PIQUE SOLUTIONS

Business Value of Using Oracle Enterprise Manager for Managing Oracle Databases

Enterprise Customer Perspective

PIQUE SOLUTIONS

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Executive Summary

Managing databases is increasingly about striking a balance between proliferating and consolidating in enterprise environments. Multiple studies prove that while there is growing business demand for databases, operational teams are constrained by budgetary pressures and often unable to meet the demand in a timely fashion. This places a premium on the ability to manage these two conflicting forces.

Pique Solutions was commissioned by Oracle to investigate to what extent Oracle Enterprise Manager customers are able to meet these challenges and to quantify the impact of using Oracle Enterprise Manager on IT operational management costs, database administrator (DBA) productivity, and business agility. The results of our research demonstrate two dichotomous scenarios: (a) operating at enterprise scale without a unified management capability results in a huge ongoing management cost and resource burden that snowballs continuously along with expanding database estates, and (b) Oracle Enterprise Manager enables customers to manage more databases and more data more effectively by providing integrated and comprehensive management capabilities across the life cycle of the database environment and, in many cases, the full application-to-disk IT stack. Benefits stated by study participants include a dramatic increase in DBA and other IT staff productivity, quantifiable cost reduction and avoidance, increased business agility, and reduction in risk. The impact to companies using Oracle Enterprise Manager is in most cases transformational versus incremental.

As part of the study, Pique Solutions interviewed and collected detailed data from seven companies using Oracle Enterprise Manager to manage Oracle Database and its underlying infrastructure and then measured the benefits and management cost savings of the Oracle Database Management solution. Primary research and economic modeling based on a composite profile of study participants found the following key benefits:

- A 60% lower operational management cost with Oracle Enterprise Manager, driving nearly $12M in database management cost savings over three years, including in the areas of staff efficiency, resource optimization, and avoided cost to scale (**Figure 1**).
- Increased efficiency to manage larger and more dynamic database estates without adding resources and, in some cases, reducing the overall staffing profile and shifting work to focus on higher-level strategic projects critical to the business.
- Increased agility with an order-of-magnitude shortened cycle times, with a mean reduction of 92%, for database

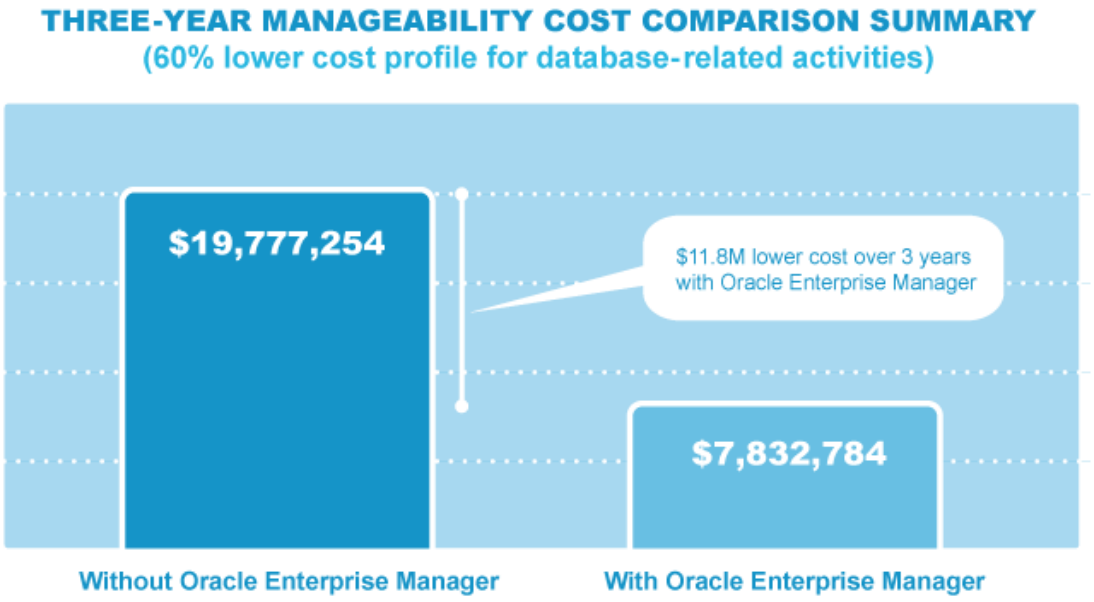
> With Oracle Enterprise Manager, study participants found 60% lower operational management costs, the ability to manage larger and more dynamic database estates without adding staff, an over 90% reduction in database provisioning cycle time and, for DBAs, an improved quality of life in terms of shifting from after-hours firefighting to strategic career-enhancing activities."

