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Oracle E-Business Suite for Engineered -
Systems -
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Executive Overview

Organizations around the world use Oracle E-Business Suite to optimize their mission-critical operations. Business owners expect real-time insights into the health of their business to make informed decisions and remain competitive and profitable. Increasing revenue opportunities, improving the efficiency of the supply chain, and being compliant with regulatory requirements are key objectives of every business. These objectives can be achieved by improving overall productivity and the performance throughput of processes such as manufacturing planning, financial close, order fulfillment and other similar business functions.

Oracle’s Engineered Systems are designed with the purpose of delivering the required performance and scalability that helps to increase the performance levels of these business processes at a lower cost of ownership.

Introduction

Oracle E-Business Suite remains the most comprehensive suite of integrated global business applications, enabling organizations to make better decisions, reduce costs, and increase business performance. Oracle E-Business Suite delivers enterprise resource planning, customer relationship management, supply chain planning, human capital management, project management and more.

This whitepaper describes how Oracle E-Business Suite users can further build on these benefits by deploying Oracle’s Engineered Systems. For more information about these systems, see the section “Overview of Engineered Systems” at the end of this white paper.

Business Benefits of Deploying Oracle E-Business Suite Products on Engineered Systems

Benefits Overview

Oracle’s Engineered Systems leverage the latest technology to deliver maximum availability, high performance, scalability, and standardization. Benefits for Oracle E-Business Suite users include:

- Faster application responsiveness for end-users
- Faster batch processing
- Faster report generation
- Faster data loads
- Reduced need for application tuning
- Faster extraction-transformation-load to populate data into business intelligence data warehouses
- Scalable platform to support business growth
- Faster time to value and improved supportability

These benefits are discussed in more detail here.
Faster application responsiveness for end users

Employee productivity, customer satisfaction, customer retention and revenue recognition opportunities will increase as a result of faster application responsiveness to end users. Employee productivity is critical for manufacturing, shop floor operations, order processing, and customer service. Here are some examples where Engineered Systems can increase end user responsiveness:

- Processing orders quickly and responding to customers promptly is an essential business need for e-commerce and online vendors. Large numbers of customers concurrently submitting orders or requests for information expect instant response. Superior performance of Engineered Systems will facilitate such response times and will help to retain customers, increase revenue and customer referrals.

- Ability to respond quickly is critical for businesses relying upon customer service or call centers. In order to deliver timely response to customers, the customer service representative must be able to retrieve all the relevant information real-time to provide critical information that customers are looking for.

- Accounting departments can reduce the invoice processing costs and improve the predictability of the cash flow by increasing the speed of the receivables invoice entry.

- The vast majority of warehouse management users on the warehouse floor use mobile devices to complete their tasks. A busy facility may complete thousands of tasks per hour, which require tens of thousands of data entries and validations. Users typically demand sub-second response time for mobile warehouse applications. End user productivity is tightly coupled with the response times. If a picker spends 10% less time entering the data, this would increase worker productivity and decrease costs.

- Procurement professionals using the system with high intensity can benefit from increased productivity. A buyer who can quickly access relevant details about a supplier including recent transaction history can be more effective in negotiations. A supplier sales administrator can more efficiently update the large documents with thousands of lines in iSupplier Portal due to faster response times. This can lead to higher efficiency between suppliers and buyers resulting in increased purchases. Improved performance will increase efficiency and transparency of the auctions.

Faster Batch Processing

Improvement in batch processing or concurrent programs aids on-time completion of critical business processes, thereby improving productivity of day-to-day operations, and increasing the ability to meet service level agreements and regulatory reporting needs.
Here are some of the examples where these resource intensive batch programs can benefit from the performance of Engineered Systems.

- Faster financial period close helps businesses with timely regulatory reporting, early visibility of revenue, margin and profits for real-time decision making. Financial period close comprises of several highly resource intensive batch programs that involve gathering of up to date information from numerous divisions, cost centers and other stake holders. Businesses often struggle to close the financial periods on time. Engineered Systems can increase the speed of these batch programs enabling a faster period close.

- Frequent running of batch processes for supply chain operations increases the timeliness and accuracy of information required to complete manufacturing planning.

- Service providers or companies engaged in delivering customer warranties can realize cost savings in fuel expenses and increase revenue by performing more service calls when the field service technicians use optimized trip routes.

- Almost all corporations need to complete the payroll processing within a time critical window in order to ensure employees are paid on-time and accurately, payment transfers to banks are completed on time, and legal and compliance issues are prevented. Improved time in transferring payroll data to General Ledger also helps in a faster period close.

- Improved performance in batch processes can allow customers to run them by including more details and increase the value of the information for decision making. One such example is running cost rollups by using greater number of cost elements to obtain precise costing information.

