

OPTIMIZED SOLUTIONS FOR ORACLE DATABASE ADMINISTRATORS

How Pure Storage solutions can easily overcome operational challenges, simplify and expedite your processes, and substantially lower your costs.



As key influencers in their companies, database administrators (DBAs) manage daily programs that directly impact productivity and profit. DBAs enable others to access critical information that lets them complete their own tasks; rapid, unencumbered access to databases is essential to companies across the globe. In turn, a lack of access due to downtime or excessive latency can inhibit a company's output to the point where profitability is no longer within reach.

As a DBA, you likely struggle with delays due to database installations or upgrades, which can create unacceptable downtime for your users and systems. Storage and capacity planning can feel like trying to predict the future amid unknowns like peaks in demand, unexpected efficiencies, and future growth. You do this planning with the added pressure of avoiding overcompensation, which could lead to unnecessary costs. DBAs are also regularly responsible for backing up the business's data, with the ability to restore and recover that data in the event of corrupted files or malfunctioning hardware. That data must also be protected and kept in compliance with laws and regulations that companies are obligated to meet in order to do business.

A DBA that can find solutions to these challenges enables its company to be more efficient. But to do so, you need the tools to create a system that is faster and more reliable. By creating a database that is robust enough to serve your company today and in the future, you're able to beat these common problems and focus your expertise on innovation and analysis instead of troubleshooting and maintenance.

Pure Storage® provides technology solutions that can add value across your organization — bringing benefits to DBAs, database engineers, storage administrators, and users across your company. Here's how Pure Storage can help you overcome the challenges of database management in your Oracle® environments.

INSTALL AND UPGRADE WITH MINIMAL RISK

Each upgrade of your system naturally introduces risk — in many cases, data must be moved from servers and storage to new physical hardware. DBAs face the responsibility of scheduling downtimes for upgrades that won't prevent others from completing their own tasks, leading to complaints and loss in revenue.

Evergreen™ Storage from Pure Storage delivers periodic in-system software and hardware upgrades without disrupting your system or degrading performance. These routine upgrades are completed without downtime, greatly reducing the impact on your organization.

The city of St. Petersburg, Florida, has experienced the benefits offered by the Pure Storage Evergreen Storage program, citing it as a major differentiator. The Evergreen Storage program ensures that customers are able to experience ongoing upgrades to the latest technology while still preserving their investments. Non-disruptive refresh cycles ultimately bring reduced costs and increased technological performance, as noted by David McLean, Computer Operations Manager for the city of St. Petersburg [in a case study](#) regarding their improvements through Pure Storage.

“ WE HAD ALWAYS FOLLOWED THE TRADITIONAL MODEL OF DOING FORKLIFT UPGRADES EVERY 4–5 YEARS, BUT THAT ALWAYS CAUSES YOU TO CHOKER AT THE END OF THE PROCESS, WITH NEGATIVE RIPPLES ALL THE WAY DOWN TO END USERS. WITH THE EVERGREEN BUSINESS MODEL, YOU HAVE NON-DISRUPTIVE REFRESH CYCLES BUILT RIGHT IN. THAT’S FUTURE-PROOFING WITH REAL VALUE.

— DAVID MCLEAN, COMPUTER OPERATIONS MANAGER FOR THE CITY OF ST. PETERSBURG ”

ACCELERATED ORACLE PERFORMANCE STRAIGHT OUT OF THE BOX

DBAs have the difficult task of fielding calls and complaints regarding database performance. Users who are struggling often turn to DBAs looking for a cause, in the hopes that the DBA can track down the applications and tasks causing latency and making the users' jobs more difficult. Pure Storage knows that this makes a DBA's tasks more difficult, too. If you're ready to have smooth, rapid database processing that accelerates critical functions — including enterprise resource planning (ERP), customer relationship management (CRM), and supply-chain management (SCM) applications — Pure Storage FlashArray™ products can meet your needs and deliver tremendous performance with sub-millisecond latencies, fast response times, and high input/output (I/O) operations per second (IOPS) with minimal tuning.¹ In fact, the Pure Data-Centric Architecture is proven to deliver 3x faster transaction throughput for Oracle databases with a 10x increase in response times compared to competing arrays.