provisioning and in particular for cloud deployments.

- In many cases, a transformative shift with Oracle Enterprise Manager, allowing transparency to the business to understand the cost associated with database infrastructure and in some cases a shift in actual operating costs to the business.

- Finally, in using Oracle Enterprise Manager, numerous DBAs cited the overall improvement in quality of life as it relates to their database work and the ability to free themselves from mundane tactical activity and proactively address more strategic, valuable, and career-enhancing activities.

Figure 1. Three-Year IT Operational Management Cost Comparison without Oracle Enterprise Manager versus with Oracle Enterprise Manager ($25B Organization with 1,200 Oracle Databases)



Introduction

Study Approach and Methodology

The Pique Solutions approach to quantifying business value is based on a deep engagement with a significant number of customer and partner organizations experienced with the solution under evaluation. Based on that engagement, for this study we sought to establish and measure the most common and recurring set of benefits across the customer and user base. We then used a mean or composite profile to calculate the savings over a three-year time horizon. The specific steps in the process included the following:

- Reviewed publicly available information and secondary research regarding Oracle Enterprise Manager solutions, use cases, and key value drivers.
- Conducted interviews with Oracle product management, marketing, and sales staff to collect existing customer data and further validate costs, benefits, and value drivers as experienced by current customers and partners.
- Defined a preliminary value framework for investment, cost savings, and value based on Pique Solutions' past analyses in the database domain and project-specific research on Oracle Enterprise Manager and internal interviews.
- Identified and qualified seven interviewees from a wide range of industries and worldwide locations who participated in detailed primary research and data gathering.
- Revised cost/value model based on customer data (primary research) and publicly available secondary research.
- Developed this paper to summarize the research findings.

Primary Research Profiles

Table 1 includes the profiles of companies who participated in Pique Solutions' research. The research involved one-hour interviews with each company and completion of a detailed data collection instrument.

Table 1. Research Participant Company Profiles
A large **European Federal Agency** that manages an estate of 620 Oracle Database instances deployed in a private cloud environment. Two-thirds of the databases are development and test instances supporting a development team creating and maintaining applications used by the 20,000-agency workforce. Five DBAs are involved in the implementation and administration of all of the Oracle Database estate, using the Oracle Diagnostics Pack and the Oracle Tuning Pack along with the Oracle Cloud Management Pack for Oracle Database.
A **Fortune 500 U.S.-Based Hotel and Leisure Company** with an employee base of 200,000 and a database estate of 15,000 Oracle Database instances. A team of 59 DBAs manages the database infrastructure and life cycle.
A **U.S. Global Systems Integration Company** with expertise in database administration, development, and engineered systems. The database team is experienced with all of the Oracle Enterprise Manager Database Management Packs.

