White Paper

Optimize Oracle Workloads with NetApp Solutions

Unleash the Power of Your Data and Gain a Competitive Advantage with NetApp All-Flash Solutions

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Abstract

Oracle databases facilitate business-critical applications and are key to the success of countless data-driven enterprises. Line-of-business (LOB) owners must provide a responsive, uninterrupted experience for employees, customers, and partners who access Oracle data, and they must provide predictable high performance and continuous availability, even in the face of shrinking budgets. Modernizing the Oracle environment with higher levels of cloud integration, performance, and efficiency can help address the IT challenges and give the business a competitive edge.

This white paper explains why NetApp® technology is the best-in-class storage and data management solution for Oracle. It describes how Oracle database applications running on NetApp systems can help you grow your business, make actionable decisions faster, and deliver a consistent user experience—all while improving data center economics and accelerating your return on investment.

NetApp®

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1 Fuel Your Data-Driven Strategies

In today's data-driven world, Oracle applications play a crucial role in the success of any business. However, disconnected infrastructure and aging storage systems make it difficult for many organizations to get the most value from their Oracle data. Instead of focusing efforts on innovation and moving the business forward, IT departments are left to struggle with:

- Slow overall performance that cannot meet the needs of modern Oracle applications
- Lengthy test and development cycles due to long resource provisioning time
- Exponential increase in costs as the various data center systems that have been acquired over the years consume vast amounts of space, power, cooling, and other resources—not to mention the soaring cost of managing and maintaining all those different devices

Staying a step ahead of the competition requires an agile and efficient IT infrastructure that meets the demand for fast, secure, and continuous access to your Oracle data. You need smart, powerful, trusted solutions that take advantage of modern cloud technologies.

1.1 NetApp and Oracle: Better Together

NetApp® cloud-connected all-flash systems are designed to help organizations accelerate their infrastructure transformation and fuel data-driven strategies. Powered by NetApp ONTAP® data management software, NetApp solutions deliver the industry's highest performance, superior flexibility, and best-in-class data services and cloud integration. You can dramatically improve Oracle performance (by up to 20 times compared with traditional storage) while continuing to support both existing and emerging applications with the NetApp unified data management architecture. NetApp solutions are built for change, enabling you to scale dynamically and move data and applications freely to where they run best—on-premises or in your choice of cloud providers. You can be confident that your business will have the agility and innovation you need to keep up in a dynamic digital world.

2 Stimulate Innovation

To win the race with their competitors, enterprises need to accelerate projects and speed time to market. However, traditional approaches to Oracle test and development system provisioning are based on manual processes, which consume large amounts of time, capacity, and resources—in addition to being error prone. The results are delayed innovation and reduced ability to respond to business requirements.

Modernizing your Oracle environment with all-flash systems from NetApp can help you deliver projects up to 30% faster than disk-based solutions.

2.1 Deploy New Projects in Minutes

Built-in automation enables faster deployment of your Oracle projects with less risk of human error. Because NetApp solutions are tightly integrated with Oracle management tools, you can easily automate application-integrated workflows. For example, system provisioning and prototyping that typically take days to complete are done in just minutes with one-touch, automated provisioning. Cloud volumes can be provisioned in just 8 seconds.

2.2 Shorten Development Cycles

Cloning your Oracle data for testing and development can add hours (sometimes days) to the development cycle. With NetApp FlexClone® thin-cloning technology, you can clone the largest volumes in seconds. Because FlexClone uses just a small amount of space for metadata and uses additional space only as data is changed, you don't incur the added expense of purchasing large amounts of extra storage capacity. You can create as many copies of your full production dataset as you need. If a test corrupts the data, you can start again in seconds, with almost no delay in development. And, because

you can clone data from a primary site, an off-site backup, or a disaster recovery location, your test data is always up to date, enabling better results in less time.

2.3 Scale Seamlessly and Without Limit

By combining on-premises and cloud resources, you have the power to seamlessly grow as business needs dictate. For example, you can instantly spin up a testing and development site in the cloud, and spin it down when the project is complete.

Because NetApp offers a truly unified storage architecture with a single data management system (ONTAP) across all platforms, you can scale capacity and performance without requiring data migration or a change of operating system. You can start small and grow with your business by using high-capacity SSDs or HDDs to scale your storage environment. Storage systems that run NetApp ONTAP can handle SAN and NAS workloads that range from a few terabytes to up to 176PB. You can scale by adding capacity to existing storage controllers or scale out by adding controllers to seamlessly expand your cluster up to 24 nodes. With NetApp solutions for Oracle, storage no longer becomes a bottleneck for projects. Your business is free to expand without limits, across on-premises and cloud resources.

2.4 Make Better-Informed Decisions

With a data fabric powered by NetApp, data is accessible where it's needed most, helping you realize the full potential of your data. Because the data fabric enables you to access your data across your entire IT infrastructure—on premises and in the cloud—you gain better insights into your business. These insights can help you make better-informed decisions to guide your business forward.