**Faster Report Generation**

There are hundreds of reports within Oracle E-Business Suite to meet the needs of the business users. Increasing the performance of these reports can help to increase the accuracy and timeliness of the decisions and reduce the risk of non-compliance. Here are examples of some such reports:

- Global Payroll year end reporting that is needed as part of statutory reporting. Data from this report is further used by various processes like generating paper W2 for employees and reporting to federal and state authorities.

- Understanding up to date information regarding the health of a project is critical for any project centric company. By improving the performance of reporting that provide details of project performance, burden rates, and revenue impact project managers can gain quick insight into the health of the project to make critical decisions to change the project scope, cost or time.

- Parts usage analysis reports provide instant information regarding components by maximizing re-use of parts. Manufacturing organizations can realize significant design and manufacturing cost savings reduce duplicate parts inventory, and lower inventory carrying costs with these timely reports. Understanding where a particular component is used across product assemblies and subassemblies is critical when it comes to analyzing product recall situations or designing the next generation of products. Better understanding of where parts are used and whether to
continue to reuse them or replace them with new parts is fundamental to inventory optimization to reduce large write-offs. Most new product development activities start with and require significant re-use of existing parts and subassemblies.

**Faster Data Loads**

There are many business processes within Oracle E-Business Suite that facilitate importing of massive amounts of external data. Increasing the performance of these programs can help to increase the overall performance of the business process flow. Here are some examples of the data imports and loads:

- High order volume processing and order import programs are designed to process large numbers of orders and fulfillment rapidly. In certain industries like retail, this is an extremely time sensitive process where orders are received in the morning from thousands of stores and have to be delivered from the warehouse to the store the same day.
- Manufacturing cycle time plays a very critical role in make-to-order environments since it directly contributes to the customer commitment time frames. By reducing the cycle time in manufacturing and administrative processes, companies are finding that they can respond faster to customers and become more flexible in dealing with marketplace changes. Work order import is an example of such data load program.
- Manufacturers can reduce the risk of costly product recalls, loss of productivity and damage to brand reputation by identifying and resolving quality problems quickly. By increasing the frequency and performance levels of quality data imports employees can perform more rapid root cause analysis and identify manufacturing defects.

**Reduced need for application tuning**

Oracle E-Business Suite allows customers to extend the applications. Most large customers extend or add customizations to meet their specific needs. Enterprises often make substantial investments with system integrators or use in-house developers to tune these custom applications. These recurring investments are needed as changes occur in the systems or new custom applications are developed. With the performance gains of Oracle’s Engineered Systems, these custom programs are likely to perform faster thus reducing the need to invest in highly expert performance tuning projects.

**Faster extraction-transformation-load to populate data into business intelligence data warehouses**

In order to deliver business intelligence to executives, transactional data has to be aggregated and loaded into data warehouses. This process is called extraction-transformation-load (ETL). By speeding up these processes and running them frequently customers can ensure intelligence provided to decision makers is current and accurate aiding them to make timely and informed decisions. The performance gains from Engineered Systems allow these ETL processes to be executed more frequently without impacting the performance of other processes and without
impacting the online users. Oracle Incentive Compensation Analytics is an example where increased frequency of incentive insights will help better alignment of selling behaviors to corporate goals.

**Scalable platform to support business growth**

Engineered Systems deliver the capacity and scalability that allows companies to deploy Oracle E-Business Suite rapidly across multiple business units or multiple regions, consolidate existing application environments, add new users, add additional workloads or transactions, quickly assimilate new organizations during mergers and acquisitions.

**Faster time to value & Improved Supportability**

Exalogic and Exadata are pre-assembled systems with limited variations in customer configuration. Pre-assembly saves 1000s of hours spent by customers in researching and building a system to scale to the demanding needs of Oracle E-Business Suite. Pre-configured systems allow customers to spend less time and resources on implementation and realize the value of the production systems quickly.

Reduced number of customer configurations (uniform Operating system, CPU, memory, network, and storage) allows Oracle to replicate customer issues easily and maintain consistent patchsets across components, reducing regressions and simplifying diagnosis and hence resolve problems faster. Oracle offers Platinum Services at no additional cost to Oracle Premier Support customers. This service provides peace of mind to customers with industry-leading response and restore times including a 5-minute Fault Notification service level agreement. Running an E-Business Suite instance on Oracle’s Engineered System platform saves cost of configuration and reduces business risk.

