

Oracle Exadata: Fueling a Revolution in Business Performance



This paper examines the performance and competitive edge that companies have gained after switching to business platforms based on Oracle Exadata technology. The paper looks closely at improvements in organizations' enterprise resource planning and related business systems—including Oracle E-Business Suite applications—as measured by factors such as speed, high availability, cost savings, and growth enablement.



INTRODUCING THE NEXT TECHNOLOGY PARADIGM

For a long time businesses were stuck with an uncomfortable reality: In order to compete in a world of ever-growing data volumes and processing speeds, you had to keep buying more and more IT infrastructure. It was a world in which you were constantly scaling out: adding more servers, applications, and databases to address every new need—for handling more transactions, for launching new products and services, for building out your online presence, and so on.

Corporate data centers became crowded places in the process, as well as vastly more complex and difficult to manage. Costs skyrocketed for everything from hardware and staffing to maintenance fees and electricity. And today there seems to be no end to the sprawl as companies gear up to tackle a new round of tech-intensive opportunities, including those presented by Big Data and the mobile-social revolution.

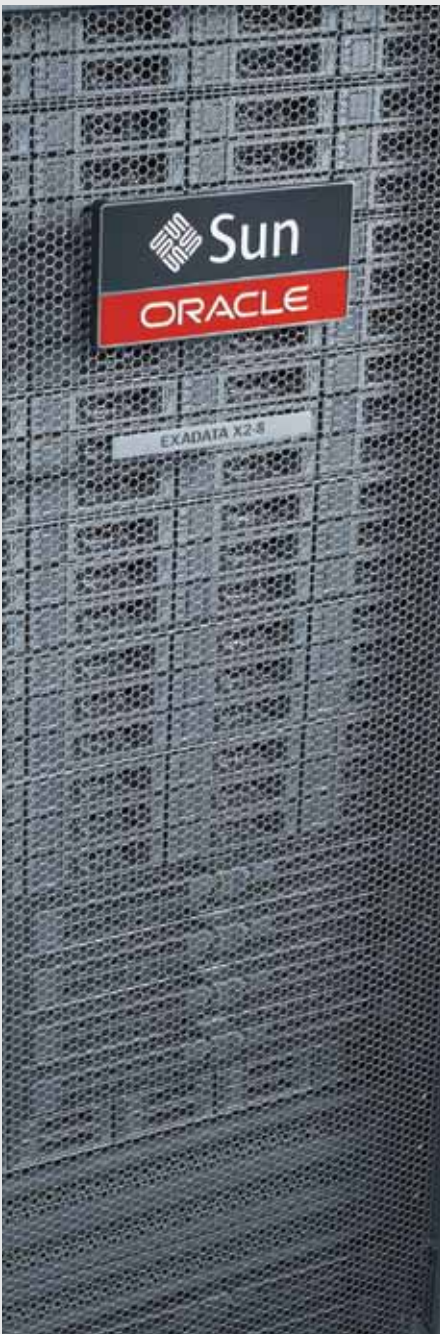
Today, however, companies have hit a critical crossroads. They can no longer scale up their systems by simply doubling or tripling their IT spending on infrastructure sprawl. That's because IT budgets are not infinitely scalable; in fact they are flat to declining in many companies. Moreover, companies that keep adding layers of IT complexity eventually hit a wall, with rising system management hassles taking their toll on business agility, speed-to-market performance, and innovation.

Now there's a better way. It's an approach to managing technology infrastructure that tames infrastructure complexity, boosts application performance without adding costs, and provides ample capacity for business growth. The new strategy, pioneered by Oracle, focuses on building richly integrated and fully optimized systems from the ground up, with hardware and software expressly created to work together to deliver maximum performance.

Oracle Exadata Database Machine embodies this new “engineered systems” strategy, combining servers, storage, and networking equipment in an integrated, pre-optimized box that delivers significantly greater speed, power, and cost-performance. Exadata appeals to organizations that are seeking an alternative to the array of generic servers, storage and networking gear that require expensive, ongoing efforts to test, tune and manage. Moreover, Exadata attracts organizations that are looking for faster, more reliable performance for their mission-critical business applications.

“By running E-Business Suite on Exadata our business can keep moving. Now that we can evaluate our inventory at the beginning of the shift, we’ve been able to eliminate stock shortages, which is helping to increase sales and customer satisfaction.”