Pure Storage FlashArrays have delivered real-world benefits for users in a variety of industries:

- [BPL Global experienced](#) greater than 4:1 data reduction and performance 20–25x faster than with its solution prior to implementing FlashArrays.
- [The Kremsmueller Group](#) reduced latency time from 7–10 milliseconds (ms) to less than 1 ms, accelerating all of its system processes.
- [i3D.net](#) increased IOPS to 3,000 interactions per second while reducing latency 100-fold to less than 1 ms.

The real-world examples above are just the beginning. As another example, Figure 1 details how the transition of a major insurance vendor from a tier-1 legacy disk to Pure Storage FlashArray creates a clear advantage. Figure 1 shows a dramatic performance improvement with the company's implementation of Pure Storage FlashArray. This customer was experiencing peak latency of 26 ms, with overall latency being so varied that users experienced extremely unpredictable report running times. Running the same database on Pure Storage FlashArray brought consistent sub-millisecond latency and a 15x reduction in transaction time.²

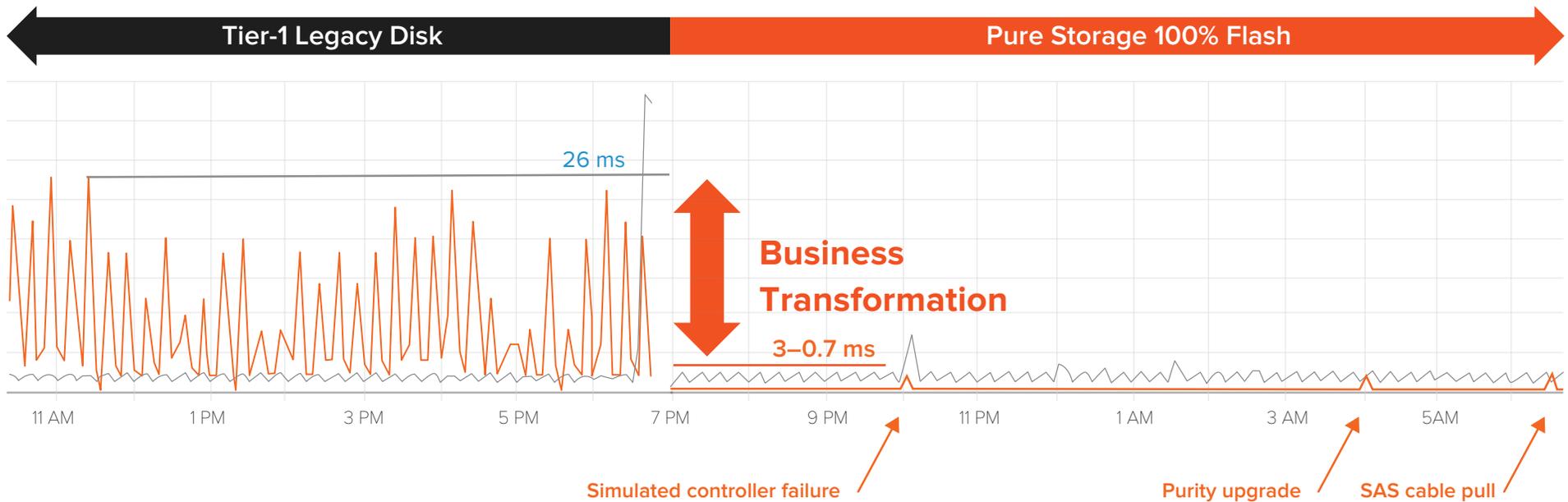


Figure 1. A major insurance vendor experienced a dramatic performance improvement in terms of latency — even during failures, upgrades, and maintenance — with Pure Storage FlashArray products.²

BACK UP, RESTORE, AND RECOVER YOUR DATA

Chances are that your organization requires your data to be available constantly — 24/7/365 — with minimal exceptions. Companies often determine that this need justifies an expensive system, despite performance limitations and difficult maintenance with hundreds of pages of instructions.