**Supply Chain Management (SCM)**

The following section highlights the benefits derived when the following Supply Chain Management key functionalities are deployed on Oracle’s Engineered Systems:

- Manufacturing, Cost Management & Product Information
- Order Management and Advanced Pricing
- Procurement & Contracts : Spend Classification & Analysis
- Warehouse Management System

**Manufacturing, Cost Management & Product Information**

**Business Requirements**

Manufacturing enterprises perpetually deal with complexity and variability. Raw materials, production resources and delivery schedules are prone to constant change in today's increasingly complex supply chains and manufacturing processes. In such an environment, manufacturers need real-time visibility across operations and their value chain for greater synchronization and predictability in order to get the 3Rs - right products to the right customers at the right time.
Manufacturers generate massive amounts of information from their production facilities, machinery, point of sale (POS) and quality systems. As businesses ramp up and transaction volumes exponentially increase, manufacturers must ensure that their IT systems are able to scale accordingly to accommodate the future demand and growth, while ensuring enhanced operational excellence and user productivity. Ability to make timely decisions based on analysis of massive amounts of ERP and non-ERP data becomes a critical success factor in gaining a competitive edge and preempt potential downstream impacts to other dependant business processes.

The following section highlights some of the significant benefits that manufacturers achieve when they run E-Business Suite Manufacturing and Cost Management applications on Oracle’s Engineered Systems.

Business Benefits

- Faster period closing helps to comply with statutory reporting and to understand the overall health and profitability of the business for the period.
- Rapid product cost or rate change impact analysis allows business owners to quickly react to changes and incorporate measures to reduce costs and adjust price lists as needed.
- Instant product genealogy and parts reuse analysis allows businesses to react quickly to service calls that will reduce costs and increase customer satisfaction.
- Reduced manufacturing cycle times allow businesses to fulfill customer needs quickly, be more flexible in dealing with marketplace changes, and stay competitive.
- Rapid root cause analysis for manufacturing defects prevents expensive product recalls and bad reputation.
- Shorter product information processing cycle times allows quick search and retrieval of product information to shorten the order processing times, accelerate revenue realization, reduce product introduction costs, shorten go-to market time and build competitive advantage.
- Speedier product search and product catalogue retrieval, which is critical for order fulfillment process, and the ability to quickly understand parts usage also allows many industries to react promptly to service calls thus reducing operation costs and increasing customer satisfaction.

In today’s business climate, the old adage "time is money" has evolved into “time is a competitive weapon”. Empirical evidence gathered from companies in the U.S. and Canada shows that companies that reduce total manufacturing cycle time by 75% will double productivity, reduce the break-even point of a facility by 20%, grow at three times the industry average, and have two times the industry average margin. One major reason to reduce cycle time is to get more of the manufacturing process out of the make-to-forecast mode and into the make-to-order mode, without demanding that customers wait longer between their order and their receipt of a product.

Customers need to track, investigate and analyze differences between value in financial books, physical inventory balances and discrepancies between the two, often with transactions being generated up to the last minutes of the period. Most customers also set up new costs for the succeeding period at this time, and period end values are used as the baseline for this cost calculation.
and inventory planning. Nearly 20 extremely data intensive reconciliation reports that process large amounts of data from many different products and have complex algorithms feed into this.

Historically, customers have struggled to close periods on time because of the above requirements and the inability of current servers to quickly process the data. Oracle’s Engineered Systems deliver the performance levels that allow the ability to process cost information and close periods faster than any tier 1 hardware. As a result, enterprises can perform cost planning, maximize margins, minimize variances, maintain lean inventory and submit statutory reports within Federal deadlines.

Ability to run reports such as Margin Analysis, faster than traditional hardware provides close to real time information to business owners on earned revenue versus recognized COGS. The provision to view summary or detailed information by customer, order and line number, further aids them in their decision making.

Supply chain cost rollup is another extremely data and calculation intensive process where customers have seen huge performance improvement. For a typical business where cost rollup process has run for many hours and borders on day long process, customers have now been able to complete it within a matter of minutes.

Quality efforts have a material effect on the bottom line by identifying areas of waste, sources of hidden costs and opportunities for increasing the profit margin. Identifying and resolving quality problems needs to happen the moment they occur - before the issue of recalls; before customers complain; before problems happen in the field. Recalls cost manufacturers lot of money each year in production losses and damage to their brands’ reputation.

Shorter product information processing cycle times accelerate revenue realization, build competitive advantage, and reduce product introduction costs. There are many factors that contribute to the length of this cycle but performance of your IT systems does not need to be one. Whether it is a new highly Engineered System in Hi-tech, or processing and release of voluminous supplier feeds on an e-commerce site in Retail or designing and testing of a new Telco bundle in multiple OSS and BSS stacks, the unprecedented computing power of Oracle’s Engineered Systems reduces the product processing time, increases efficiency and enables you to easily scale as the number of products, attributes and rules grow.