Matt See, Consultant, Centric Consulting, working with PetSafe



Even when optimally configured and tuned, traditional non-engineered systems rarely match Exadata’s performance in crucial areas. The reason: a set of new technologies that distinguish Oracle’s engineered systems, including:

- A “scale-out architecture” that off-loads data-intensive processing to the storage system, dramatically speeding workloads
- Smart Flash Cache technology that accelerates performance by automatically caching frequently accessed data
- Database compression technology that reduces I/O traffic and enables cost savings
- Extreme high availability through built-in features like hardware redundancy, database clustering, automatic storage management, and disaster recovery software

This paper examines the performance and competitive edge that companies have gained after switching to business platforms based on Oracle Exadata technology. The paper looks closely at improvements in organizations’ enterprise resource planning (ERP) and related business systems—including Oracle E-Business Suite applications—as measured by factors such as speed, high availability, cost savings, and growth enablement.

GETTING FASTER: THE TECHNOLOGY OF BUSINESS ACCELERATION

In an economy where competition can emerge overnight from any corner of the globe, speed and agility are crucial to success. That means fast product development, tightly executed go-to-market strategies, instant course corrections, and a rapid and satisfying customer experience. Slow-to-react businesses face an uphill battle in this new landscape and more than a few are left playing catch-up to speedier, nimbler rivals. Getting first to market with innovations or simply reacting swiftly to competitive threats are capabilities that the best companies engineer directly into their business infrastructures. Many start by ensuring their primary business systems—their ERP, CRM, supply chain, and analytics applications—aren’t slowing down operations.

That was the case at PetSafe, a leading maker of pet training and related devices. The company’s European subsidiary was often left waiting for inventory data to arrive after all-night batch processing at its US headquarters. The situation changed when PetSafe moved to an Oracle Exadata platform and cut processing to less than two hours from six hours, allowing Europe to access operational and demand-planning data at the start of the day. “By running E-Business Suite on Exadata our business can keep moving,” said Matt See, a consultant with Centric Consulting, which assisted with the Exadata implementation. “Now that we can evaluate our inventory at the beginning of the shift, we’ve been able to eliminate stock shortages, which is helping to increase sales and customer satisfaction.”

Other companies report similar boosts in application performance after adopting Oracle Exadata. Alpha Natural Resources, one of America’s top coal producers, saw a jump in

“For months leading up to our conversion over to Exadata, we averaged two unplanned outages every month with our hosting provider. We have now completed a full year on Exadata without a single unplanned event.”

Jeff Bauserman, director of ERP development, Alpha Natural Resources



the speed and throughput of its Oracle E-Business Suite modules, with payroll running in minutes instead of hours, and accounts payable reconciliations finishing in 30 minutes instead of more than five hours. Faster financial processes will help Alpha cut administrative overhead and accelerate cash flow.

ADNOC Distribution, a subsidiary of Abu Dhabi Nation Oil Company, the world’s fourth biggest oil company as measured by hydrocarbon reserves, switched to running Oracle E-Business Suite on Exadata, becoming the first oil and gas company in the Middle East to implement Oracle Exadata. The move yielded immediate results, helping the company boost order processing speed 5x–10x and complete payroll processing in 20 minutes compared to 2.5 hours before. In its back offices, the energy company shrank financial closing cycles from hours to minutes and eliminated long waits for business reports. The company attributes the improvement to Exadata’s scale-out architecture, query-accelerating technologies such as Smart Scan, and the platform’s massively faster I/O throughput performance. All this has added up to savings of thousands of hours of transaction time per year and translated into a more productive and competitive workforce.

BUILDING A NON-STOP BUSINESS: HOW EXADATA ENSURES HIGH AVAILABILITY

For businesses that rely on uninterrupted online environments, service outages can be devastating. According to a *USA Today* survey of 200 data center managers, more than 80% reported that their downtime costs exceeded \$50,000 per hour.¹ For more than 25% of these managers, downtime cost exceeded \$500,000 per hour. Even more costly may be the loss of future sales as competitors exploit downtime events to woo disgruntled customers. American Airlines’ reservation-system outage, Bank of America’s 6-day service interruption, and Google’s 2-day Gmail outages are just a few recent examples of why high availability has landed squarely on the radar screens of both IT and business executives.

Exadata is specifically engineered for high availability. The architecture includes safeguards against every type of failure, from hardware and software crashes to human error. Each Exadata Database Machine features redundant components, including InfiniBand networking gear, power supplies, and database and storage servers. Built-in clustering technology protects against database failures while Oracle’s Automatic Storage Management (ASM) feature does the same for the storage environment.

