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## Case Studies

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**ORACLE®**

**Migrating from Teradata to Oracle**

**Three Customer Case Studies**

**January 2006**

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## Introduction

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Enterprises using NCR's Teradata data warehouse platform can find themselves facing several ongoing challenges. These challenges include the high costs of Teradata proprietary software and hardware upgrades, a restricted selection of technology partners and third-party tools, and a limited pool of individuals with Teradata skill sets and expertise who command premium rates. Many organizations have discovered a more cost-effective alternative — migrating from their proprietary Teradata system to an open Oracle business intelligence and data warehousing platform. They made the switch without significant disruption to their core business activities and have realized considerable return on investment.

This study briefly enumerates the multiple advantages an Oracle platform has over Teradata, and describes how three actual businesses have seized these advantages by migrating from Teradata to Oracle.

## The Business Case for Oracle over Teradata

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Advancements in technology coupled with the need for business change causes many enterprises to reconsider data warehousing strategies that are based on proprietary data warehouse technologies such as NCR's Teradata. Data centers face rapidly changing business requirements and a demand for increased productivity and efficiency, along with constant pressure to reduce expenses. Many are now taking a much closer look at the cost of data center solutions and are evaluating the viability of Off-the-Shelf (OTS) and commoditized hardware as part of the infrastructure, an infrastructure that Oracle can fully leverage.

### Comparative Costs

A system using OTS hardware offers far more pricing choice over one using proprietary hardware. Commodity hardware is subject to market competition that drives down prices. The use of OTS hardware also leads to greater flexibility in tailoring purchases to company requirements, rather than having those decisions driven by the vendor.

Teradata will most commonly position very expensive high-end servers for potential growth far in excess of a customer's real needs. By contrast, where customers' expanding requirements demand additional growth, Oracle's scalable alternatives

enable those customers to buy what they need when they need it at current price points, which results in lower costs than a Teradata system entails. In some cases the cost of merely upgrading a Teradata system is nearly as expensive as purchasing an entirely new one and deploying Oracle on a commodity platform.

Oracle offers lower total costs for software, as well. Since Oracle is the data warehouse market leader,<sup>1</sup> widespread support exists among third-party software vendors. This not only reduces integration challenges in a given enterprise, but also drives down costs through the same competitive market principles that apply to OTS hardware.

Finally, the consolidated architecture of Oracle's solution reduces costs. Oracle's database comprises ETL, OLAP, and data mining, eliminating the need for multiple specialized business intelligence servers.

## **Cost of Administration and Deployment Skills**

Oracle's integrated solution dramatically cuts the ongoing expense of licensing, training, and administration compared to multiple specialized intelligence solutions. A single-vendor, integrated solution for data warehousing and business intelligence also reduces the risks and costs involved in integrating disparate products. Since Oracle Database 10g is completely integrated with Oracle development and business intelligence tools, organizations can rapidly develop efficient business intelligence applications, further expediting ROI.

Oracle has a much larger installed base than Teradata, so Oracle expertise is much more readily available among data warehousing administrators, consultants, and designers. A recent search of Oracle skills on the Monster.com jobs portal revealed over 5,000 entrants listing Oracle skills, compared to only 85 listing Teradata knowledge. Teradata experts are typically more difficult to find and retain, and often command premium salaries.

## **Better Performance**

Hundreds of Oracle's customers have successfully deployed multi-terabyte data warehouses on a variety of 64-bit SMP and NUMA platforms and on RAC Linux clusters using commodity platforms. Oracle Consulting Services and Oracle's partners have built thousands of Oracle data warehouse solutions, including data marts and enterprise data warehouses well into the tens of terabytes. Because they deploy OTS mid-range servers,

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<sup>1</sup> IDC, September 2005 — *"Worldwide Data Warehousing Tools 2004 Vendor Shares"*

these solutions are much more cost-effectively scaled to keep pace with a data center's growth.

Oracle's consolidated server and storage model simplifies the enterprise data infrastructure, reducing administrative complexity and increasing the productivity of an organization's staff. This superior architecture can result in a host of performance-related benefits, including:

- Better data access and improved query performance.
- Extraction times reduced by as much as 50 percent.
- The ability to quickly produce canned reports.
- Native connectivity and extended support through a variety of Oracle BI tools and partner products.
- Tight integration of analytics and data mining in a single database engine, enabling high-performance analysis without introducing the need for costly time delays associated with moving data into data marts.