**Order Management & Advanced Pricing**

**Business Requirements**

Ability to process a large number of orders and perform critical functions such as track the orders, process returns, change the orders, ensure the order-to-cash flow is accurate, seamless, and quick are all critical to any company to ensure satisfied customers and recognize company revenues.

Pricing is a critical aspect of any business to ensure the company remains competitive and at the same time profitable with healthy margins. Pricing rules can be very complex in many organizations and retrieving the accurate price based on underlying rules is critical for Order Processing to ensure customers and channels are paying accurate price for the product.
Order Management and Advanced Pricing applications can have large volumes of data and require real-time integration with multiple applications such as Inventory, Manufacturing, Bill of Materials, Sales, Quotes, Credit department, Finance, Invoicing, and Receivables.

Companies should have the ability to complete the order-to-cash cycle quickly. This implies all of the underlying processes should be completed quickly and end users and business owners should be able to get accurate transactional and decision support information in real-time.

**Business Benefits**

As a result of their superior performance, deploying Order Management on Engineered Systems helps organizations to perform real-time order execution regardless of underlying complexities. They are successful in delivering fast end-user response times allowing companies to perform quick order execution prevent order losses due to slow order processing times. The same applies in case of price inquiries. If companies repeatedly cannot provide pricing information quickly to customers, then they not only face the risk of losing the current order but may also find it difficult to retain the customer. In other words, engineering systems help in reducing the amount of time required to enter, process and update orders that directly impact the bottom line of the company.

Engineered Systems dramatically improve load times for data such as large volumes of Order imports. It is essential that these orders be processed rapidly and the status of these orders during the order lifecycle be continuously communicated to partners and distributors so they, in turn, can keep the end customers up-to-date.

Deploying Order Management and Advanced Pricing on Engineered Systems will have a multiplier effect that will dramatically improve end user response times across multiple applications in E-Business Suite, and also dramatically decrease the batch processing time thus having a direct impact on the bottom line by increasing revenue and improving customer satisfaction.

**Procurement & Contracts: Spend Classification & Analysis**

**Business Requirements**

Spend analysis is the process of analyzing corporate expenditures to identify saving opportunities and monitor compliance with contracts and corporate policies. Statistics show that organizations with capabilities to make data-driven purchasing decisions can save millions of dollars. On average, companies save between 0.25 – 1% on total spend per year. For a company with $1 billion in spend, that equates to a yearly savings of $2.5 to $10 million.¹

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Despite the many benefits of spend analysis, many organizations find it difficult to overcome the challenges of obtaining good spend visibility. Whether enterprises are using a single ERP system or many, spend data typically resides in multiple disparate locations with different data structures and lacks sufficient detail for good analysis.

Companies face several challenges while implementing effective spend classification and analysis like data consolidation, expenses for external service providers and data security.

The following section describes how an Engineered System from Oracle helps to eliminate some of these challenges and reduce risk that allows organizations to realize the benefits of on-going spend analysis.

**Business Benefits**

High performance of Oracle’s Engineered Systems allows the ETL (extraction, transformation and load) processes required for data consolidation to be much faster and at reduced cost and effort.

Internal comparisons have shown that resource intensive processes required to perform spend classification such as Oracle Data Mining are up to ten times faster on Engineered Systems.

Oracle Procurement and Spend Analytics includes pre-built data models with more than 100 pre-loaded metrics, and best practices enabling organizations to implement more quickly, with less risk, and at a fraction of the cost required to build traditional business intelligence (BI) solutions.

Oracle’s Engineered System Exalytics can be configured to run these analytics as in-memory applications for faster execution. Oracle Procurement and Spend Analytics are available today for use in conjunction with Oracle Exalytics without application changes. The winning combination allows users to extract relevant business insight from massive values of data at the speed of thought.

The Exadata Storage Server provides a very advanced compression capability called Hybrid Columnar Compression (HCC) for data warehousing applications. Hybrid Columnar Compression enables the highest levels of data compression and provides tremendous cost-savings and performance improvements due to reduced I/O. This is especially useful for the many companies that like to maintain up to 10 years of data in their data warehouse. The added storage costs as the size of the database grows, in traditional systems can thus be eliminated. Compressing data can provide dramatic reduction in the storage consumed.

Oracle Spend Classification and Oracle Procurement and Spend Analytics deployed on an Exadata Database Machine provides a cost effective, high performance solution for spend management. Data collection and classification processes can be automated allowing spend data to be refreshed periodically at any desired frequency. Pre-built dashboards allow for faster deployment at a lower cost. Hardware and software engineered together ensures the solution is not only high performing but is also scalable to accommodate growth.

