

For DBAs and LOB Managers:
**Using Flash Storage to Drive Performance
and Efficiency in Oracle Databases**



WHITE PAPER

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Oracle databases are the backbone of a wide range of business-critical applications, from online transaction processing to business intelligence systems for corporate finance and dozens more. In today’s environment, organizations are under extreme pressure to process more transactions faster than ever and to drive efficient and consistent performance from their Oracle databases.

All-flash storage arrays have become a breakthrough technology for Oracle databases, enabling levels of performance that are unattainable with spinning disk drives. In addition, with certain all-flash solutions, organizations can drive down costs—including Oracle licensing fees—while reducing storage complexity and improving application availability.

The impact of deploying all-flash storage with Oracle databases leads to improved productivity for database administrators (DBAs), faster time to value for new applications and better customer service, among other



benefits. In this article we examine how flash storage for Oracle addresses the particular needs of DBAs and line-of-business (LOB) managers.

The Benefits of Flash Storage for Oracle Databases

Oracle databases need the performance that can only be delivered by all-flash arrays. The amount of data is growing rapidly and so is the size of data sets. At the same time, business leaders are striving for improved agility and real-time analytics, meaning the database must be able to process more transactions in condensed time frames.

Spinning disk drives are a bottleneck to delivering the performance required for Oracle databases. In the past decade, the speed of CPUs and memory has accelerated dramatically, while spinning disk performance has remained about the same. This has not only been a drag on database performance, but it has also been a drain on resources—

resulting in overly complex management challenges for DBAs as well as Oracle licensing costs that have often spun out of control. The right flash storage solution can immediately shift the paradigm for Oracle performance, management efficiency and costs. Key benefits of flash include:

- **Unprecedented—and consistent—performance to support existing applications and enable new ones.** As an example, the Pure Storage FlashArray executes 300,000 IOPS at sub-millisecond latency. Not only is this performance orders of magnitude better than spinning disks, the performance is also consistent and predictable with virtually no spikes or anomalies.
- **Much greater efficiency to support simpler and less time-consuming database management.** DBAs can move their Oracle databases to a Pure Storage FlashArray as is. There is no tuning required, no complex LUN management, no RAID compromises and no block alignment issues. In addition, with flash,

organizations can typically expect a 10X reduction in backup/recovery time.

- **Lower overall costs, enabling the business to maximize the investment in all-flash solutions.** With flash storage, your servers are far more efficient, enabling you to reduce the number of cores, resulting in lower Oracle licensing costs. In addition, because of the management simplicity of a Pure Storage FlashArray, as well as its efficiency in using advanced compression and deduplication technologies, you will significantly lower the costs of managing and maintaining the infrastructure. Many organizations have seen cost reductions of 30% or more in moving Oracle databases to all-flash arrays, which can more than covers the cost of the array itself.

What DBAs Need From Flash Storage

DBAs are under the gun to improve the performance of critical business applications. They also need to simplify the processes involved in managing and scaling their databases. All-flash arrays are becoming the “go to” solution to address these needs, particularly for databases running online transaction processing, real-time analytics, data warehousing or mixed workloads.

All-flash arrays typically deliver a 3X improvement in the performance of transactional and business intelligence solutions. In addition, that performance is consistent at all times, which is equally important to DBAs. The faster and consistent performance can be a game changer. For example:

- **Kiabi**, one of France’s leading clothing retailers is now running data process jobs five times faster with all-flash storage versus spinning disks. The time it takes to run these jobs is now four hours, down from 24 hours.

- **SurePayroll**, an Illinois-based supplier of online payroll services to small businesses, has increased batch-processing rates by 4X and virtually eliminated database I/O waits. As a result, the company is opening up new revenue streams by providing its payroll services to more companies and service providers.

In addition to performance, simplicity and efficiency are key drivers for DBAs. A Pure Storage FlashArray is practically a plug-and-play device: your applications can be running within a half-hour of setup. You also don’t have to do many of the time-consuming tasks typically associated with spinning disk drives, including tuning, short stroking, managing RAID groups and storage tiering. Also, performance is not a function of the number of LUNs; i.e., you don’t need multiple LUNs in order to gain IOPS. This means you only need to create LUNs for specific database components, such as redo and temp space.