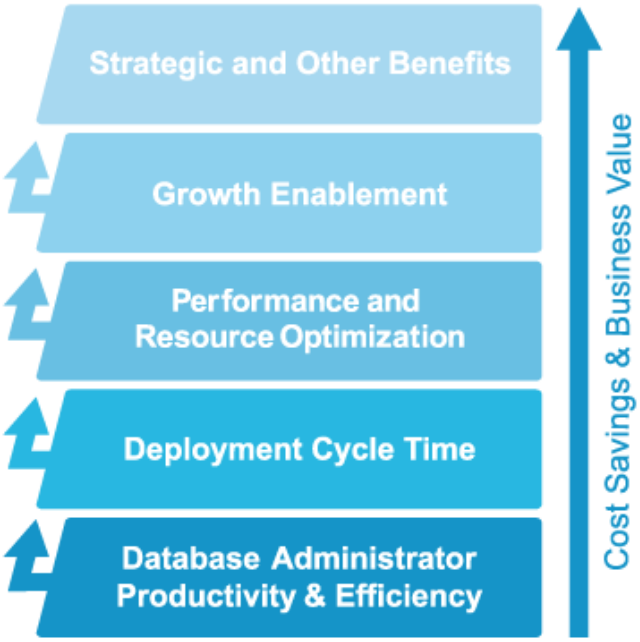
Table 1. Research Participant Company Profiles
A global **U.S. Food Service Company** with 2,000 database instances on 380 database servers in **100** different locations in **40** countries. The estate is managed by a global management and administration team. Every Oracle Database is managed by Oracle Enterprise Manager, using Oracle Diagnostics Pack, Oracle Tuning Pack, and Oracle Lifecycle Management Pack for Database. A total of 49 DBAs are involved in the "run" and "change" teams, with the run team focused on production and change on development and testing.
A large **U.K. Retailer** with 750 database instances supporting corporate and retail operations. A team of 28 DBAs manages the **environment, using Oracle Diagnostics Pack, Oracle Tuning Pack, and Oracle Lifecycle Management Pack for Database,** with 8 full-time DBAs in the **United Kingdom** augmented by 20 offshore DBAs.
A **Fortune 100 U.S. Financial Services Provider** with a database estate of 1,200 database instances, 40% of which run Oracle Real Application Clusters One Node, 30% run Oracle Real Application Clusters multi-node, and the remainder are standalone. A team of 22 DBAs manages the environment, using Oracle Diagnostics Pack, Oracle Tuning Pack, and Oracle Lifecycle Management Pack for Database, with half the DBAs on the development team and the other half on the production team.
A large **U.S. Systems Integration Firm** with a consulting practice that includes cloud management and DevOps for Fortune 1000 customers primarily in the United States.

A Value Framework for Managing Databases

This section provides a framework for the economic and value analysis and how the value flows and is manifested through the different Oracle Enterprise Manager Management Packs. Essentially, there is a productivity and efficiency effect on the users of the capabilities in both automating existing manual activities and performing activities they could not do before. That leads to a cost savings and avoided cost associated with confidently transitioning work to more junior resources and scaling the database operation. The agility layer represents the impact from a process or cycle time perspective. In many cases, the productivity and efficiency result in shortened cycles and/or the ability to scale without adding resources. Finally, there are strategic benefits that may not be quantifiable per se but are an important factor in the value of Oracle Enterprise Manager's capabilities. These could include reduction in or better management of risk, compliance management, and improved quality of life for the IT team.

Figure 2 below depicts the flow of value and the business benefits of using Oracle Enterprise Manager Management Packs for database management.

Figure 2. The Flow of Business Benefits and Value for Database Management



The specific value drivers and descriptions are outlined in **Table 2**.

Table 2. Framework Value Drivers

Category	Description	Key Value Drivers
Cost & Scale	The value (cost savings or avoided cost) from automation of manual activities or the result of management capabilities	• Administrator productivity and efficiency • Performance and resource optimization • Business application owner productivity
Agility	The process, cycle time, or scalability savings (generally expressed as *x*% faster/shorter than before deployment of management packs)	• Reduction in database deployment cycle time
Strategic and Other Benefits	Other benefits not necessarily quantifiable via dollars or metrics	• Quality of life • Risk management or mitigation • Compliance • New service enablement

The Business Case for Oracle Enterprise Manager Database Management Packs

Now that we have described and presented the logical and thorough cost/business value framework, we present the business case based on the synthesized data from our primary and secondary research. Using the model, we input the primary research data and demonstrate the economic and strategic benefits for adoption. We begin at a high-level summary analysis and progress to the more detailed comparative analysis and calculations. Lastly, we discuss the more strategic considerations as they relate to the primary research participants' input to the study.