**Warehouse Management System**

**Business Requirements**
Customer satisfaction is and should be the primary goal of every distribution organization. Getting the right product to the right customer in the right quantity at the right time is an ongoing battle. Wave management process within warehouse management delivers the tools necessary to initiate, monitor and optimize the outbound flow of material. This process helps to reduce cycle times, ensures customer compliance and improves customer service in the order fulfillment process, provides great flexibility to the user and tremendous cost savings for transportation. This process can place extreme demands upon the hardware.

Furthermore, it is important for companies to be flexible and prepared to adapt to changes quickly. To do this they should be able to access critical information about their entire value chain execution process. As a key part of the value chain process, a well performing and efficient warehouse management allows companies to maximize their utilization of labor, space, and equipment investments by coordinating and optimizing resource usage and material flows. Faster inventory flow through the value chain results in positive improvements in the bottom line of any manufacturing company. It is also critical to get real-time accurate information on inventory levels. For this each operation related to inventory management is validated in the system and these validations must be completed within a fraction of a second. This implies superior performing underlying hardware architecture and well tuned applications is a must for companies to prevent delays in any of these above mentioned operations.

It is critical that within warehouse management, the analysis must be performed quickly and accurately to determine the storage location for all the items. This storage location analysis requires answers to several questions such as type of the item, special care and handling required for the item, the order in which the items must be stored for efficient pick process and the optimum usage of the warehouse space. All of these considerations must be analyzed each and every time an item is handled within the warehouse management system. Accuracy and speed of this operation will determine the efficient usage of space, employee productivity and cost savings for the company. The analysis is resource intensive in terms of CPU usage and without a high performing hardware this process could become a bottleneck within the entire value chain system.

There are many resource intensive analysis processes within the warehouse management system similar to the example provided above. The following paragraph outlines how running warehouse management system can meet these above mentioned business requirements and deliver several business benefits.

**Business Benefits**

Besides high performance and high availability, deploying warehouse management systems on Engineered Systems can help to achieve the following business benefits:

- Efficient use of warehouse space resulting in cost savings
- Shortened order fulfillment process resulting in increased customer satisfaction and customer retention by ensuring customer compliance.
- Sub-second end user response times, despite intensive analysis data validations, thereby removing any bottlenecks in the supply value chain process
• Use of mobile warehouse applications resulting in savings on time and cost otherwise spent on frequent replacement of warehouse desktops and stationary devices. Many warehouse locations are co-located with the shop floor and mobile warehouse applications eliminates the need for desktops or other stationary devices that can be damaged due to harsh conditions. Mobility and scanning devices also increase employee productivity by eliminating need for data entry that could slow the entire process and also is error prone.

• Speedier batch processing, which ensuring the entire value chain process runs smoothly without delays.

• Improvement in ship confirm process by 50% ensuring shipments occur within a short period of time at the end of the day. Also, invoicing process and intercompany invoice processing improves 100% on Engineered Systems.

• Engineered Systems are scalable to the needs of increasing transaction volumes such as orders, shipments, and items, thus allowing companies to scale their operations and easily assimilate other similar systems from mergers and acquisition activities without losing the overall performance.

Oracle Projects

Business Requirements

Project-centric organizations rely on strong project management for the success of their business. Whether it is their core business such as building a bridge, release of a new product or simply a corporate initiative, being able to manage a successful project is critical for these organizations. An IPMA study from 2010 points out that economic downturn has placed new demands on project-based industries. Sixty-six percent of the IPMA study respondents believe enterprise software tools are indispensable in running their projects. A software application like Oracle Projects is a mission-critical application for project-centric organizations.

A central, core application like Oracle Projects must be performant to process a large number of transactions, responsive to a large number of users, and scalable for growth. Following sections illustrate some of the benefits of running Oracle Projects on Oracle’s Engineered Systems.

Business Benefits

Customers can assess the health of a project faster, and recognize revenue quickly because Engineered Systems are capable of processing high volume of information much faster than traditional hardware. This helps the projects because each project transaction is integrated with numerous applications and overall project portfolio transaction volume can quickly grow into millions.

Project managers can identify and analyze risks proactively through the near real time information and assessment of resources, cost, estimated time for completion, roadblocks, deviations and several such key pieces of information possible through Engineered Systems. Oracle’s Engineered Systems empower Oracle Projects to be performant in transforming source transactions into project financial
data and financial measures that the project manager or controller can use to effectively manage their projects.

Oracle Projects deployed on an Engineered System improves end user response times, batch processing times, and transaction scalability. Users see these benefits with up to date and reliable information after completing many complex project changes, or through quick visibility into changes in a project’s health after processing transactions from across the enterprise, or through support of future business growth with the scalability of an Engineered System.