NetApp Solution in Action: DG Khan Cement Company

With a production capacity of about 4.2 million tons per year, DG Khan Cement Company Limited (DGKCC) belongs to one of the largest cement producers in Pakistan. Its plants in Dera Ghazi Khan and Khairpur apply the latest dry-process technology to provide high-quality cement for local and international construction projects. DGKCC has about 1,200 employees.

Industry
Manufacturing

Challenge
Keep pace with business needs by providing an IT infrastructure that can support 20% data growth year over year. Simultaneously provide the speed and reliability that mission-critical applications such as Oracle demand.

Solution
The company deployed two NetApp systems running ONTAP data management software. NetApp SnapMirror® replicates data from the production system to the disaster recovery site 75 kilometers away.

Benefits
- Accelerated database performance with flash technology
- Saved 40% of disk capacity with storage efficiency
- Simplified data management
- Optimized support for fast business and production applications
- Prepared for growth with seamless storage scalability

Learn more

3 Deliver a Consistent Customer Experience

In today's always-on world, customers expect to access data when and where they need it. Providing the performance and availability that meet customer needs is critical to maintaining business success. NetApp FC SAN solutions deliver market-leading performance, and with the industry's first true end-to-end NVMe/FC solution, you can get next-generation SAN performance with the industry's first all-flash, all-NVMe array.

3.1 Speed Application Response Times

NetApp all-flash storage systems speed up your Oracle environment with the fastest unified scale-out all-flash array, with up to 1 million IOPS and latency of about 100 microseconds. Combining the industry's fastest end-to-end all-flash arrays with the first truly end-to-end NVMe, NetApp high-performance, highly scalable all-flash solutions enable you to cut application response times in half, so that you can easily support peak usage demands.

3.2 Maximize Availability

Availability is crucial to your Oracle environment. NetApp all-flash systems deliver 99.9999% availability (~31.5 seconds per year of pausing). They can absorb multiple concurrent faults without affecting application performance. Recovering from a drive or node failure takes only minutes and is fully automatic, requiring no operator intervention and eliminating the fire drills that typically occur when a component fails. Nondisruptive software updates and hardware maintenance help deliver nonstop operations.

3.3 Enable 24/7 Operations

Any interruption to Oracle workflows can bring the business to a halt. To maintain business continuity, a disaster recovery plan that meets recovery point objectives (RPOs) and recovery time objectives (RTOs) is essential. For a seamless data protection experience, you can build Oracle solutions that are fully integrated with NetApp Snapshot™ and SnapMirror replication technologies.

Most organizations have a disaster recovery plan, but they might not know whether the plan actually works until it's too late. Halting the production environment for disaster recovery testing is not a viable option for most businesses. With NetApp solutions, you can easily use current data to test your disaster recovery plan. Using NetApp FlexClone technology to clone the disaster recovery site, you can carry out a failover test without influencing or interrupting ongoing replication to the active disaster recovery site. Because FlexClone makes testing fast and easy, you can perform more tests in less time, and you'll feel better knowing that your data is protected.

3.4 Protect Your Data Across Edge, Core, and Cloud

NetApp integrated, automated data protection helps safeguard your data no matter where it resides or moves. NetApp Snapshot copies and SnapMirror replication software send only changed blocks over the network, enabling faster, more complete backups that use less bandwidth and consume less storage space to enable more cost-effective disaster recovery. To get more value from your backup and disaster recovery sites, you can use those secondary data copies for development and testing or for analytics and reporting.

3.5 Maintain optimal performance

Predictive analytics and actionable intelligence using NetApp Active IQ® monitoring keep your NetApp systems operating at peak performance. Active IQ predicts and detects problems with performance and capacity and makes configuration recommendations to help optimize your Oracle environment. By following Active IQ recommendations and mitigation plans, you can avoid bottlenecks and deal with issues proactively.

NetApp Solution in Action: RapidScale

RapidScale is a provider of fully managed cloud solutions that make it easy for businesses of any size to move applications and users to the cloud. Understanding that no two businesses are the same, the company's vision is to provide personalized, customer-oriented cloud solutions.

Industry
Cloud services

Challenge
Differentiate their services to sustain growth and keep customer satisfaction high

Solution
- Deploy NetApp AFF systems to give customers unparalleled performance for demanding workloads such as Oracle databases

Benefits
- Accelerates database transactions and virtual desktop response times up to 20 times
- Delivers a high-performance experience to customers, making RapidScale more competitive
- Eliminates the need for performance tuning at the storage layer, reclaiming valuable engineering time
- Makes flash storage efficient and affordable with deduplication and compression

Learn more

4 Simplify Operations and Lower TCO

Oracle environments can be complex and expensive to operate. To extract the most value from your Oracle investments, you need to simplify the management and maintenance of your environment while improving IT economics. NetApp tools make it easy to understand consumption and costs, so you can optimize your storage infrastructure and keep and store your data where it's most effective. With policy-based quality-of-service (QoS), databases get the performance they need. QoS also reduces costs by allowing you to safely consolidate workloads onto a single system so that you can run production and development side by side on the same system. Multiple storage efficiency technologies allow you to place more data in a smaller footprint.