A Composite Business Case Scenario

Pique Solutions developed a composite profile based on the typical company and mean deployment scope aggregated from the primary research participant data. This data serves as the basis for the calculations in the economic analysis. The details are listed in **Table 3**.

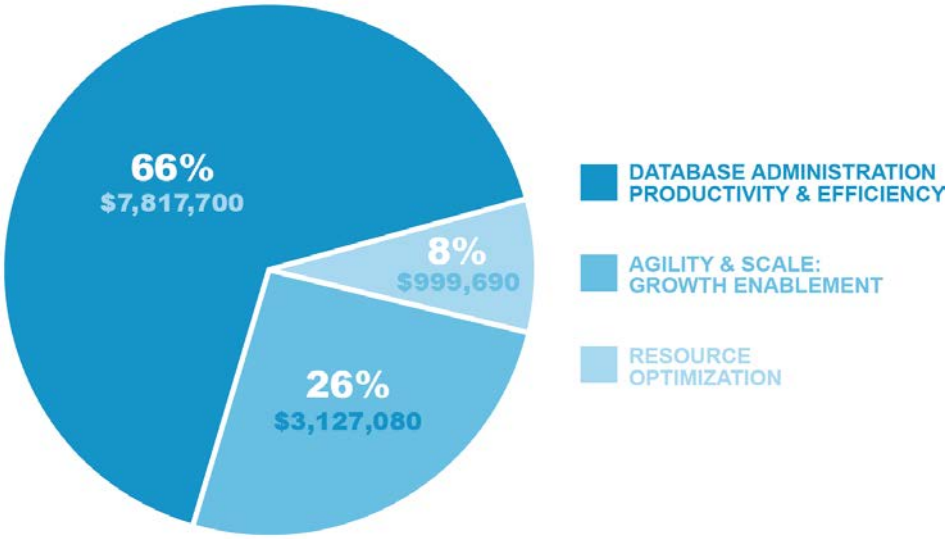
Table 3. Composite Company Profile

Element	Values
Deployment Type	Private cloud deployment of development and test databases with on-premise production databases
Company Size	$24B annual revenue; workforce of 33,000
Annual Growth in Database Infrastructure	20%
Number of Database Instances	1,200
Number of DBAs	22
Number of Operations Staff (Level 2)	12
DBA Annual Salary (5–10 years' experience, full time + benefits)	$150,000 (Source: salary.com)

Summary Economic Analysis

Figure 3 presents the management cost savings for the composite company modeled over a period of three years, a total of nearly $12M in savings over the time horizon. There are substantial savings in each of the areas of the framework, with the largest savings coming from database administration and growth enablement. The management cost savings increase each year due in large part to the year-over-year growth in the database environment.

Figure 3. Three-Year Management Cost-Savings Summary
($24B Organization with 1,200 Oracle Database Instances with 20% YoY growth)



Database Administration Productivity and Efficiency (Three-Year Savings of $7.8M)

Based on the composite environment, the database administration team using Oracle Enterprise Manager consists of 22 full-time DBA resources, including roughly half supporting the development team and the other half the production team. Pique Solutions' research found that organizations not using the Oracle Enterprise Manager capabilities required an average of 100% more, or double the effort, to handle their ongoing database administration workload. This was due to using manual administrative tasks and procedures. This percentage did vary by deployment, with some citing 60% efficiency improvement and others citing 150% based on the extent and utilization of the database management packs and the dynamics of their deployment. As a result of the staff size and using mean database administration salaries,[1] administrator efficiency and productivity equate to a savings of nearly $7.8M over three years.