Oracle Financials

Business Requirements

Global enterprises in industries such as financial services, communications and utilities where high volume processing is the norm, and where many external legacy systems need to be integrated to the General Ledger struggle to complete their financial period close within a short time frame. If batch processes for transaction import, journal import, payments, accounting generation and journal posting can be executed faster, the time to perform the financial period close is reduced. This subsequently provides enough time for financial analysts to run reports to validate the accuracy of the data while enabling CFOs to provide accurate forecasts and reports in a timely manner to management and externally to authorities. Overall, this reduces risks and costs and allows the finance staff to spend time on value add analysis on business performance for better decision making.

Similarly, end user response times are crucial to improve productivity and cash flow. Productivity gains can be achieved in areas such as receivables invoice processing to ensure billing is done promptly and from a receipt collection perspective to ensure the collections agent can collect payment from the customers as fast as possible and improve the cash flow of the enterprise.

Business Benefits

Deploying Oracle Financials and Oracle Financials Accounting Hub on Engineered Systems addresses these business requirements through the following benefits:

• A 3x to 6x faster batch run time. Performance proving tests for the accounting process in Oracle Financials Accounting Hub on Exadata Database Machine X2-8 showed up to 6 times faster batch run time, in one case reducing batch run time from over 3 hours to 30 minutes. In addition to generating accounting for external legacy systems, this process is also used to generate accounting for E-Business Suite subledgers such as Oracle Payables, Oracle Receivables, and Oracle Assets. Therefore, faster batch run times, result in overall faster processing to address the time critical process windows for the financial period close.

• Very high volumes batches can be processed must faster for Oracle Financials and Oracle Financials Accounting Hub products when run on an Exadata Database Machine X2-8. Increasing the number of Real Application Clusters (RAC) nodes help increase the scalability
even further. Performance proving tests have shown faster processing of high volume batches for programs such as Create Accounting, Journal Import and Journal Post in Oracle General Ledger, which help customers with growing volumes address scalability and time critical windows.

- Two times faster invoice processing using Oracle Receivables on Exalogic. Faster Forms applications for Oracle Financials aids the financials close process by alleviating delay for invoice entry clerks entering 100s of invoices in the last few days of a period close. This enables organizations to considerably reduce their invoice processing cost and predict the cash flow based on customer orders.

- Improved end user response times with Oracle Financials deployed on an Engineered System, providing collection agents with up to date and reliable information on customer profile and financial data, thus aiding customer communication and satisfaction. The customers too are able to access real time information on their billing and receipt status through Oracle iReceivables.

- Internal productivity gains can be achieved on Engineered Systems by enabling employees to very easily enter their expense reports through self service iExpenses. Even an asset manager can increase productivity by entering asset data at least twice as fast when Oracle Assets is deployed on an Engineered System.

Human Capital Management (HCM)

Business Requirements

Businesses struggle to attract and retain talent in the current age of globalization and changing demographics. Having the right talent in the company can be the differentiator between success and failure. Human Resource (HR) function therefore has become a strategic integral part of the company’s decision making process and the automation of HCM processes has become very complex.

Over time, the exponential growth of data and technical issues like aging infrastructure have added risk and complexity to this already challenging process of Globalization, increasingly complex need for compliance, need for scalability due to mergers and acquisition activities, and need for integration with other business processes like Financials, Shop Floor, and Projects. There is an urgent need by C level executives for instantaneous strategic information from the HR function to assess the company’s talent pool, training needs, diversity, resource utilization and other employee related information. Statutory requirements call for data retention of several years and the ability to furnish this information to regulatory authorities at a short notice.

Most companies have automated several aspects of their employee and manager self service applications such as employee training, new hire on boarding processes, benefit enrollment, time card entry, retrieval of employment history, expenses, performance appraisals and recruitment applications that can be accessed by external recruiters or applicants. It is critical to ensure
employees and managers are able to access all of these applications without delay. End user response times are critical for employee satisfaction and productivity and lack of it will obviously impact overall company productivity and bottom line.

The following section describes how these challenges can be met by deploying Oracle HCM applications on Oracle’s Engineered Systems.

**Business Benefits**

Engineered Systems can dramatically improve end user response times to ensure large number of employees complete some of these mandatory tasks in short time period. This will boost employee and manager productivity, and reduce help desk calls and other administration overheads.

- Employee benefits enrollment
- Performance appraisals
- Time card entries required for payroll processing.
- New applicant response
- Hiring procedures

Payroll is a resource intensive process with very complex calculations ideally suited for deployment on Engineered Systems with high CPU speeds and faster memory. Faster payroll cycles help to reduce costs and improve compliance.