In addition, you can migrate from spinning disks to an all-flash solution with no downtime and without having to change the database configuration. For example, performance is not a function of block size. You can use 2K, 4K, 8K, 16K or 32K blocks, based on the needs of the database—without worrying about the effect it will have on storage performance.

DBAs are also concerned about the potential for rising costs, particularly as data volumes grow. Flash can be a factor in reducing Oracle licensing fees because your compute functions will be more efficient and you can use fewer cores. Flash will also take up less power and space in the data center. Skullcandy, a Utah-based provider of specialized audio products, was able to free data center space by consolidating databases that were previously spread across multiple servers and storage volumes onto a single server and Pure Storage FlashArray. The result has been a significant reduction in database licensing costs.

What Line-of-Business Managers Need From Flash Storage

Like DBAs, LOB managers are also concerned with performance: If applications are running faster, employees will be more productive, customers will be better served and, hopefully, profits will rise. But it's not just performance that is critical for LOB managers, it's also issues around reliability, uptime and improving time to market for new applications that can drive revenue.

Uptime and availability of applications are critical. Every moment of downtime can be extremely costly—in lost revenue, missed opportunities and customer goodwill. Therefore it is important to deploy flash solutions that offer five nines reliability along with a resilient architecture that doesn't tolerate even planned downtime.

As an example, the Pure Storage FlashArray features a true active/active controller architecture, online capacity expansion and online non-disruptive code upgrades. The Pure solution also employs RAID-3D, a unique form of RAID protection that is designed to protect against the three failure modes of flash: device failure, bit errors and performance vulnerability.

Speed to market is another important differentiator. In today's business environment, organizations need to be able to respond quickly to new opportunities and they can't afford long development cycles. Flash storage gives LOB decision-makers the opportunity to eliminate bottlenecks and get applications into the hands of users much faster. Customers of Pure Storage FlashArrays often see a 10X or better improvement in the time it takes to launch new applications.

One of the ways that Pure all-flash arrays improve developer productivity is through the availability of FlashRecover snapshot technology, which allows developers to do as many snapshots as they want at any time without impacting the performance of the production

system. This enables them to get copies of applications schema within seconds to accelerate development cycles.

What to Look for in an All-Flash Solution

For DBAs and LOB managers, the specific challenges may differ but there are common goals as well: to get the performance they require from their Oracle databases; to deploy a solution that is resilient and reliable; to keep costs under control; to make their lives simpler; and to use technology that helps grow and scale the business. Here are some of the important considerations in evaluating all-flash solutions:

- **Extreme performance:** Today's all-flash solutions should be able to deliver consistent performance of 400,000 IOPS at sub-millisecond latency.
- **Simple by design:** Enabling you to use any file system, block size or number of LUNs, with no issues around tuning, caching or tiering and with simple snapshots for recovery and development.
- **Highly efficient:** Using industry leading compression and deduplication technologies to significantly reduce the storage footprint.
- **Cost-effective:** The all-flash solution should enable you to reduce costs by optimizing Oracle licensing through workload consolidation, while also lowering operating overhead and reducing requirements for server hardware, data center space, cooling and power.
- **Immunity from storage disruptions:** Features to look for include crash-consistent snapshots, RAID-3D dual parity and five nines availability.

Taking the Next Step

Moving Oracle databases to all-flash storage is a necessary and inevitable path. The performance gap between spinning disks is too great and the performance

requirements of Oracle databases are too demanding for it to be any other way. As DBAs and LOB managers work with their IT storage and infrastructure teams to evaluate all-flash solutions, they need to be looking at products that address their requirements for performance, simplicity, cost efficiency, resiliency and high availability.

Pure Storage FlashArrays offer particular advantages over other all-flash solutions in supporting Oracle databases. Not only do they deliver the highest levels of performance, but they also utilize an architecture that was designed from the ground up for flash so that the performance is

consistent, helping DBAs and LOB managers to meet the most demanding SLA requirements. In addition, Pure FlashArrays offer industry leading compression and deduplication to reduce the storage footprint. They also feature FlashRecover snapshot technologies to improve efficiencies and accelerate application development.

To learn more about how all-flash storage can change the paradigm of your Oracle database environment, contact Pure Storage <http://www.purestorage.com/solutions/oracle/> for more information.