4.1 Reduce Management Complexity

Solutions built on NetApp all-flash storage systems streamline Oracle operations with up to 90% savings in time and effort compared with existing solutions. NetApp solutions for Oracle offer proven value with fewer components, greater return on investment, and lower TCO. With the most options for private, public, and hybrid cloud deployments, NetApp solutions allow you to put your Oracle data wherever it makes the most sense. As business needs change, you can easily and nondisruptively move your data between cloud and on-premises environments. NetApp ONTAP data management efficiencies simplify management and data protection across your entire Oracle environment, in the data center and in the cloud.

4.2 Eliminate Guesswork

NetApp solutions are fully tested and proven to operate seamlessly with Oracle applications. Capacity monitoring through NetApp Active IQ predicts when you will need more storage, eliminating overprovisioning and overpurchasing. Proactive monitoring from Active IQ predicts potential issues to help reduce downtime and resolve issues quickly, with minimal troubleshooting time.

4.3 Lower TCO

NetApp solutions for Oracle can help you improve IT economics, on the premises and in the cloud. NetApp offers the lowest $/MBps for all-flash arrays in the SPC-2 top ten list, occupying three of the places on the list. Because NetApp solutions allow you to scale compute and storage independently, you pay only for the Oracle licenses you really need. And our deep integration with the largest cloud storage service providers lets you realize the efficiencies of the cloud with a tailored pathway that best suits your business requirements.

NetApp Solution in Action: California State University, Chico

California State University, Chico, is part of the 23-campus California State University system. The school serves 17,000 students.

Industry
Education

Challenge
Provide constant online access to university students and faculty while adhering to strict budget requirements

Solution
- Deploy NetApp AFF8060 system to support the existing data center network and Oracle Real Application Cluster environments

Benefits
- Saves 100 to 200 business days per year of staff time through faster document access
- Doubles the speed of application and transcript request processing by admissions staff
- Handles spikes in usage with no connection drops, enabling admissions, housing, and classroom collaboration to run smoothly
- Received large electric company rebates due to power savings in virtualized data center

Learn more

5 Summary

In the modern data center, IT is charged with achieving maximum performance for business-critical workloads like Oracle, scaling without disruption as the business grows, and enabling the business to take on new data-driven initiatives. By building a hybrid cloud infrastructure with NetApp solutions, you can create a data fabric that enables you to meet business demands and gain a competitive edge now and in the future.

With a NetApp solution for Oracle, you can:

- **Speed innovation.** Modernizing your Oracle environment with all-flash systems from NetApp can help you deliver projects up to 30% faster than disk-based solutions.
- **Deliver a consistent customer experience.** Accelerate application response times and deliver 99.9999% availability to give customers access to data when and where they need it.
- **Simplify operations and lower TCO.** Streamline Oracle operations with up to 90% savings in time and effort compared with existing solutions. The ability to scale performance and capacity separately helps you reduce costs by purchasing only the Oracle licenses you really need. The lowest $/MBps of all-flash arrays in the SPC-2 top ten list helps further reduce costs.

6 Learn More

The following resources provide more detailed information about NetApp solutions for Oracle:

- Customer success story: DG Khan Cement Company
- Customer success story: RapidScale
- Customer success story: California State University, Chico
- Oracle Database solutions from NetApp
- Infographic: Top 10 Reasons Your Oracle Applications Belong on NetApp
- Infographic: NetApp E-Series EF570 and Oracle
- Maximize Oracle Performance and Agility with Symantec and NetApp
- FlexPod® for High-Performance Oracle Real Application Clusters
- TR-3633: Oracle Databases on ONTAP
- TR-4794: Oracle Databases on NetApp EF-Series
- TR-4676: Oracle Databases on ONTAP Cloud with Amazon Web Services
- TR-4690: Oracle Databases on ONTAP Select
- TR-4691: Oracle Databases on ONTAP Cloud with Microsoft Azure
- TR-4514: NetApp AFF8080A EX Storage Efficiency and Performance with Oracle Database
- TR-4592: Oracle on MetroCluster™

Refer to the Interoperability Matrix Tool (IMT) on the NetApp Support site to validate that the exact product and feature versions described in this document are supported for your specific environment. The NetApp IMT defines the product components and versions that can be used to construct configurations that are supported by NetApp. Specific results depend on each customer's installation in accordance with published specifications.

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