By switching from a hosted IT service provider to an on-premise Exadata platform, Alpha Natural Resources reduced unplanned downtime by a significant margin, despite the hosted provider’s reputation for high availability. “For months leading up to our conversion over to Exadata, we averaged two unplanned outages every month with our hosting provider,” said Jeff Bauserman, director of ERP development with Alpha Natural Resources. “We have now completed a full year on Exadata without a single unplanned event.”

¹ www.availabilitydigest.com/private/0206/benchmarking.pdf

“Our business is expanding rapidly and having a scalable and highly available solution is essential to meeting our customers’ expectations. Oracle is helping us to meet those goals.”

Eng. Saeed Al-Rashidi, Senior Vice President—Technical Group Engineer, ADNOC Distribution

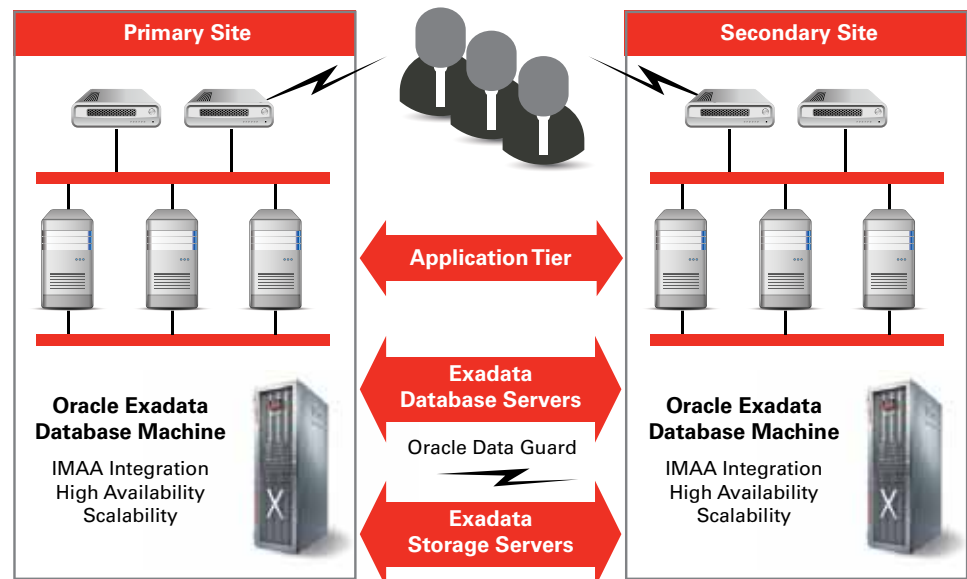
HOW EXADATA MAXIMIZES PERFORMANCE

- Exadata Smart Scan.** The smart storage software in Exadata offloads data-intensive query processing from Oracle Database 11g servers to Exadata’s storage layer for parallel data processing. Because there’s less data moving through the higher-bandwidth connections, performance improves significantly as well as concurrency for simple and complex data warehousing queries.
- Exadata Smart Flash Cache.** With more than 5 terabytes of flash memory per full rack, Oracle Exadata intelligently caches “hot” data and assigns the rest to disk storage, giving organizations the speed of flash with the cost-effectiveness of disk storage. Exadata Smart Flash Cache can process up to 1.5 million random I/O operations per second and scan up to 50 GB of data per second to deliver ultra-high performance for OLTP applications.

Companies frequently pair their production environment with a remotely located Exadata box and incorporate DataGuard software to create a hot standby database, providing even greater protection against site failures and disasters. For companies like ADNOC Distribution, the second planned Exadata Disaster recovery site will not only provide robust recovery capabilities, but also serves as a convenient resource for running backups and online reporting, relieving the load on its production site, as shown in Figure 1.

“Our Exadata highly available architecture will support meeting business-defined SLAs which is a key aspect for providing 24/7 services across the country,” said Ali Abdul Aziz Al-Ali, Vice President — Information Technology, ADNOC Distribution.

Figure 1: Robust Disaster Recovery



Because Exadata’s InfiniBand network resides entirely inside the engineered system, organizations create database backups and clones faster than before. PetSafe, for example, cut its backup procedure from hours to just 16 minutes after moving to Exadata, and also addressed auditor’s concerns over business continuity and risk. “It was very difficult to meet recovery SLAs when it takes that much time to back up and restore a database,” said the consultant See.

SIMPLIFYING AND CONSOLIDATING

Reducing complexity has emerged as a top priority for cost-conscious IT organizations that have been struggling to combat server and database sprawl. Companies get in the habit of deploying extra standalone boxes for every new application and segregating online transaction processing (OLTP) from analytics and data warehouse applications. Efficiency



suffers in these increasingly complex, “siloed” environments, with individual servers and equipment often going underutilized and management costs rising from year to year.

