Rhapsody Tunes Performance Scaling

Industry-leading music provider innovates to support 12 to 18 months' growth headroom in the same server footprint, while maintaining best-in-class performance.

Solution Focus

- Oracle
- Digital Content
- Software as a Service

Summary of Benefits

- **Fast content management** job processing to meet contractual publishing obligations
- **High metadata database performance** for optimal application response and rapid customer searches
- **12 to 18 months' performance headroom** in customer-facing transactional database and metadata database
- **10x faster** content management database job completion
- **8x faster** transactional database job completion
- **High Availability** that is easily implemented without backend storage cost with Oracle Data Guard
- **100% ROI** on Oracle licensing cost savings

The Challenge

Since Rhapsody's founding in 2001, the Seattle-based online-subscription music provider has seen its catalog grow to over 16 million songs. In December of 2011, it reached over one million paid subscribers accessing content on many devices, from PCs to mobile phones to televisions.

In March, Rhapsody expanded its business overseas to Germany and the UK, resulting in an additional surge of its subscriber-base—a trend they expect to continue.

Heng Cao, Rhapsody's VP of Platform and Operations, told us this presented his team with the following challenges:

1. Complete content management processes on-time to meet contractual music publishing requirements—even as the music library continues to grow.
2. Scale transactional database to handle the demands of a rapidly growing subscriber base.
3. Deliver rapid metadata response times to ensure real-time visibility of music information and to speed customer searches.
4. Ensure high availability 24/7/365 across the globe.
5. Keep costs in check to protect bottom line and to ensure the most competitive pricing to customers.

The Solution

Cutting Content Management Job Times to Support More Label and Artist Contracts

Heng described the challenge Rhapsody's content management system faced. "Our content management system has over 16 million songs and is growing rapidly as we expand internationally. The ingestion process and analysis that ensures the right content is published to meet our contractual obligations must run nightly. These batch jobs took such a significant amount of I/O that running them on our NAS system could take anywhere from eight hours to 21 hours to complete."

Adding four Fusion ioMemory™ ioDrive®2 cards to one server solved this problem, accelerating read performance by 17x and boosting write operations by 5x.

Heng explained how this performance improved job processing. "The ioDrive cards moved the bottleneck to the CPU and memory. The CPU is doing a lot more work now, which is a very good thing. Now, no job takes more than two hours. This

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improves Rhapsody's services by ensuring editors now have more time to improve content and can deliver more up-to-date content, while still meeting contractual publishing deadlines."

Content Management Processing Time

With SanDisk 1-2 hours

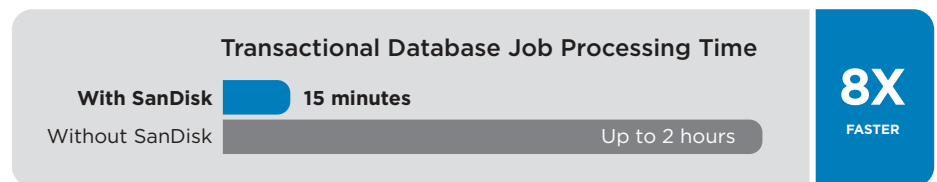Without SanDisk 8-21 hours

10X FASTER
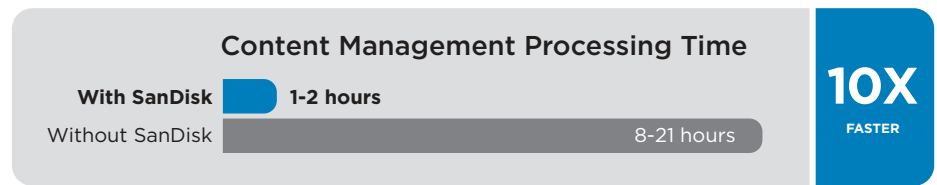
Future-Proofing Transactional Database Performance

After seeing the benefits Fusion ioMemory delivered to Rhapsody's content management system, Heng targeted another I/O intensive system: the customer-facing transactional database Rhapsody used to support features like playback, account maintenance, and initial registration.