Most global organizations have operations in multiple countries and many continue to run local Human Resource systems in multiple countries. Engineered Systems can scale and deliver desired availability and performance levels to consolidate all these environments into a single global instance. This allows companies to operate shared HR service centers and reduce the overall IT costs, implement standardization across the company, reduce complexity and deliver critical information to C level executives quickly from a single source of truth.

**Customer Relationship Management (CRM)**

**Field Service Advanced Scheduler**

**Business Requirements**

Oracle Field Service Advanced Scheduler (OAS) helps leading field service providers book appointments, schedule field service technicians and creates optimized trips for field workforce to meet tough customer service objectives while minimizing travel and other key operational costs.

OAS has been deployed in large sophisticated field service businesses across a wide array of industries including high tech, industrial manufacturing, office and medical equipment, local government, utilities, retail, security, and telecommunications. OAS is part of Oracle E-Business Suite Field Service suite of applications that also include Mobile Field Service and Spares Management applications.
OAS should be highly scalable to consider a wide variety of configurable constraints, workforce availability, skills and spare part requirements, business rules, service objectives, and cost factors.

To be productive, field service resources should be able to access information quickly regardless of their location. The information they can see in the field is the result of intense background batch processing of variety of data and if this information is not processed at high speeds and made available on time, then schedules will be disrupted and will result in lost revenue, increased costs, increased SLA violations and probably huge number of unsatisfied customers.

**Business Benefits**

The across-the-board improvement in performance, throughput and scalability achieved by deploying Oracle Advanced Scheduler on Engineered Systems can deliver several benefits in the daily operations performed by field service personnel. Some of these are listed below:

Dispatch Center dashboard can perform 8 times faster providing real-time GPS based location tracking and mapping capabilities and other aggregated information to Dispatchers in a field organization. This allows companies to handle exceptions and meet their service level agreements (SLAs) with customers, thus increasing customer satisfaction, while reducing operational costs.

Advanced Scheduler processes a vast amount of data related to geo-spatial attributes, territories, technician calendar and shifts, spare parts availability, and scheduler rules and presents this information in an intuitive format in the Scheduler user interface. This process can run 6 to 10 times faster, thereby boosting employee productivity.

Several resource intensive batch processes within OAS will benefit from high performance of Engineered Systems. Some of these are listed below:

- Autonomous scheduling with cost based business rules enforcement
- Timely release of tasks to field technicians
- Real time organization of wide trip optimization
- Enhanced scalability of OAS operations by scaling to increases in personnel, global expansions, and transaction volumes.

Service providers can expect to get substantial ROI and remain competitive and profitable only if they achieve significant operational advantage. Deploying OAS on Engineered Systems to increase performance by 6 to 10 times will allow customers to execute Scheduler Optimizer more times to get the best schedule that will lead to direct cost savings in fuel and in vehicle maintenance. Optimization will increase number of jobs done per day to transform the field service organization into a customer oriented profit center.

**Oracle Incentive Compensation (OIC)**

**Business Requirements**

More and more organizations including telecom companies, cable providers, financial services, and network equipment manufacturers use daily or near real time incentive insight to motivate sales
people or a network of partners, as a competitive advantage to increase market share, and attract and retain partners and customers. Nightly end to end commission processing must complete within nightly Service Level Agreements (SLAs) to associate more granular commissionable events to its reward.

Sales Operations constantly strive to keep the sales forces motivated with attainable goals and need the ability to react quickly to changes due to acquisitions, changes in selling models, territory realignments, and retroactive compensation plan changes. Any such change also requires re-calculations involving large volumes of data such as all the transactions for the entire year. This volume of data processing requires additional performance and scalability in the underlying system architecture. Performance testing is critical to ensure these business requirements of daily incentive insight and retroactive commissioning can confidently be completed within critical time windows. Case studies have shown Oracle Exadata Database Machine reduces project risk and overall performance testing time from few months to few weeks.

Business Benefits

Incentive costs can represent a sizable cost component in many organizations. The data within these siloed incentive programs are the most accurate sources of sales performance data because it has been vetted by each and every sales rep and partner. When an organization recognizes the business value of consolidating incentive systems and its associated sales performance analytics on a single enterprise platform, they have built a framework for continual sales force or partner alignment.

Strategic alignment benefits via frequent insight, agile plan changes and modeling include:

- 1%-3% sales growth, improved margins
- Increased customer experience
- Increased market share

These strategic benefits are predicated on performance and scalability because if customers cannot consistently finish calculation and report processing within tight SLAs, it is impossible to obtain the analysis and insight into information that will help to keep sales organizations aligned and motivated. The nature and performance characteristics of OIC are a perfect match for Exadata’s extreme performance architecture for the consolidation and warehousing of sales performance data.