You can achieve the goals for backing up, restoring, and recovering data in two ways:

- Creating maintenance windows that minimize access issues
- Planning for backup and restore of data caused by system outages or corruption

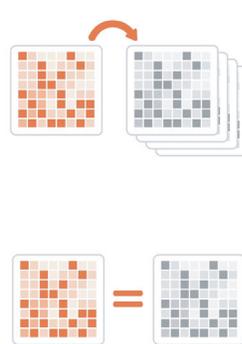
You can schedule regular backups through Oracle Recovery Manager, but many backup solutions have a negative impact on system performance. Disaster-recovery solutions are also available, but they are frequently costly and complex to implement and manage.

In contrast to these expensive, complex, and yet ultimately limited systems, Pure Storage FlashArray//X systems are designed to simplify backup, restore, and recovery tasks for DBAs through space-efficient “snapshots” of data. Frequent backup and restore snapshots have minimal impact on production databases while avoiding the licensing costs of third-party solutions.

For backup and recovery challenges, Pure Storage FlashBlade™ is a high-capacity, scale-out storage system, capable of rapidly and reliably storing petabytes of data while providing fast access to thousands of clients. FlashBlade can support read rates of 16GB/s and write rates of 4.5 GB/s in a single 4U chassis capable of storing around 1.5 PB usable with data reduction. The system scales in seconds, both linearly and non-disruptively — this further simplifies your backup and recovery operations. By leveraging Oracle Recovery Manager (RMAN), Pure Storage enables rapid backup and restore of your Oracle database from FlashArray to FlashBlade.



FlashArray Virtual Volumes
100% Metadata



Snapshot Any Volume at Any Time

- No reservations or planning required
- No performance overhead
- Flexible consistency groups



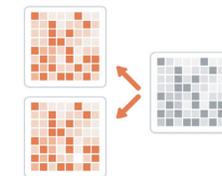
Snapshots Have Full Capabilities

- Mount, read, write, snapshot again, etc.
- No dependencies on one another
- All have full performance



Always Full Yet Space Saving

- No data duplication
- Always thin, deduplicated, and compressed



Recover Anything to Anywhere

- Instantly roll forward or backward
- Recover any volume from any snapshot

Figure 2. FlashArray solutions bring simple and complete backups through snapshots of data that have full capabilities while still saving on storage space.

PROVIDE CONSISTENT BUSINESS CONTINUITY

Although natural disasters are often credited for server, system, and network downtime, companies in safer geographic locations still experience real risks to their business continuity. IT system downtime can cost companies more than \$7,900 USD per minute according to a recent study by Ponemon Institute.³ On average, 59 percent of Fortune 500[®] companies experience at least 1.6 hours of down time each week; that equates to \$758,400 USD.³

Pure Storage simplifies disaster recovery with its all-inclusive software model. This means that DBAs can access Pure Storage Purity ActiveCluster and easily create a zero recovery-point objective (RPO) and zero recovery-time objective (RTO) synchronous replication for disaster recovery between data centers.⁴ DBAs can complete this process with only four steps and a new command, a valuable level of simplicity in an often complex process.

Pure Storage delivers business continuity without requiring a third site, extra hardware, additional licenses, or fees. The simple setup requires only four steps:

1. Connect the arrays
2. Create a stretched pod
3. Create a volume
4. Connect hosts

All of that is enabled with just one new command. Your mission-critical apps, including SAP[®], Oracle[®], Microsoft[®], and Microsoft SQL Server[®] solutions, will run seamlessly — even if disaster strikes.

When you simplify backup and restore activities, you save time that your team can then use to innovate and add value. This drives greater efficiency for your team while also delivering cost savings.

