

# Improve Oracle Database Performance, Scalability, and Data Protection while Lowering Costs

Delivering responsive and available business-critical applications using Oracle databases requires IT infrastructure that efficiently delivers performance and availability, while adequately protecting critical data. IT and database administrators (DBA) and architects realize the importance of storage in maintaining services levels and staying in budget, especially in the face of rapid growth.

Nimble Storage delivers the ideal storage platform for Oracle database online transaction processing (OLTP) and online analytical processing (OLAP) environments. Whether you are deploying Oracle on a single symmetric multiprocessing (SMP) server or you are running Oracle Real Application Clusters (RAC) on multiple nodes, Nimble Storage CS-Series can help you:

- Improve performance including both throughput and latency
- Increase protection and availability with better recovery point objectives (RPO) and recovery time objectives (RTO)
- Lower costs and improve your staff productivity while handling rapid growth
- Accelerate application development and improve test coverage

## Adaptive Flash Performance

Nimble Storage systems are built on the patented Cache Accelerated Sequential Layout (CASL™) architecture, which uses a combination of solid state drives (SSD) as a dynamic read cache and a write-optimized data layout to deliver excellent random read/write performance with sub-millisecond latencies. This makes it ideal for OLTP workloads. Similarly building on sequential read and write performance of high capacity disks, it enables powerful analytics using Oracle databases (OLAP) without requiring a massive datacenter footprint.

Here is how it works. Unlike bolt-on or tiered flash storage solutions that require data migration between SSD and HDD, CASL dynamically caches a copy of active “hot” data and meta-data in flash for reads. This is a more effective use of flash because it avoids the pitfalls of moving data around within the array. For write transactions, CASL first acknowledges the write transaction and then coalesces and compresses the data into HDD-optimized stripes. It sequentially writes these stripes along with checksum and RAID to high capacity disk drives—taking advantage of its sequential write performance. CASL delivers sub-millisecond latencies by decoupling the array performance from the hard disk drive performance.

Since CASL compresses all data on the array without any impact to latency or throughput and supports variable blocks, the benefits of caching and sequential writes to disk are compounded. Overall, the Nimble Storage CS-Series can deliver two to five times better performance for a given budget versus traditional disk based storage solutions.

## Overview

Nimble Storage delivers the ideal platform for supporting your Oracle database. Nimble Storage systems provide:

### Adaptive Performance

Get optimal storage performance for transactional and analytics workloads that adapts to your business-critical application needs.

### Enhanced Protection and Availability

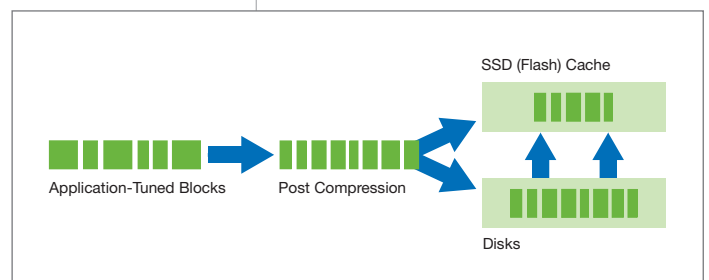
Enable frequent and fast backup, simple recovery, and affordable disaster recovery to meet the needs of storage teams and DBAs.

### Improved Efficiency and Scalability

Spend less time and budget on your Oracle storage, scaling performance and capacity as your Oracle database needs grow.

### Simplified Test and Development

Speed up deployments with efficient developer environments without needing additional storage or disrupting production.



[Nimble Storage's flash-optimized architecture delivers excellent performance for transactional and analytical workloads.](#)

## Enhanced Protection and Availability

Nimble Storage CS-Series integrates data protection through the use of efficient, instantaneous snapshots. Nimble Storage snapshots are instant point-in-time copies, which do not copy any data on future changes (redirect-on-write).

Whether you are using ASM or a file system such as VxFS, the CS-Series can help protect rapidly growing databases without the complexity of external backup solutions. IT administrators and DBAs can take frequent consistent backups of their data, control and log files simultaneously. Proven solutions using native Nimble Storage snapshots and clones and Oracle RMAN processes eliminate disruptive backup windows for production databases.

For added protection and disaster recovery snapshots of the database, control and log files can be efficiently replicated to another CS-Series array. Similar in concept to Nimble Storage snapshots, only the changed data is replicated compressed to the other array. That second array can be a basic entry configuration-- different from the one used in production. This makes disaster recovery for Oracle an affordable reality.

Nimble Storage snapshots make recovery simple by allowing for DBAs to restore from local or remote snapshots or RMAN based back-ups. DBAs can perform a full database recovery, partial database/logical recovery or do a point-in-time (System Change Number or time) recovery quickly and easily.

