PIPKINS^{SM}

Pipkins Hosts a Cost-effective Cloud Solution Without Compromise

Industry leader in call center workforce management innovates a hosted solution with the performance of a SAN at an attractive price.

Solution Focus
- Oracle
- Cloud Computing
- SaaS (Software as a Service)

Summary of Benefits
- **Eliminated** database queuing and wait time
- **Exceeded workload goal of 6x the data load** to support more databases
- **Cost a fraction** of the closest alternative solution, while lowering operational expenses
- **Enabled a cloud business** that could be offered at an attractive yet profitable price point
- **Fulfilled Pipkins's commitment** to use only state-of-the-art technology in its Houston, TX based SAS 70 Type II certified datacenter

The Challenge

Pipkins is a leading supplier of workforce management software for commercial call centers, providing sophisticated forecasting and scheduling technology to some of the world's largest organizations.

Pipkins started to see extraordinary demand for its hosted platform and decided to upgrade its system to support a much larger customer base. However, in order to make the upgrade viable, Pipkins had to overcome the following challenges:

1. **Performance.** The Oracle database server that supported its solution had to support a wide variety of queries from multiple customers.
2. **Cost.** The solution had to be more cost-effective than traditional disk solutions. Pipkins CIO Joel Gilbert told us, "Most of the customers interested in a hosted solution are cost-conscious. The system cost had to be low enough that we could make it available at an attractive price point, while supporting a profitable business model."

The SanDisk® Solution

Gilbert had been watching flash memory evolve and knew it was ideal for overcoming the I/O constraints that plagued databases. Gilbert said, "We evaluated everybody out there and concluded that SanDisk had the best technology."

At that point, Pipkins' product architecture team proceeded to design its SanDisk powered hosted solution.

Help for an I/O-Bound System

Gilbert commented, "When we decided to expand our hosted solution, we knew demand would be high. We wanted to ensure we had the highest performance up-front to avoid growing pains down the road."

Pipkins' existing database server struggled to meet its current customers' needs. To ensure Pipkins could support its substantial expected growth, Gilbert's team targeted a system that could support six times the data load from many more databases. The SanDisk-powered system more than delivered.

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The table below shows the results of tests comparing system usage.

Database File Reads
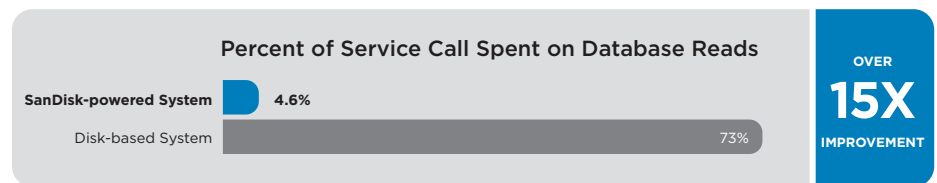
	Disk-based Server	SanDisk-powered Server
CPU utilization	6%	81%
Percent of service call spent on database reads	73%	4.61%
Average wait time (in milliseconds)	87	0

The SanDisk Fusion ioMemory™ solution virtually eliminated wait time, keeping CPUs productively processing data instead of waiting on disks. The database's CPUs were more than thirteen times more productive, which is why the system could achieve such high performance without a SAN. Importantly, this performance ensured its application was never slowed by poor database response. The new system spent just 4.61% on database reads compared to the disk-based system, which spent 73% of the call waiting for read responses.

"One of our design engineers commented that he doesn't worry about I/O anymore—ever," Gilbert said. He added, "The I/O bottlenecks that used to dominate our system reports don't even show up anymore. The Fusion ioMemory solution completely eliminated this problem."

Percent of Service Call Spent on Database Reads

SanDisk-powered System — 4.6%
Disk-based System — 73%

OVER **15X** IMPROVEMENT

Gilbert noted what this improvement meant to its customers, "We take pride in proving value to our customers every day and we have a monthly subscription model that keeps the pressure on us to deliver. SanDisk provides us performance levels that outsourced cloud solutions cannot match."
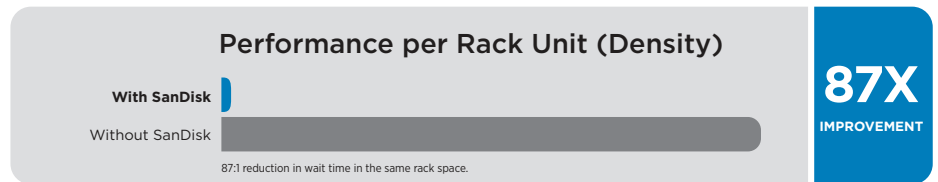
A Cost-Effective Cloud

While Pipkins' goal for upgrading its system was to support growth, cost was a key constraint. SanDisk eliminated this problem as well.

"SanDisk killed everybody on a price/performance basis. The least expensive enterprise alternative would have cost us 10 times as much. The Fusion ioMemory solution was a fraction of this price—and I'm not even including the money we saved on power and rack space," Gilbert said. "I'd estimate the payback period on the SanDisk-powered system was literally weeks to months, whereas using a SAN would have busted our business model."

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System Overview

System Before	System After
One 2U server, Quad-Core Intel Xeon 3.4 Ghz, 3 GB RAM	*One 2U HP DL385 G5, Dual AMD OpteronT 8384 Quad-Core, 2.7 Ghz*

One 2U server, Quad-Core Intel Xeon 3.4 Ghz, 3 GB RAM
- OS: Windows Server 2003 Standard SP2
- Application: Oracle 10g
- Disks: 6 x 10k RPM SCSI disks in a RAID 5

One 2U HP DL385 G5, Dual AMD OpteronT 8384 Quad-Core, 2.7 Ghz
- OS: Windows Server 2008 x64 SP2
- Application: Oracle 11g
- 16 x 10K RPM SAS disks in a RAID 5
- 2 x ioDrive® 320GB

Performance per Rack Unit (Density)

With SanDisk

Without SanDisk

87:1 reduction in wait time in the same rack space.

87X IMPROVEMENT

Summary

Implementing the Fusion ioMemory solution gave Pipkins the following benefits:
- Eliminated database queuing and wait time
- Exceeded workload goal of 6x the data load to support more databases
- Cost a fraction of the closest alternative solution with lowest future operational expenses
- Enabled a cloud business to be offered at an attractive yet profitable price point
- Fulfilled Pipkins's commitment to use only state-of-the-art technology in its Houston, TX based SAS 70 Type II certified datacenter

Gilbert couldn't be happier with the SanDisk system. He said, "Our cloud customers are extremely cost-conscious but not at the expense of performance. We had to design a high-performance, yet affordable, architecture that would scale with rapid growth. SanDisk was the only provider in its space that was able to satisfy these requirements. It hit our price point and exceeded our performance needs."

About the Customer

Pipkins, Inc., founded in 1983, is the leading supplier of workforce management software to the call center industry. Its Vantage Point™ product enables managers to solve the complicated operational issues in multi-faceted call center environments. By providing enterprise level backoffice support, Pipkins enables the entire workforce to be scheduled. Pipkins introduced WorkforceScheduling.com™ as a subscription-based alternative for users wanting the full complement of enterprise features and benefits of its Vantage Point software on a hosted platform. Pipkins' systems forecast and schedule more than 100,000 agents in over 500 locations across all industries worldwide.

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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.