[1] http://swz.salary.com/SalaryWizard/Oracle-Database-Administrator-Salary-Details.aspx

The key capabilities cited by study participants as driving the database administration savings are as follows:

- A unified view and a singular tool used across databases, including standalone and more complex cluster environments.
- Streamlined and consistent provisioning of databases based on a standard "gold image" with automated inheritance of configuration and profiles for monitoring and alerts.
- Automation of manual activities for configuration, configuration management, and patching.
- An objective source of truth for configurations across the production, development, and testing deployment environments.
- Improved collaboration and efficiency among teams, with all using the same tool- and data-driven decision-making.
- Automated deployment, redeployment, and undeployment of database instances.
- The ability to transition previously high-cost work activities to other teams, such as operations, because they can now be performed without high-end skills and knowledge.
- The ability to maximize database performance by detecting and preventing issues.
- Historical performance monitoring, which frees up administrators from actively monitoring servers while still providing the ability to identify performance issues.
- Dramatic reduction in the number of issues, resulting in less time spent processing and resolving them.

A database architect at the global U.S. food service company with 2,000 database instances on 380 database servers in a hundred different locations recently saw its administrator productivity and service quality improve dramatically as it partnered with third-party vendors and suppliers to manage its global database estate. Oracle Enterprise Manager was a key factor in the ability to execute on this strategy, which drove productivity savings in the millions of dollars per year. He explained, "I don't see how we could have successfully executed our database management strategy and partnership without the benefit of Oracle Enterprise Manager. The more you can do with automation, the better. Especially when you're dealing with an outside firm and the majority of their operations team are limited in focus and scope. We saw as much button-clicking as possible rather than writing scripts and running commands manually. We make fewer mistakes as a team using the tools than if we were doing things manually. It's not only the number of people but the quality of work that it enables an entry-level DBA, or even an experienced DBA, to do more complex tasks because they can use Oracle Enterprise Manager to do it."

"I don't see how we could have successfully executed our database management strategy and partnership without the benefit of Oracle Enterprise Manager."

Database Architect

Global U.S. Food Service Company

Avoided Cost to Scale: Growth Enablement (Three-Year Savings of $3.1M)

Another significant advantage of Oracle Enterprise Manager for every company interviewed was the ability to support scaled database environments quickly and easily without adding corresponding effort or additional staffing. All of the companies interviewed were growing in terms of their database capacity and private cloud initiatives. Those companies that had a need for agile enterprise scenarios cited dramatic growth in databases requested by development and testing teams.

With Oracle Enterprise Manager, respondents found they could easily scale the environment without adding resources. Without Oracle Enterprise Manager capabilities, growth in environment required the addition of staff, with a cumulative impact on the long-term staffing profile. In the composite scenario, with year-over-year growth of 20%, this equates to a cost savings of $3.1M over three years.

> "If we did not have Enterprise Manager, I would easily have to double to triple the size of my DBA team. With the Cloud Management pack, we have reduced the database provisioning process from 10 days down to 18 minutes."
>
> **Database Manager**
>
> European Federal Agency

The European federal agency who participated in our study has an Oracle Database estate of 620 instances, 200 in production and 420 in development and test. They are growing at the rate of roughly 120 database instances per year. As indicated in the previous section (**Table 3**), leveraging the capabilities of Oracle Enterprise Manager, in particular Oracle Cloud Management Pack, they have reduced provisioning cycle time 99% from 10 days to just 18 minutes. Not only that, the new process is largely self-service for the developers so the effort required on the DBA side is just a validation step. With a team of just five DBAs, they are able to support the 20+% growth in the database estate with the same number of resources. Several other benefits have been achieved resulting from Oracle Cloud Management Pack including the ability to automatically clone and provision, within minutes, terabyte-sized databases through the Pack's Snap Clone capability and then deprovision the databases to prevent database sprawl and the associated management costs with inactive databases. Second, through the chargeback and metering capabilities, the organization's IT executives and managers were able to gain visibility into the cost associated with each database provisioning request in terms of size of database and other factors. While they did not initially decide to fully shift the cost to the various lines of business, they instead provided them with the visibility to help drive better decisions for application services and deployments.

In the words of the database manager, "If we did not have Oracle Enterprise Manager, I would easily have to double to triple the size of my DBA team. With Oracle Cloud Management Pack, we have reduced the database provisioning process from 10 days down to 18 minutes.

