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Nimble Storage SmartStack for Oracle with Cisco

Converged Infrastructure Building Blocks for Oracle Software

Today, database administrators and architects realize the importance of storage in maintaining services levels and staying on budget, especially in the face of rapid growth. Deploying the right storage solution is critical when utilizing Oracle databases to support business-critical applications. Database administrators and architects are faced with the following challenges:

1. Maintaining services levels and staying within budgets, especially in rapid growth environments
2. Managing costs associated with procuring IT infrastructure
3. Rapidly provisioning more resources to support growing database environments
4. Continuously tuning IT infrastructure to support evolving environments

To address the challenges of both analytic and transactional workloads, Nimble Storage, along with Cisco, Oracle Linux and Oracle VM, offers a converged infrastructure to deliver adaptive performance with high availability, capacity savings, efficient data protection, and improved staff productivity while handling rapid growth. Because of Nimble's intelligent flash-based architecture, customers utilizing Nimble Storage solutions for Oracle database workloads can take advantage of:

- Adaptive performance to easily grow performance and/or capacity to scale to the needs of OLTP and OLAP applications as they grow
- Ease of deployment with pre-configured optimizations and performance profiles to minimize the guesswork of tuning the infrastructure for performance
- Integrated data protection and enhanced availability, enabling organizations to take more frequent backups without disrupting applications, and facilitate quick recovery with Nimble Storage snapshots

A Better Way Forward

Nimble SmartStack™ for Oracle delivers the ideal converged infrastructure for Oracle database online transaction processing (OLTP) and online analytical processing (OLAP) environments with Oracle Linux, in both bare-metal and Oracle VM environments. Whether deploying Oracle on a single symmetric multiprocessing (SMP) server, on virtual machines with Oracle VM, or running Oracle Real Application Clusters (RAC) on multiple nodes, Nimble Storage SmartStack for Oracle is the perfect solution.

Highlights of the SmartStack Configuration for Oracle

- This pre-validated converged infrastructure is based on an Oracle Validated Configuration that includes Oracle Database and Oracle Linux with the Unbreakable Enterprise Kernel.
- The solution components include a Nimble Storage CS-Series array, two Cisco UCS B200 M3 blade servers, Oracle Linux 6 Update 4 with the Unbreakable Enterprise Kernel, and Oracle Database 11g Release 2 or Oracle Database 12c Release 1.

The Nimble Storage CS-Series is certified with Oracle VM 3.2 providing an even more flexible solution leveraging virtualization for functions such as test and development by delivering excellent random I/O performance in Oracle VM environments. The Nimble Storage CS-Series comes with all this rich functionality included, so there are no separate licenses to buy or hidden services fees.

SmartStack Solution Benefits

Nimble Storage delivers the ideal platform for supporting Oracle databases running on Oracle Linux.

Nimble Storage solutions 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 Oracle storage, scaling performance and capacity as your database needs grow.

Simplified Test and Development
Speed up deployments with efficient developer environments without needing additional storage or disrupting production.

Proactive Management
Eliminate the guesswork of tuning Oracle databases with proactive wellness that sends remote alerts for system health, performance, and protection gaps.

The validated design for deployments supporting Oracle databases includes:

Storage

- Nimble Storage CS460G-X2 Series array

Compute

- Two Cisco UCS B200 M3 blade servers
- Two Cisco UCS 6248 Fabric Interconnects

Database

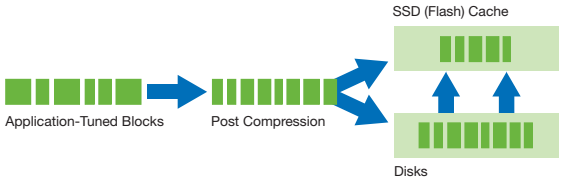
- Oracle Database 11g Release 2 or Oracle Database 12c Release 1

Operating System

- Oracle Linux 6 x86_64 with the Unbreakable Enterprise Kernel

Adaptive Performance

The flash-optimized hybrid Nimble Storage CS-Series storage platform is built on the patented Cache Accelerated Sequential Layout (CASL™) architecture. It 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.



Nimble Storage's flash-optimized hybrid architecture delivers industry-leading price performance for transactional and analytical workloads

Enhanced Protection and Availability

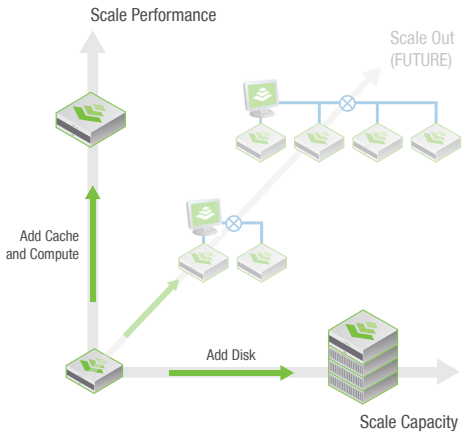
Nimble Storage CS-Series integrates data protection through the use of efficient, instantaneous snapshots. Whether using ASM or a file system such as EXT, the CS-Series can help protect rapidly growing databases without the complexity of external backup solutions. IT administrators and DBAs can take frequent consistent backups of their data, control, and log files simultaneously, eliminating disruptive backup windows for production databases. Nimble Storage snapshots are instant point-in-time copies that do not copy any data on future changes (redirect-on-write). In addition, Nimble snapshots share common data blocks and there is no duplicate data, making them very space efficient. DBAs can store many months' worth of frequent backups locally or on a second system, improving service levels.