The new strategy stresses simplicity through infrastructure consolidation. Consolidating applications and databases on fewer machines reverses sprawl, increases system and capital utilization, and allows organizations to simplify by standardizing processes, procedures and hardware. This invariably cuts costs, as companies spend less on equipment and licensing and on the effort needed to manage the streamlined environment.

This is the vision being pursued by consumer products innovator PetSafe. “We could put all of our databases on Oracle Exadata and eliminate servers and enterprise database licenses,” said See. The company plans to put all of its new systems on Exadata to avoid buying more licenses. “By being able to do database consolidation in the future on Exadata database machines, the company not only gained extreme performance improvements but also cut down on costs,” See explained.

Similar gains from Exadata-driven consolidation are being reported by oil and gas company ADNOC Distribution, which ran a major consolidation project to pull together scattered databases. So far the company has migrated eight databases—including a mix of Online Transaction Processing System (OLTP) and Business Intelligence (BI) workloads—over to a single Exadata machine with its unified storage and networking infrastructure. The consolidated environment is easier to manage, executives say, especially when combined with Oracle Enterprise Manager 12c, a software solution that works in tandem with Exadata to automate routine tasks from testing and deployment to proactive monitoring and ongoing maintenance. “Exadata and Enterprise Manager allows you to manage everything from a single console,” said Awad Ahmed Ali El Siddig, a senior database administrator in the company’s Infrastructure & Data Center Department. “You can provision, de-provision and expand your storage while your applications are still running—and all of this is happening with extreme performance.”

GETTING LEAN: EXADATA DRIVES COST SAVINGS

While Exadata is proving its worth as a business accelerator and high availability platform, the engineered systems approach also wins plaudits for its cost-saving prowess. For a lot of companies, a big portion of those savings will come from cutting back on licenses as they put most or all their databases inside a single Exadata Database Machine. One company in this study (ADNOC Distribution) says it’s expecting to cut licensing costs 40% after consolidating on an Exadata Quarter Rack and shedding a majority of its standalone database licenses. With a total cost savings of \$600K for database licensing, ADNOC Distribution expects to achieve an ROI of \$2.5M over five years. The company will save even more over this period by cutting back on annual software maintenance costs.

Exadata’s simplified system management generates further savings by helping organizations optimize workloads and staffing, boosting labor productivity. Savings start from day

one, companies report, with Exadata's pre-tested, pre-configured architecture allowing IT to minimize time-intensive system setup, deployment, and tuning efforts. When Alpha Natural Resources tallied the savings potential of Exadata, it determined an Oracle engineered system would actually be less expensive to own than its current hosted service, sealing its decision to switch. Executives say the company is on track to reduce its total ownership costs by half, saving Alpha \$650,000 annually and approximately \$3.25 million over five years.

Figure 2: Saving with Exadata: Cost and Benefits Over Five Years

Alpha Natural Resources Exadata Database Machine was less expensive to own than its legacy hosted infrastructure service.

	Impact
Hosting Provider Contract	(\$8.7M)
Hardware/Software Purchase	\$2.15M
Hosting Provider Early Termination Fee	\$0.35M
Addition of Two Employees	\$1.5M
Managed Services	\$1.0M
Additional Oracle Maintenance	\$1.3M
Net Savings*	\$2.4M

*\$2.4 Million/5 Years = \$480K/year

**Figures represent constant 2012 dollars

SCALING OUT: DRIVING GROWTH AND INNOVATION WITH EXADATA

While cost control is a big lure, some companies are finding an even greater attraction in Exadata's ability to support growth and innovation. With Exadata's native scale-out architecture, which offloads data-intensive SQL operations into the Oracle Exadata Storage Servers, companies remove most of the I/O and storage bottlenecks that can lead to delays in business initiatives and curb growth. With Exadata, companies add capacity rapidly and cheaply, effectively absorbing the demands of growth and innovation.

For companies like PetSafe, growth can come in sharp increments when it's pursuing acquisitions. With Exadata, PetSafe now has an infrastructure that will allow it to ratchet up capacity—from its current Exadata Quarter Rack up to a Half Rack or Full Rack—as it integrates new business units. "PetSafe has a pretty aggressive acquisition strategy and executive management didn't want to worry about having the infrastructure to handle it," said See, the business consultant. "Whatever solution we decided on, it had to be extremely scalable." Executives also say that the platform's scalability will allow it to develop and launch new products, including planned cloud-enabled services, on an ambitious timeline.

“With Exadata, you can create a highly available, best-practice-compliant database in a couple of hours, reducing a lot of time in deployment and testing.”