## Emerging Trends

Oracle's technology is designed with an eye on the future. It accommodates next-generation warehousing, which require a scalable database that can handle high concurrency and updates (that is, OLTP characteristics of near real-time data warehousing). Oracle Database 10g includes key features such as built-in queuing, replication, and fast copy capabilities (Oracle Streams, Transportable Tablespace), built-in XML capabilities for handling multiple document types and metadata, and built-in ANSI standard SQL Analytic Functions and OLAP for sophisticated analysis in the database.

Oracle's open standards approach and widespread ongoing support among third-party vendors gives companies numerous options for designing best-of-breed business intelligence solutions tailored to provide optimal performance. Oracle's dominance in the market ensures that these partners will continue to develop around emerging Oracle features well into the future.

The following sections describe how actual companies have successfully migrated their data warehouse solution from Teradata to Oracle, and how they have benefited as a result.

## Case Study 1 – Tele2UTA Austria

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When Tele2UTA acquired Netway, one of Austria’s most successful Internet providers, Tele2UTA faced a decision. It had grown to become Austria’s leading provider of telecommunication services, delivering phone services to 520,000 customers and Internet connectivity to 28 million customers in 24 countries. The company’s success relies heavily on the strategic use of business intelligence mined from its 1.5 terabyte data warehouse, which contains approximately 1.8 billion Call Detail Records (CDRs) and grows by two to three million CDRs per day. The data consolidation required by the Netway merger could not leverage Tele2UTA’s existing Teradata data warehouse, since Tele2UTA could not justify the price of the needed Teradata upgrade. Upon investigation, Tele2UTA found that deploying an entirely new Oracle-based solution would cost less than the Teradata upgrade alone.

“The high cost of upgrading the existing Teradata system prompted us to opt for an Oracle infrastructure, instead,” says Kurt P. Buchleitner, Tele2UTA Austria’s Business Intelligence and Data Warehouse Manager. “It now appears that our return on investment will be realized a year earlier because we switched.”

In all, the system cost savings realized by moving to Oracle rather than upgrading the Teradata platform amounted to 50 percent. Tele2UTA was able to move from high-end proprietary hardware to a fully scalable Sun V880 midrange server with a much better cost-performance ratio.

“Why would we need such a large machine if we can get the same power with an Oracle database and much smaller hardware?” asks Mr. Buchleitner in reference to the Teradata hardware proposal. In fact, Tele2UTA was able to double the number of CPUs and increase memory (because the Oracle-based open solution can support more memory). Mr. Buchleitner emphasizes that “this approach was still more cost-effective than the Teradata approach of going to disk.”

The data migration went quickly, required minimal code modifications, and was completed in a little over six months by Oracle Services. Most importantly, the migration caused no interruption in the company’s core business operations.

“Personally, I did not notice there was a migration going on,” reports Rainer Roesner, Tele2UTA’s chief controller. “There was virtually no disruption of our usual processes.”

Mr. Buchleitner reports that Teradata cast doubt on Tele2UTA’s ability to load the Oracle warehouse successfully. However, the company not only accomplished it, they

also improved query performance and reduced extraction time by 50 percent — eliminating ongoing complaints regarding lengthy data upload times. Mr. Roesner agrees, adding: “I think the most positive change was that before migration we regularly received e-mails from the business intelligence team complaining that uploads had not been successful and data was not up to date. Those e-mails have stopped altogether.”

A large part of the rapid ROI Tele2UTA realized is due to time saved in setting up and maintaining the data warehouse system, time now spent on strategic development for their business users.

“We are able to implement our users’ requirements much faster than before,” Mr. Buchleitner says. “Our development production has increased roughly 300 percent without any added expense.”

Contributing to these impressive results is Tele2UTA’s ability to leverage widely available in-house and external Oracle expertise, coupled with Oracle’s lower learning curve. Teradata administrators, by contrast, were always difficult to locate and commanded as much as three times the salary.

One of the most important benefits gained by the switch is the ability to create and deliver reports with integration to an enterprise portal within a matter of minutes — an efficiency-boosting feat entirely impossible with the Teradata system.