Nimble Storage snapshots make recovery simple by enabling 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. For added protection and disaster recovery, snapshots of the database, control, and log files can be efficiently replicated (only changed data) to another CS-Series array.

Improved Efficiency and Scalability

Nimble Storage CS-Series delivers a rich set of efficiency and scalability features that improve return on investment through datacenter space, power, and cooling savings, as well as cost avoidance around buying new storage. Nimble Storage CASL architecture leverages high-capacity disk drives, RAID-6, and compresses (which enables it to store 30 to 75 percent more data in the same space) all data on the array, without any impact to performance throughput or latency. Complementing compression is the use of thin provisioning where storage is only allocated as needed.

The CS-Series provides the ability to scale storage performance and capacity non-disruptively and independently without the upfront investment. For rapidly growing Oracle environments, this translates to flexibility and higher availability. Scaling storage performance is as simple as upgrading the controllers, resulting in higher throughput and



Independently scale performance and capacity to accommodate growing database needs

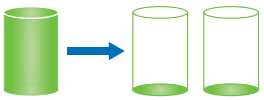
IOPS. IT admins can scale the cache by upgrading SSDs to accommodate larger amounts of active data in the database. This enables IT to non-disruptively grow storage capacity by adding additional disk shelves to scale to hundreds of TB.

Simplified Test and Development

Oracle DBAs can rapidly provision individual developers with their own development environment, with full functioning clones of the production database—for testing, development, patching, reporting, training, or quality assurance. This is because the Nimble Storage CS-Series enables DBAs and application developers to quickly create full functioning copies or clones of Oracle database volumes including data, control, and log files, without taking additional space or impacting production databases.

If impact to a production environment with Nimble Storage is a concern, Oracle DBAs can efficiently replicate full functioning copies of the production databases to another Nimble Storage array, and use the second array for test and development. Nimble Storage can also deliver the value of full functioning clones for testing and development in environments that continue to use their existing non-Nimble SAN infrastructure for production. Oracle DBAs can leverage Oracle Data Guard to replicate from the primary database on non-Nimble SAN, to the Nimble Storage array, and then create a full functioning copy on the Nimble Storage array.

The Nimble Storage CS-Series comes with all this rich functionality included, so there are no separate licenses to buy or hidden services fees.



Rapidly provision test and development environments with zero-copy cloning

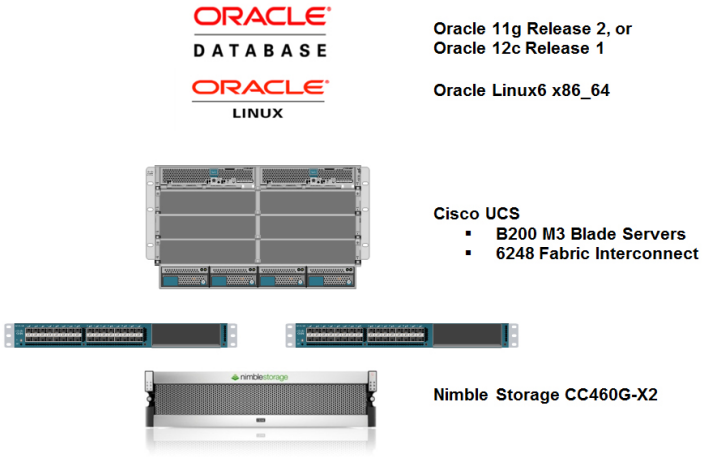
Proactive Management

Nimble's application performance policies eliminate the guesswork of tuning Oracle database. Nimble Storage InfoSight leverages the power of deep data analytics to proactively optimize storage arrays for best performance, deliver detailed reporting on capacity, performance, protection and system health, identify performance bottlenecks, and enable customers to plan for future needs.

The Bottom Line

Cisco, Oracle, and Nimble Storage have created a validated solution for Oracle Database 11g Release 2 and Oracle Database 12c Release 1 on Oracle Linux with the Unbreakable Enterprise Kernel. The combined solution delivers the performance, data protection, efficiency, scalability, and test/development platform that keeps DBAs productive and business-critical applications running smoothly.

For more information, visit www.nimblestorage.com/solutions/oracle or contact an authorized reseller.



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