Awad Ahmed Ali El Siddig, Senior Database Administrator,
Infrastructure & Data Center Department, ADNOC Distribution

Today energy leader ADNOC Distribution handles more than 250 million financial transactions a year on its Exadata-supported Oracle E-Business Suite platform that serves, concurrently, more than 3,000 internal users daily. Those numbers are expected to rise as the company expands its network of filling stations, convenience stores, and auto maintenance shops. The retail outlets also benefit from Exadata’s built-in scalability, which allows headquarters to deploy new applications faster than ever.

“With Exadata, you can create a highly available, best-practice-compliant database in a couple of hours, reducing a lot of time in deployment and testing,” El Siddig said. ADNOC Distribution’s IT organization spends less time optimizing the platform, he said, because “the full stack arrives pre-tuned and often provides far better results compared to any in-house tuning effort.” Finally, executives say that having a tightly integrated engineered system dispels concerns over security threats that can arise in a fast-growth environment. “The whole platform is already secure when you receive it. It’s running a secure operating system, each node is secure, and the parameters for secure administration are already set,” El Siddig said. “And because of the system extreme performance, you can turn on all the security and auditing features that you need without impacting system performance. This is a key aspect to meet internal and external auditing regularity.”

CONCLUSION

As businesses confront a future that will demand record levels of computing and storage firepower, they are facing a dilemma: How to scale out their IT infrastructures to tackle this challenge without adding more layers of cost and complexity. Now, with Oracle Exadata Database Machine, companies have a clear alternative to buying more servers, storage, and networking gear. The engineered systems approach is paying off for companies across multiple industries, offering significantly more speed, availability, manageability, and scalability. Exadata is also proving to be an ideal platform for deploying business-critical Oracle E-Business Suite applications, with companies able to easily scale their ERP systems to handle the growing transactional and throughput demands of an expanding business—all while controlling costs and infrastructure sprawl.

* * *

“Oracle products are engineered to work together and gives us peace of mind that we will have the high availability and functionality we require to meet our goals for business growth. For that reason, Oracle is our preferred IT partner.”

Chris Chandler, Chief Financial Officer, Radio Systems Corporation (PetSafe)

By adopting the Exadata Database Machine, PetSafe will have:

- The fastest possible Oracle databases
- An infrastructure that will scale as PetSafe continues to grow
- The most “highly available” Oracle configuration
- Reduced data center floorspace and power requirements
- Disaster recovery protection (if deployed across data centers)
- Reduced infrastructure management labor

CASELET 1

PetSafe: Innovating Faster with Exadata and Oracle E-Business Suite

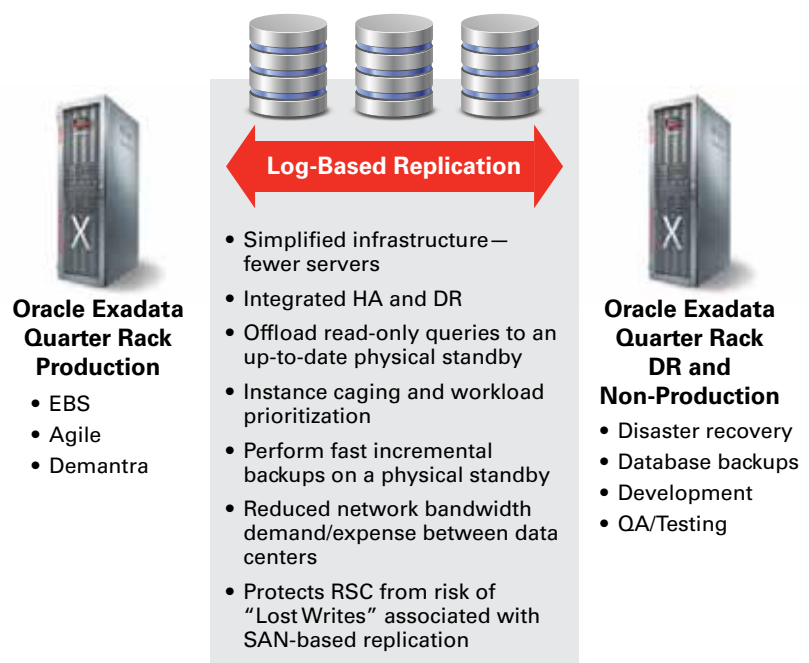


Headquartered in Knoxville, Tenn., Radio Systems Corporation—better known to many dog and cat lovers as PetSafe—is the industry leader in the management of pet behavior, offering pet training, containment, safety, and lifestyle products. As demand for PetSafe’s products took off, the company needed enterprise applications that could handle the resulting surge in financial transactions, product shipments, and customer records. For the last five years, the company’s data traffic had been growing 30% a year as new orders flowed in from large, brick-and-mortar retailers such as Walmart and Pet Smart, as well as e-commerce giants like Amazon.com.

