950 server, 3GHz Intel Xeon processors, 8 cores, 32GB RAM
• OS: Windows Server 2008 R2 Enterprise
• Application: SQL Server 2008 R2 Enterprise
• Log files on 2 x local SAS disks 15K RPM, RAID 1 mirror
 	
SAN
• OLTP Data
  – Data files on 4 x SAS disks 15K RPM, RAID 10
• tempDB on 2 x SAS disks 15K RPM, RAID 1
  – tempDB data files on SAN, shared 6 x SAS disks 15K RPM, RAID 5
• OLAP Data
  – Data files on SAN, 6 x SAS disks 15K RPM, RAID 5
  – tempDB log files on 2 x local SAS disks 15K RPM, RAID 1
  – tempDB data files on SAN, shared 4 x SAS disks 15K RPM, RAID 5
	Replaced OLAP server with a readable mirror that also serves as a failover for the OLTP database server.
	
	OLTP Database Server
	• 2U Dell R810 server, 2.67GHz Intel Xeon processors, 32 cores, 256GB RAM
	• SQL Server 2012 RC1
	• Data and log files on 1 x Fusion ioMemory 1.28TB ioDrive card
	• tempDB and short-term backups on 1 x Fusion ioMemory 640GB ioDrive card
	
	AlwaysOn Synchronous Readable Mirror Database Server
	• 2U Dell R810 server, 2.67GHz Intel Xeon processors, 32 cores, 256GB RAM
	• Windows Server 2008 R2 Enterprise
	• SQL Server 2012 RC1
	• Data and log files on 1 x Fusion ioMemory 1.28TB ioDrive card
	• tempDB and short-term backups on 1 x Fusion ioMemory 640GB ioDrive card
	
	SAN
	• Moved all active data onto ioDrive cards
	• Reduced performance burden by using SAN only for older playback data and long-term archive

System Before			System After

Fusion ioMemory™ - ioDrive®

OLTP Data   **OLTP Server**

ioDrive 1.28TB card
• Data files
• Log files

ioDrive 640GB card
• tempDB
• Short-term backup

OLTP Server

OLAP Server   **SAN**   **OLAP Server**

ioDrive 1.28TB card
• Data files
• Log files

ioDrive 640GB card
• tempDB
• Short-term backup

AlwaysOn

Performance Density

With SanDisk

Without SanDisk

Maintain replication speeds at 10 times the current workload in the same rack space.

10X
IMPROVEMENT

Summary

Implementing Fusion ioMemory solutions with Microsoft SQL Server 2012 benefitted BetOnSoft as follows:
- Improves user experience by eliminating maintenance impact on performance
- 10.8x faster Check DB jobs
- 9x faster backups
- 10x workload support per server
- Offloads tasks with SanDisk-powered readable mirror (SQL Server 2012)
- 200-millisecond average replication speeds (SQL Server 2012 AlwaysOn)
- 14-second failover (SQL Server 2012 AlwaysOn)

About BetOnSoft

BetOnSoft, an international gaming software provider with presence in 11 countries, is a fast-growing developer of popular online casino games used by players around the world. The company provides gaming software and hardware infrastructure to independent operators that market and brand the games. Since the company's launch in 2006, the company has launched new operators into the marketplace and acquired existing operators from other software providers through its superior platform and products.

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