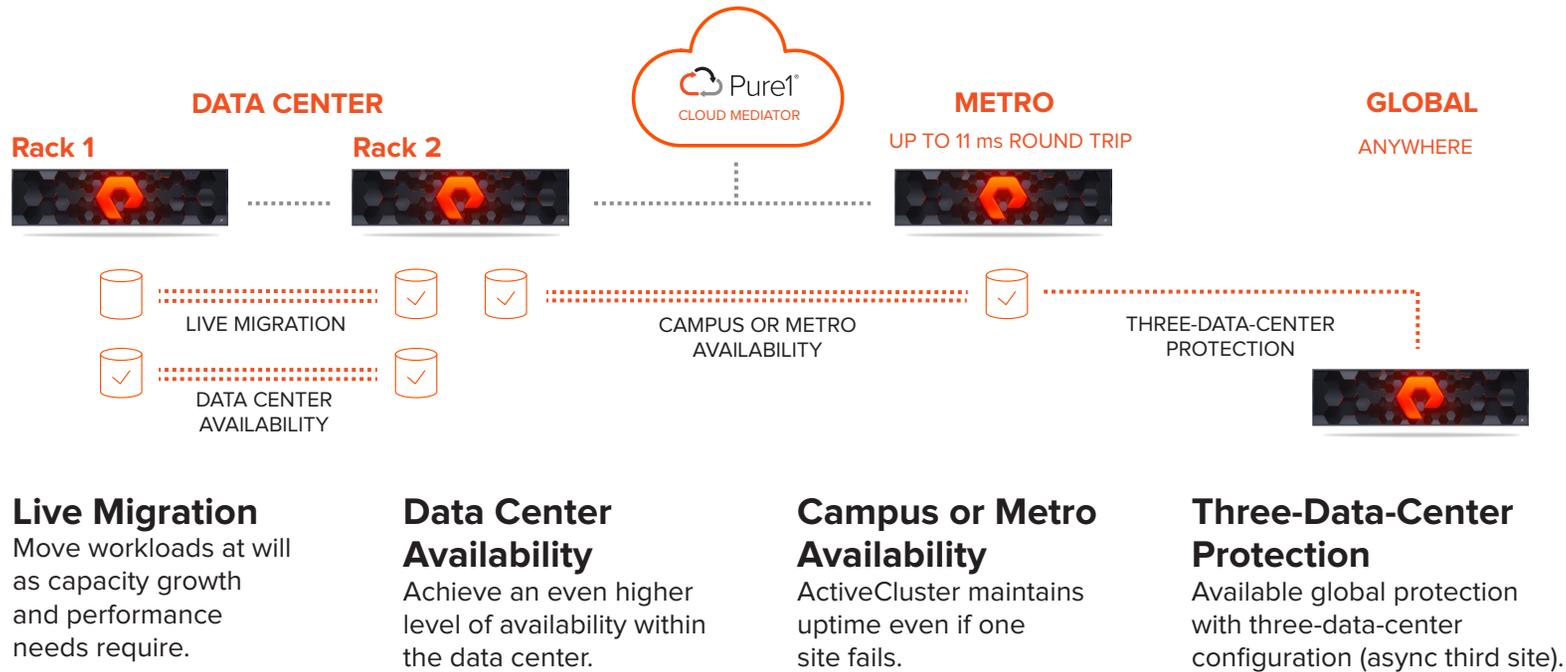


FIGURE 3. Purity ActiveCluster is multi-purpose, adjusting with your systems' workload and providing constant availability to your users.

IMPROVE DATA SECURITY AND COMPLIANCE

You need to keep your data secure and your system in compliance with the law.

The Purity operating environment includes data-storage measures that meet industry standards, including Federal Information Processing Standards (FIPS) 140-2 data encryption and Common Criteria, which help keep your organization in compliance.

Pure Storage FlashArray products also include security features that can help improve your data security, such as:

- AES-256 encryption
- Full data reduction without impact to operations
- No DBA administration requirements
- No key-management requirements
- No additional license costs

Purity operating system–powered FlashArray products are ready to meet your security requirements, including modern compliance regulations like General Data Protection

Regulation (GDPR), leaving DBAs to focus on other priorities with the knowledge that their systems are legal and compliant.

PERFORM DATA EXTRACTION, TRANSFORMATION, AND ANALYTICS

Data loads and extractions can take a long time to complete, consequently slowing down your ability to run queries against your data. Additionally, DBAs are increasingly asked to determine how to integrate data-analytics projects into their traditional database environments to support data scientists and analysts.