The explosion in data put a strain on PetSafe’s business systems. Users in China and Europe, for example, complained about a sluggish online experience, and nightly information processing jobs in the U.S. took as long as six hours. And speed was only one concern: The company also worried about having a truly resilient system that would enable it to keep critical systems available continuously and bounce back instantly after any kind of malfunction or natural disaster.

PetSafe examined its options, including updating its SAN and installing new servers and switches. But a better solution soon emerged: moving to a new platform based on Oracle engineered systems technology, specifically Oracle Exadata. “If we just refreshed what

PetSafe’s Exadata Architecture



“Oracle Exadata has enabled us to deliver exceptional service to our business users while reducing the cost involved. Exadata has been a big win for our business and for IT.”

Saul Hernandez, CIO, Alpha Natural Resources



we had we were looking at a 2- to 3-times improvement, but if we purchased Oracle Exadata, we were looking at a 15- to 20-times improvement in performance,” said Roman Havrylyak, ERP Manager. “Oracle E-Business Suite on Exadata is capable of delivering extreme throughput with more users supported per core.” Cost analyses also showed that Exadata would be cheaper to own and scale out as the company continued to expand both organically and through acquisition.

According to PetSafe’s CFO, “things are 100% better” since moving to Exadata, with the company reporting significant performance gains when running E-Business Suite on Exadata compared to its legacy application infrastructure. Improvements run the gamut from speedier application performance to faster business reporting to more robust disaster recovery capabilities. Specific performance gains include:

- Nightly batch processing went from 6 hours to less than 2 hours.
- Full ATP-system refresh was 3 hours and 45 minutes and now completes in 36 minutes.
- Time to run a custom pick-slip report fell from 20 minutes to 1 minute.
- Full system backup takes 16 minutes compared to 3.5 hours before.

The company is also saving money after consolidating all of its Oracle databases on a single Exadata machine. Not least, PetSafe now has an infrastructure that will allow its business to continue to grow.

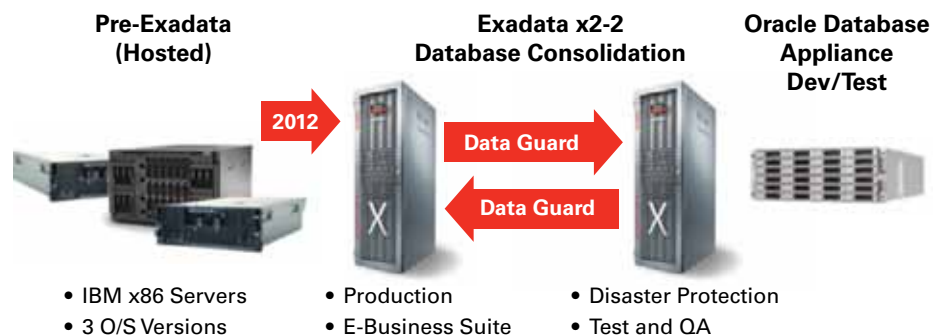
CASELET 2

Alpha Natural Resources: Global Coal Producer Fuels Growth with Exadata



Alpha Natural Resources is one of the largest coal producers in the U.S. and the world’s third largest supplier of metallurgical coal used in steel production. The Bristol, Va., based company operates about 150 mines and 40 coal preparation plants located throughout Virginia, West Virginia, Kentucky, Pennsylvania and Wyoming. To boost performance and

Gaining Failsafe Redundancy with Exadata



“Building the right infrastructure platforms that can meet the organization goals today and in the future is the most difficult part of the game, and this is where Oracle Engineered Systems is helping us to succeed.”