"The transactional nature of the database meant that capacity requirements were comparatively lower than our content databases, while performance demands were much higher," Heng explained. "We ran competing proof-of-concepts for several months and chose SanDisk® because of its simplicity and much lower comparative cost for capacity to support 12 to 18 months' growth."

Heng added, "Job times on this system have also been greatly reduced. Jobs to transactional databases that used to take two hours now take less than 15 minutes."

Transactional Database Job Processing Time

With SanDisk 15 minutes

Without SanDisk Up to 2 hours

8X FASTER
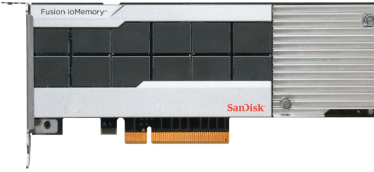
Scaling Metadata Databases with Flash Memory

Heng also identified another I/O intensive system that could benefit from Fusion ioMemory solutions: the metadata database its music application accesses for information about content, including track title, albums, and artists, and which customers also access to search the content library.

Heng said, "Customers expect music players to display real-time information and expect searches to be very fast. The ioDrive2 cards will allow us to maintain fast response times as our subscriber base and content library continue to grow."

Easy High Availability with Oracle Data Guard

As a rapidly growing business with an international subscriber base, Rhapsody had to ensure its customer-facing transactional database performed at peak levels around the clock, with little to no downtime. This meant that implementing server redundancy was a must.

Heng explained how Rhapsody achieved High Availability in a server-side solution, "When we initially expanded overseas, our primary servers could not support the capacity to handle both online traffic, including ETL jobs, and replication, which reduced our availability profiles. With the ioDrive2 cards, we now have the capacity to host Oracle Data Guard replicated databases within the servers, while still leaving plenty of room for future growth."

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Rhapsody

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Fusion ioMemory™ - ioDrive®2

Cost-Effective Scaling for Rapid and Unpredictable Growth

One might expect that implementing a high-performance system that delivers 12 to 18 months of performance headroom in a rapidly growing market would cost a lot of money.

The ROI on Rhapsody's SanDisk powered systems proved to be quite the contrary.

"We have a very condensed data center with limited space to expand. This made scaling up preferable to scaling out. We were also looking to minimize our Oracle licensing costs," Heng explained. "The ioDrive2 cards use the server CPUs much more efficiently, which has given us 12 to 18 months of growth in the same server footprint. We realized 100% ROI just on the cost of the Oracle database licenses we would have needed had we implemented a storage-based system."

Summary

Implementing Fusion ioMemory gave Rhapsody the following benefits:

- Fast content management job processing to meet contractual publishing obligations
- High metadata database performance for optimal application response and rapid customer searches
- 12 to 18 months' performance headroom in customer-facing transactional database and metadata database
- 10x faster content management database job completion
- 8x faster transactional database job completion
- High Availability that is easily implemented without backend storage cost with Oracle DataGuard
- Receives 100% ROI on Oracle licensing cost savings

Heng is thrilled with his SanDisk powered systems and is looking to implement ioDrive2 cards in other I/O-constrained systems. "Based on success in production, we are currently deploying Fusion ioMemory into our preproduction environment to boost development and testing productivity, and are seeing great success."

About Rhapsody

The Rhapsody® digital music service gives subscribers unlimited on-demand access to more than 16 million songs, whether they're listening on a PC, laptop, Internet connected home stereo or TV, MP3 player or mobile phone. Rhapsody allows subscribers to access their music through more touch-points than any other digital music service, including mobile phones from Verizon Wireless and MetroPCS, through Rhapsody applications on the Apple iPhone, iPod Touch and iPad, RIM BlackBerry, Windows Phone 7 and Android mobile platforms as well as through devices from Vizio, SanDisk, HP, Sonos and Philips. Rhapsody is headquartered in Seattle, with offices in Frankfurt, London, Luxemburg, New York and San Francisco.

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At SanDisk, we're expanding the possibilities of data storage. For more than 25 years, SanDisk's ideas have helped transform the industry, delivering next generation storage solutions for consumers and businesses around the globe.