You can improve your data warehousing process with the Pure Storage FlashBlade™ product, built specifically to simplify these challenges. FlashBlade is capable of handling multiple data types, helping to streamline data-load activities while minimizing costs compared to legacy data-warehouse systems. FlashBlade also has the option of building a data hub to support analytics projects.

For example, a large web company was running Oracle solutions for data warehousing with the goal of speeding up its analytics to transform to real time. The competition in this space is an existing leader using an all-flash network-attached storage (NAS) four-node cluster. Using Pure Storage solutions, the company achieved 4.5:1 data reduction, compared to 2.1:1 for the competitor.² The Pure Storage solution dramatically simplified the company's processes, driving efficiency — in fact, 96 percent of all queries ran 30 percent faster than with the leader's all-flash NAS solution.²



Elastic Scale-Out

Scale out everything instantly by simply adding blades. Each blade adds capacity, performance, metadata scale, NV-RAM, and client connections.



Easy to Manage

FlashBlade includes a built-in graphical user interface (GUI) and command-line interface (CLI), in addition to the Pure1® cloud-based management and support platform. A single administrator can manage a FlashBlade deployment of any size.



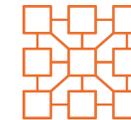
Consistent All-Flash Latency

DirectFlash™ minimizes wait time for data access. FlashBlade accelerates large- and small-block I/O, and makes both user I/O and metadata operations flash-fast.



Resiliency You Can Trust

Blades are deployed in N+2 redundant fashion to protect against flash or full blade loss. When blades fail, the system automatically heals around them, returning FlashBlade to full resiliency.



320 Gb/s Ethernet Throughput

High-performance fabric with object messaging and distributed transaction protocol to ensure fast and reliable communication between Purity instances running on each blade.



Metadata Performance

NFS operations are often full of metadata operations, like getattr() operations. FlashBlade implements a massively distributed metadata database, used by all layers of the system, which is independently queryable for powerful analytics.

SET UP YOUR DATA SYSTEM FOR SUCCESS

DBAs provide critical services as the guardians of company data today, and they are the ultimate influencers of that data as their companies move into the future. Pure Storage is dedicated to bringing the tools — simple, efficient, and cost-effective — that DBAs need to succeed and excel in their tasks and focus their efforts on innovation and progress. To get started, contact your Pure Storage representative [here](#) to accelerate your Oracle database.

- ¹ Pure Storage. "Maximize the Value of Your Data with Oracle and Pure Storage." 2018.
www.purestorage.com/content/dam/purestorage/pdf/datasheets/maximize-value-of-data-with-oracle-and-pure.pdf.
- ² Numbers from direction communication between Pure Storage and the customer.
- ³ Oracle. "Oracle RAC and Oracle RAC One Node on Extended Distance (Stretched) Clusters." October 2013.
www.oracle.com/technetwork/products/clustering/overview/extendedracversion11-435972.pdf.
- ⁴ Pure Storage. Business Continuity web page. www.purestorage.com/solutions/infrastructure/business-continuity.html.



sales@purestorage.com | 800-379-PURE | @purestorage

© 2018 Pure Storage, Inc. All rights reserved. Pure Storage, Pure1, the P Logo, Evergreen, FlashArray, DirectFlash, and FlashBlade are trademarks or registered trademarks of Pure Storage, Inc. in the U.S. and other countries. All other trademarks are registered marks of their respective owners.

The Pure Storage products and programs described in this documentation are distributed under a license agreement restricting the use, copying, distribution, and decompilation/reverse engineering of the products. No part of this documentation may be reproduced in any form by any means without prior written authorization from Pure Storage, Inc. and its licensors, if any. Pure Storage may make improvements and/or changes in the Pure Storage products and/or the programs described in this documentation at any time without notice.

THIS DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID. PURE STORAGE SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING, PERFORMANCE, OR USE OF THIS DOCUMENTATION. THE INFORMATION CONTAINED IN THIS DOCUMENTATION IS SUBJECT TO CHANGE WITHOUT NOTICE.