Awad Ahmed Ali El Siddig, Senior Database Administrator,
Infrastructure & Data Center Department, ADNOC Distribution

**Behind Alpha’s Performance Gain:
Drastically Shorter System
Wait Times**

- Single block I/O times are 14x faster
- Log file sync (commit wait) are 28x faster
- Log file parallel (by LGWR) writes are 16x faster
- DB file parallel (by DBWR) writes are 2x faster

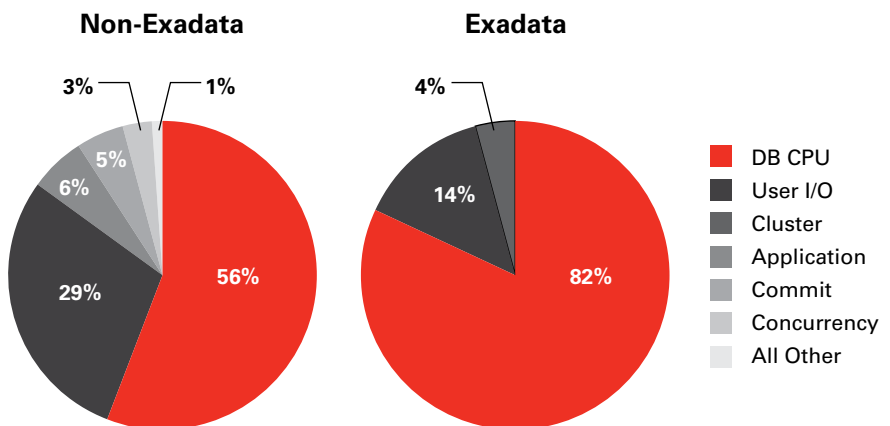
cut costs and complexity, Alpha decided to move from its hosted services arrangement to an on-premise solution built around Oracle Exadata. “Given what we’re currently paying, we were able to come up with a great ROI with Exadata,” said Jeff Bauserman, Alpha’s director of ERP Development.

Alpha has seen significant benefits from the move to an Exadata platform, which serves about 1,500 employees. Users have reported improved E-Business Suite application performance, including 5- to 10-times faster processing for key business functions running on Exadata. Payroll procedures and end-of-month processes, for example, were substantially shortened, as were key financial reconciliation routines. IT managers attribute the performance boost in part to Exadata’s ability to minimize I/O bottlenecks. “System scalability is no longer limited by commit or concurrency waits,” said Mark Behne, manager of Oracle Technical Services at Alpha.

The company has reduced unplanned downtime significantly and pushed availability to 99.95% and cut total ownership costs in half. Overall, the move to Oracle Exadata is expected to save Alpha \$650,000 annually.

No Waiting: Exadata Delivers Optimal Database Wait-Time Profile

Exadata technology with its SmartScan and PCI flash memory speeds data processing and enables scalability. Now there’s minimal waiting for I/O, cluster, and other database processes, leaving the majority of time spent on CPU.





CASELET 3

ADNOC Distribution: Exadata Improves Business Productivity Performance 20X

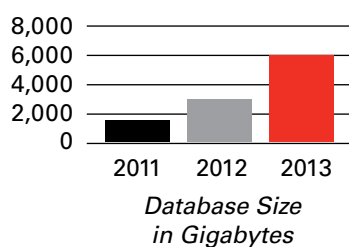
Established in 1971, state-owned Abu Dhabi National Oil Company (ADNOC) is one of the world's largest integrated oil and gas companies, controlling the fourth largest oil reserves of crude oil. ADNOC Distribution is a subsidiary of ADNOC, whose operations span the full breadth of the oil and gas industry, including exploration and production, refining, maritime shipping, and distribution of refined petroleum products through a network of more than 250 service stations.

Given the strategic value of its business applications, ADNOC Distribution grew concerned when a steady rise in business transactions occurred—much of it due to skyrocketing purchases at its popular filling stations across the region—started to take a toll on system performance. “The explosion in financial transactions created bottlenecks in our platform that impacted everything from customer service and business reporting to application testing, deployment, and backup,” said Awad Ahmed Ali El Siddig, senior database administrator, Infrastructure & Data Center Department. The proliferation of different databases supporting business transactions and analytics also hurt performance and required extra manpower to administer, raising costs.

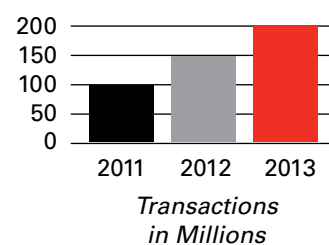
ADNOC Distribution selected Oracle Exadata because the engineered system could handle the company's data warehouse and transactional needs together in one cost-effective machine and do so with market-leading speed and scalability. “We can combine an OLTP processing system and a data warehouse in a single unified box and at the same time deliver a high level of performance, availability, and scalability,” said El Siddig.