“Our data warehouse went from an analytic island to a fully integrated open system,” Mr. Buchleitner explains.

The migration has ushered in a new era for Tele2UTA’s business intelligence. It has given Tele2UTA virtually unlimited information access. Data sources previously difficult to reach using the Teradata system can now be accessed quickly. End users can retrieve information quickly and easily using tools of their own choice. For example, Oracle Reports, Oracle Discoverer, or JavaServer pages are now all made accessible through a portal built with Oracle Application Server Portal.

“Users are happy, because information can be retrieved easily, analysis is consistent and comprehensive, and there is high performance in response time,” Buchleitner says in summation. “Our financial managers, controllers, and board members are also pleased that the new system has reduced total cost of ownership. In just a short time, our decision to migrate to Oracle has been fully validated in many ways.”

## Case Study 2 – National Commercial Bank

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National Commerce Bank (NCB), based in Saudi Arabia with branches worldwide, is the largest bank in the Middle East in terms of capital. Serving over one million clients as of year-end 2004, the bank operated 248 branches throughout the Saudi Kingdom. The bank also operates a comprehensive array of alternative channels for services delivery, including Telephone Banking, Mobile Banking, Online Banking, Trade, International Brokerage, and an innovative SMS Service, which provides its customers with easy and secure contact with their NCB accounts via mobile telephones. With over 72 percent of customer transactions executed through alternative delivery channels across multiple lines of business during fiscal year 2004 alone, NCB requires an effective way of creating a single view of its customers as a basis for delivering personalized service and innovative products.

The NCB data warehouse, with more than a terabyte of rapidly growing data, is key to its ability to provide unparalleled customer service and to target its customers with personalized services.

Faced with the need to upgrade NCB's Teradata Warehouse in order to meet performance requirements on its expanding data, the decision to migrate from Teradata to Oracle was first and foremost based on the significant incremental savings NCB would realize by migrating its data warehouse from Teradata to Oracle instead of upgrading its proprietary Teradata platform.

"When we wanted to upgrade, we were limited by Teradata to NCR hardware and Teradata's own flavor of the UNIX operating system, which is very expensive," reports Aamer Chaudhry, Head of NCB's data warehousing program. "With Oracle we had a choice of hardware, which saved us a significant amount of money. In fact, moving to Oracle resulted in a 50 percent savings on an ongoing basis when considering the support contracts."

NCB's savings from migrating to Oracle extends beyond hardware and support. NCB is now able to take advantage of significant savings from the high availability of Oracle DBA resources.

"We employ two full-time and one part-time DBAs to support our data warehouse," explains Mr. Chaudhry. "While we required the same number of FTEs to manage our Teradata data warehouse, Teradata skills are much more expensive, at least 50 percent more expensive, and difficult to find. Oracle is becoming a standard; even graduates know Oracle better than any other database."

By migrating to Oracle from Teradata, NCB is able to do significantly more with much less computing resources, which results in substantially improved performance per unit of cost.

“The upgrade reduced our load time and increased performance for our two key applications, reporting and billing,” notes Mr. Chaudhry. “We were able to achieve our goals for 400 percent better performance with less cost by moving to Oracle. If we used equivalent hardware to achieve the same performance results on the Teradata, it would cost three or four times the price than what we paid to migrate to Oracle.”

NCB is an up-and-coming bank that must rapidly respond to changes and opportunities to retain and grow its customer base and to deliver innovative products and services. Therefore, the ability to rapidly build new applications to meet customer needs is a paramount requirement. According to Mr. Chaudhry, Oracle is more open and integrated with third-party tools via native support and has its own OLAP capabilities within the database, both of which allows his developers to more rapidly build new applications to meet customer needs. Teradata does not have its own OLAP product and supports third-party tools only via ODBC, rather than via native support. This makes it more difficult and time consuming to build and maintain new applications on Teradata.

NCB was initially concerned about the time, cost, and potential disruption from migrating the existing Teradata warehouse to Oracle. With the help of skilled consultants at Oracle, plus internal expertise, the migration went quickly and smoothly without disruption to the business.