Since snapshots share common data blocks, there is no duplicate data, making them space efficient. DBAs can store months worth of frequent backups locally or on a second system improving service levels.

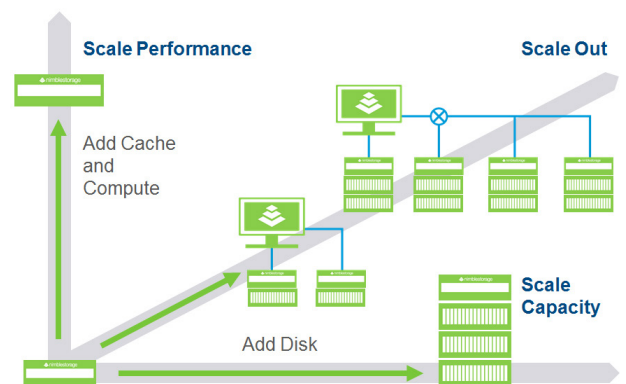
## Improved Efficiency and Scalability

Nimble Storage's CASL architecture leverages high-capacity disk drives to drive down the cost of storage. It also delivers a rich set of efficiency and scalability features that improve the return on your investment through datacenter space, power and cooling savings as well as cost avoidance around buying new storage or additional Oracle software licenses.

CASL compresses all data on the array without any impact to performance throughput or latency. This means the CS-Series can store 30 to 75 percent more data in the same storage capacity with no throughput or latency impact. Complementing compression is the use of thin provisioning where storage is only allocated as needed.

Nimble Storage CS-Series uses an efficient, high performance implementation of RAID-6. This delivers equivalent if not better resiliency than even RAID-10 without the storage capacity overhead.

The CS-Series lets you scale storage performance and capacity non-disruptively and independently without the upfront investment. For rapidly growing business critical Oracle environments, this translates to flexibility and higher availability. Scaling storage performance is as simple as upgrading the controllers, resulting in higher throughput and IOPS. Scale the cache by upgrading SSDs to accommodate larger amounts of active data in the database. Non-disruptively grow storage capacity by adding additional disk shelves to scale to hundreds of TB. Or scale out to a multi-node cluster.



Independently and non-disruptively scale performance and capacity to accommodate growing database deployments.

## Simplified Test and Development

Nimble Storage CS-Series allows DBAs and application developers to quickly create full functioning copies or clones of Oracle database volumes including data, control and log files. These instantaneous clones do not take any additional space nor do they impact production databases as they leverage the Nimble Storage snapshot functionality.

This means individual developers can get their own development environment with full copies of the production database—be it for testing, development, patching, reporting, training, or quality assurance. Efficiently replicate full functioning copies of the production databases to another CS-Series system keeping the primary array focused on production. Nimble Storage can also deliver the value of full functioning clones for testing and development in environments that continue to use their existing SAN infrastructure for production. This is accomplished by using Oracle Data Guard to replicate from primary database to the Nimble Storage platform.

Nimble Storage also makes it easy to leverage virtualization for functions such as test and development by delivering excellent random I/O performance and with its integration with VMware® vSphere™ and certification with Oracle Virtual Machines.

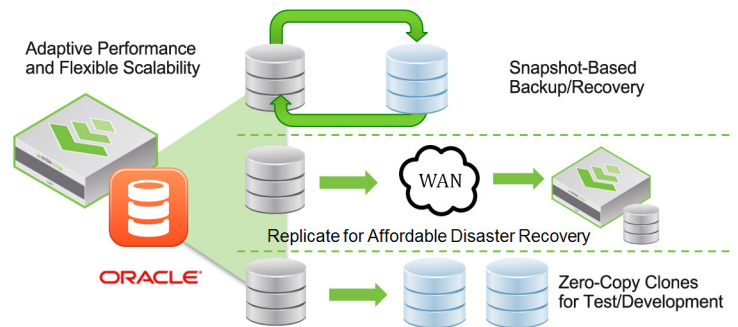
All Nimble Storage systems come with all this rich functionality included, so there are no separate licenses to buy or hidden services fees to worry about.

## Getting Started

Nimble Storage CS-Series is the ideal storage platform for your Oracle database environment. It delivers the performance, data protection, efficiency, scalability and test/development platform that keeps your DBAs productive and your business-critical applications running smoothly.

Get started on your journey:

- Download our technical report for Oracle at [www.nimblestorage.com](http://www.nimblestorage.com)
- Contact your local authorized reseller
- Email us at [info@nimblestorage.com](mailto:info@nimblestorage.com) for a demonstration of the Nimble Storage solution for your Oracle environment



Nimble Storage delivers the performance, availability, scalability, and data protection needed for Oracle database environments.