Agility: A Dramatic 92% Average Shorter Database Deployment Cycle Time

Implied in the previous sections discussing administrator efficiency and enabled by the automation provided by Oracle Enterprise Manager, every company interviewed cited dramatically shorter cycle times for life-cycle management activities such as database cloning, patching, and provisioning. In nearly every case, this ranged from significant to an order-of-magnitude difference as compared to using other tools or manual efforts. What was typically measured in hours, days or, in a few cases, weeks, was reduced down to 20 minutes or less. Consider the data gathered in **Table 4** on the cycle time for database provisioning and deployment.

Table 4. Database Cycle Time Savings Data

Participant	Savings
European Federal Agency	Database provisioning cycle reduced 99% from 10 days to 18 minutes.
U.S. Systems Integration Firm	Database provisioning cycle reduced 97% from 2.5–3 weeks to 3 hours. Weekly refresh from production for each of 120 DBs reduced from 24 hours to 25 minutes with Snap Clone.
Fortune 100 U.S. Financial Services Provider	Database deployment cycle time down 77% from 30 minutes to several hours to 15–20 minutes.
U.S. Global Systems Integration Company	Cloud database provisioning cycle reduced 95% from 7 hours to 20 minutes.

The U.S. global systems integration company, speaking on behalf of a recent deployment of Oracle Enterprise Manager for one of their enterprise retail services customers, provided some very compelling data regarding the reduction of cycle time for two key processes. The customer had a database estate of 120 instances but was growing at the rate of 2 per week, or essentially doubling the estate year over year. The first remarkable improvement was the overall database provisioning cycle, which, prior to the Oracle Enterprise Manager implementation, would take two-and-a-half to three weeks from request to fully executed provisioning. After implementing Oracle Enterprise Manager, that cycle was reduced by 97% to just 3 hours. Most of these new database requests were for development teams and, as such, there was a requirement to refresh the development and test databases on a weekly basis with production data. Prior to Oracle Enterprise Manager, this process would take on average 24 hours, and it needed to be done for nearly all of their 100+ development databases. Using the Snap Clone feature of Oracle

> "Obviously, without Oracle Enterprise Manager, the end customer couldn't focus on anything else but provisioning databases. They couldn't address any performance issues or any security situations that were around the database."
>
> **Database Lead**
>
> U.S. Global Systems Integration Company

Cloud Management Pack, the customers were able to replicate the production data (8 terabytes) in roughly 25 minutes. According to the database lead, “Because we're talking about a retail service company, it was an 8-terabyte database. The refresh was taking them about almost 24 hours. Obviously, without Oracle Enterprise Manager they couldn't focus on anything else but provisioning databases. They couldn't address any performance issues or any security situations that were around the database.”

Performance and Resource Optimization (Three-Year Cost Savings of $1M)

Research participants also found savings from Oracle Enterprise Manager by optimizing their IT operations and removing the silos that previously separated teams based on their expertise. Most experienced a shift in work, particularly in the areas of patching and provisioning, in addition to other labor-intensive life-cycle management activities and performance monitoring.

Regarding the last point, a senior Oracle DBA at the Fortune 100 U.S. financial services provider with a database estate of 1,200 database instances, 40% of which run Oracle RAC One Node, 30% run Oracle RAC multi-node, and the remainder were standalone, shared a key impact of Oracle Enterprise Manager: “After deploying Oracle Enterprise Manager, we have seen the number of database incidents go down nearly fivefold, from 2,800 per year down to just 600 globally. We are also catching them proactively such that the business doesn’t even find out about them. As a result, unplanned downtime has been reduced by up to 40% because we are resolving issues before the business even is aware.”