“Oracle consulting helped NCB complete the proof of concept, but we were able to complete the migration internally with our existing Oracle skills, says Mr. Chaudhry. “Migration went very smoothly, requiring around five months from start to finish, including all the loading scripts and conversions from Teradata and loading of the data.”

The decision to move from Teradata to Oracle came down to hard dollars and cents per unit of performance.

“Business users are much happier because their reports are taking less time than before,” Mr. Chaudhry reports. “IT is happy because our cost per unit of performance is much more favorable with Oracle.”

## Case Study 3 – A Global Semiconductor Company

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For this leading international semiconductor manufacturer specializing in producing chips and software for all types of technology — including cell phones, PCs, PDAs, hard drives, and gaming devices — the decision to migrate from Teradata to Oracle came down to dollars and cents. The company attributes a terabyte-sized data warehouse as a key ingredient to its success in serving its customers.

The company realized significant incremental savings by migrating its data warehouse from Teradata to Oracle. Eliminating the incremental Teradata support costs and the additional Teradata specialists needed to maintain the Teradata warehouse netted over one million dollars in hard dollar savings. In addition, eliminating the depreciation of Teradata's expensive, proprietary hardware resulted in over two million dollars savings directly to the P&L.

"We have a group of Oracle DBAs who could not be leveraged to support our Teradata warehouse," the company's Director of Data Warehousing reports. "With the migration to an Oracle data warehouse, our staff can be much more efficient as hard-to-find Teradata specialists are no longer an ongoing additional cost and risk."

The Director adds that, prior to the conversion the company needed the working equivalent of 1.5 Teradata specialists to maintain its Teradata warehouse, saying: "with the Oracle data warehouse, we don't need a dedicated DBA — one of our existing Oracle DBAs maintains the Oracle warehouse with less than one half an FTE. We saved real hard cash by making the switch to Oracle"

The company is also an Oracle E-Business Suite customer and evolved its data warehouse strategy in the middle of an Oracle E-Business Suite 11i upgrade.

"Eventually, we'll embed our data warehouse in our application database, which would not be possible using a Teradata system," says the Data Warehouse Director. The company currently uses Cognos PowerPlay in conjunction with its data warehouse, and the switch from Teradata to Oracle was transparent to users. "We plan to take advantage of Oracle Business Intelligence 10g's integration with the Oracle database and its productivity and ease-of-use features, down the road," the Director adds. "Getting the warehouse in Oracle was the first step."

The actual conversion took place over a long weekend without any glitches or disruptions to normal operations. After conversion, a handful of issues arose, but those were quickly remedied with tuning, and the same level of functionality and

performance was achieved at 50 percent of the cost — the company’s primary goal. Total time to full production of the Oracle data warehouse was nine months, which included building the business case, getting the necessary buy-in, and migration.

The company’s key decision driver was to take dollars out of the budget. According to the Director of Data Warehousing, “now we can leverage Oracle’s openness and flexibility... Upgrading is much easier, and we can now fully leverage Oracle’s integrated tools.”

## Conclusions

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As amply demonstrated by the case studies presented in this report, businesses can realize numerous cost-saving and productivity-enhancing benefits by migrating their enterprise data warehouse systems from a proprietary Teradata platform to a platform based on Oracle technology.

Key benefits include:

- **System Costs** — Teradata relies on high-end, proprietary servers and surplus resources to accommodate future demand, while Oracle incorporates much more cost-effective midrange servers that are scalable to meet increased system demand as needed. Upgrading a Teradata system can cost more than deploying a new Oracle solution.
- **Cost of Ownership** — Oracle’s database has built-in business intelligence functionality and also — being the data warehouse market leader and embracing open standards — interoperates with many widely-used third-party software products. Oracle’s integrated development tools expedite the creation of customized business intelligence functionality, as well.
- **Enhanced Performance** — Users in the companies described here have experienced greatly enhanced performance in migrating from Teradata to Oracle. Business line executives also reported no noticeable disruption to data service operations.

Perhaps most invaluable from the long-term perspective is Oracle’s ability to offer a data warehouse solution designed with the future in mind. Easy scalability, interoperability with third-party software, the ability to implement the latest in technology advances — these characteristics are required in today’s rapidly changing business environment. Oracle offers the assurance that an enterprise’s data warehouse capabilities will keep pace with any change the future may bring.