ADNOC Distribution's Surging Business Drives Database and Transaction Growth

Database Growth



Transactions Overview



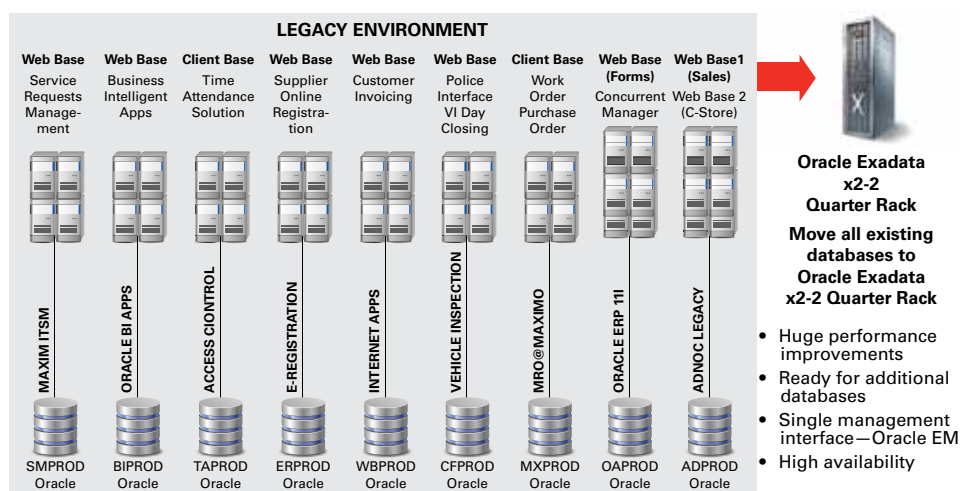
“We are very confident now that our infrastructure-critical systems are fully secure, easily scalable and capable of handling all the additional transactional workloads.”

Ahmed Mohammed Al-Shamsi, Infrastructure & Data Center
Department Manager, ADNOC Distribution



Managers said the Exadata system has helped the company handle a surge in transactions at its network of popular filling stations and convenience stores. “We are able to double and triple the number of transactions at the filling stations without compromising performance,” El Siddig observed. In the back office, performance has been equally impressive, with financial closings that used to take 14 hours being completed in 30 minutes. Gone are the long queues of reports waiting to be run—along with the frustration experienced by the business analysts waiting for results.

Exadata Facilitates System Consolidation at ADNOC Distribution



Managers said Exadata deliver better performance results, 20 times faster than its earlier SAN and Blade System design. “You can manage everything from a single console, you can provision, de-provision and expand your storage while you are applications are online running—and all this is happening with extreme performance,” said El Siddig. ADNOC Distribution also saved by consolidating 10 scattered databases onto a single Exadata box, sharply reducing licensing costs as well as power and cooling requirements. All of this has contributed to total cost saving of \$600K for the database licensing resulting in 40% reduction on licensing cost, and expected to achieve ROI of \$2.5 million over five years.

ABOUT THIS CASE STUDY

Research and analysis for this study was conducted by Mainstay based on interviews with employees of the featured companies, review of planning documents and searches of industry literature.

Mainstay is the leading provider of independent value assessment and IT strategy services. For more information, please visit www.mainstaycompany.com. Information contained in this case study has been obtained from sources considered reliable but is not warranted by Mainstay.



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ADNOC Distribution, Leading Oil & Gas Company, Achieves Extreme Performance After Switch to Exadata

Exadata drive performance gains for E-Business Suite transactions and data warehouse applications

Sales and Retail Systems Get Performance Boost

Process Name	Current System	Exadata System	Improvement
Customer Auto Blocking	30 Minutes	1 Minute	30X
Monthly Invoicing	3 Hours, 40 Minutes	10 Minutes	22X
Transaction Validation/ Posting	4 Hours	15 Minutes	16X
C-store PO Entry	4 Minutes	45 Seconds	5X
Extra Working Hours Processing	10 Hours	2.5 Hours	4X

Exadata Accelerates ERP Applications

Process Name	Old System	Exadata System	Improvement
Employee Drill Down Info	2 Minutes	3 Seconds	20X
Payroll Processing	2 Hours, 30 Minutes	20 Minutes	8X
Inventory Transaction Time	10 Minutes	2 Minutes	5X
Full Database Backup	2 Hours	30 Minutes	4X
Stock Transaction Inventory Report	8 Minutes	8 Seconds	60X
Employee Leave Approval	1–2 Minutes	1–2 Seconds	60X

Data Warehouse and BI Processes Run Faster on Exadata

Process Name	Old System	Exadata System	Improvement
ETL Loading Operation	7 Hours	1 Hour	7X
Executive Dashboard	2 Minutes	10 Seconds	12X
FIN Analytics Gain/Loss Reports	1 Minute	5 Seconds	12X
HR Analytics Reports	2 Minutes	10 Seconds	12X
Sales Profitability Report	2 Minutes	5 Seconds	24X