> "After deploying Oracle Enterprise Manager, we have seen the number of database incidents go down nearly fivefold. As a result, unplanned downtime has been reduced by up to 40% because we are resolving issues before the business even is aware."
>
> **Senior Oracle DBA**
>
> Fortune 100 U.S. Financial Services Provider

The other major savings component related to database administration and resource optimization stemmed from the ability to increase administrator productivity and automate a significant portion of work activities that were previously high-cost labor-intensive efforts. In some cases, these were more junior on-site DBAs who were able to perform minor tasks, freeing up senior DBAs to focus on higher value-add initiatives. Oracle Enterprise Manager directly enabled this productivity savings because the tooling allows for better collaboration among team members of varying skill levels and in many ways limits the risk of errors due to the automation and controls inherent in the management and monitoring capabilities. The Database Management Packs also allowed the more senior DBAs to focus on higher-level activities, particularly those offered by Oracle Lifecycle Management Pack for Database, focusing on advanced configuration, compliance, and proactive planning. Generally speaking, these senior resources transitioned to more of an architect role, helping to broaden

their business acumen skills with a focus on becoming a consultant to the business, as compared to their previous role as pure DBA.

Strategic and Other Benefits of Oracle Enterprise Manager

Beyond the quantitative findings gathered in the research and analysis, there were many other factors cited as equally important benefits stemming from the use of Oracle Enterprise Manager Database Management Packs. For those who have spent a considerable amount of time in database environments and managing enterprise databases, many study participants mentioned a tangible improvement in quality of life as it related to being on call waiting for an alert or page in the middle of the night. With Oracle Enterprise Manager, they cited a fundamental improvement in the types and levels of notifications and found far fewer off-hour alerts or, even worse, false alarms that literally kept them up in the middle of the night. Secondly, the nature of running processes with Oracle Enterprise Manager was much friendlier than in the past or with other tools, such that there was transparency as far as where tasks may have gotten stuck and being able to fix the problem. The solution diagnosed problems faster and recommended fixes that could be implemented quickly without disrupting services or the business.

The second key point related to the administration team is the ability to shift from reactive, mundane activities to proactive, value-oriented activities. Many study participants were heavy users of Oracle Diagnostics Pack and Oracle Tuning Pack and also used Oracle Lifecycle Management Pack. The administrators were performing activities such as compliance, consolidation planning, and advanced configuration tasks that at times can challenge any seasoned DBA. In the words of a database administrator for a large U.K. retailer, "If you're looking to see what the value's been added, prior to getting Oracle Lifecycle Management Pack, there was no physical way that we could've understood our compliance position. Now, we know our compliance position every single day. I think in terms of the packs, Oracle Diagnostics Pack and Oracle Tuning Pack are a necessity, whereas Oracle Lifecycle Management Pack has transformed them, in terms of their security and compliance."

"Prior to getting Oracle Lifecycle Management Pack, there was no physical way that we could've understood our compliance position. Now, we know our compliance position every single day."

Database Administrator

U.K. Retailer

Conclusions and Other Considerations

The business impact of Oracle Enterprise Manager for database environments is both economically compelling and transformational for companies utilizing the capabilities. Pique Solutions' research demonstrates that management cost—the largest element of long-term cost of ownership—can be reduced by 60%, or nearly $12M in our composite scenario, when using Oracle Enterprise Manager versus not using Oracle Enterprise Manager.

Some companies with modest-size deployments have gotten by using native or home-grown capabilities developed and managed by a team of highly skilled experts. However, the rapid growth, nonlinear scale, and increasing application and infrastructure stack complexity have created resource and cost profiles untenable and unsustainable over the long term. Throwing more human and compute resources at the problem not only increases costs and lengthens cycle times but ultimately leads to slower issue resolution, suboptimal performance and potential unplanned downtime.

Three major takeaways summarize the findings of Pique Solutions' research and analysis:

- Effective database management is no longer a nice-to-have capability. It is a foundational requirement for enabling enterprise scenarios, where rapid and efficient provisioning is a prerequisite for deploying enterprise private and public cloud applications.
- Oracle Enterprise Manager dramatically reduces long-term operational cost and lowers mean time–to–repair cycle times by as much as 92%. This includes database administrative tasks and areas for performance, life-cycle management, and cloud management. The solution provides both critical business agility and the ability to scale.
- The benefits of effective and unified management extend beyond just the data tier. With Oracle Enterprise Manager, each database management pack has its own individual value stream, but collectively the value of providing comprehensive management across all elements of the database and IT estate is far greater than the sum of the parts.