When deployed on Exadata, OIC delivers 8 to 10 times the transactional throughput of an end to end commissioned processing function over non-Engineered Systems. This ensures a timely feedback loop for aligning sales behavior with corporate goals. Exadata’s return on investment to your organization includes strategic alignment benefits and cost savings in the form of reduced risk, performance testing time, time to deploy OIC and IT resources.
Overview of Engineered Systems

Oracle’s Engineered Systems combine best-of-breed hardware and software components with game-changing technical innovations. Designed, engineered, and tested to work best together, Oracle’s Engineered Systems can power the cloud or streamline data center operations to make traditional deployments even more efficient. The components of Oracle’s Engineered Systems are preassembled for targeted functionality and then—as a complete system—optimized for extreme performance. By taking the guesswork out of these highly available, purpose-built solutions, Oracle delivers a solution that is integrated across every layer of the technology stack; a simplicity that translates into less risk and lower costs for your business. Only Oracle can innovate and optimize at every layer of the stack to simplify data center operations, drive down costs, and accelerate business innovation.

Oracle Exalogic

Oracle Exalogic is an Engineered System on which enterprises deploy business applications, Oracle Fusion Middleware or third party software products. Exalogic comes pre-built with compute nodes, memory, flash storage and centralized storage; all connected using InfiniBand in a high redundancy architecture delivering five-nine availability, with fault tolerance and zero-down-time maintenance. Exalogic dramatically improves performance of Oracle Applications, Fusion Middleware and third party applications without requiring code changes and reduces costs across the application lifecycle, from initial setup to ongoing maintenance, as compared to conventional hardware platforms.

Oracle has achieved unique optimizations and enhancements in Exalogic firmware, Exalogic software, and in Oracle’s middleware and applications. These include on-chip network virtualization based on near zero latency InfiniBand fabric, high-performance Remote Direct Memory Access, workload management in Oracle Weblogic server and optimizations in Oracle Coherence and Oracle Traffic Director. Exalogic includes support for a highly optimized version of the Oracle VM, which significantly outperforms comparable virtualization solutions and is an ideal consolidation platform for Applications. Templates to simplify installation, deployment and configuration of applications on Exalogic are available.

Oracle Exadata Database Machine

Oracle’s Exadata Database Machine is Oracle’s database platform delivering extreme performance for database applications including Online Transaction Processing, Data Warehousing, Reporting, Batch Processing, or Consolidation of mixed database workloads. Exadata is a pre-configured, pre-tuned, and pre-tested integrated system of servers, networking and storage all optimized around the Oracle database. Because Exadata is an integrated system, it offers superior price-performance, availability and supportability. Exadata frees users from the need to build, test and maintain systems and allows them to focus on higher value business problems.

Exadata uses a scale out architecture for database servers and storage. This architecture maintains an optimal storage hierarchy from memory to flash to disk. Smart Scan query offload has been added to the storage cells to offload database processing. Exadata implements Smart Flash Cache as
part of the storage hierarchy. Exadata software determines how and when to use the Flash storage for reads and write as well as how best to incorporate Flash into the database as part of a coordinated data caching strategy. A high-bandwidth low-latency InfiniBand network running specialized database networking protocols connects all the components inside an Exadata Database Machine. In addition to a high performance architecture and design, Exadata offers the industry’s best data compression to provide a dramatic reduction in storage needs.

Oracle Exalytics

As analytic applications become more sophisticated and calculation-intensive, the use of mobile BI expands, user adoption increases, and data volumes explode, speed and efficiency is more important than ever. In-memory technology can dramatically accelerate analytic performance. Oracle Exalytics In-Memory Machine is the industry’s first Engineered System for analytics that combines market leading BI foundation, in-memory analytics software, and best-in class hardware engineered and optimized to work together to deliver extreme performance for Business Intelligence and Enterprise Performance Management applications. As a result, users can visually navigate and drill into information at the speed of thought, without limits on the complexity of their questions or the volume of the underlying data. Exalytics drives a new class of smarter and more powerful analytic applications that simply weren’t possible using conventional BI software and generic hardware configurations.

Oracle Business Intelligence Foundation running on Oracle Exalytics has been specially enhanced to take advantage of large memory, processors, concurrency, storage, networking, operating system, kernel, and system configuration afforded by the Oracle Exalytics hardware. Oracle TimesTen for Exalytics has been specially enhanced for analytical processing at in-memory speeds. With lightening fast scan speed of up to 100 million rows per second and up to 10x columnar compression, TimesTen for in-memory analytics delivers faster reports and dashboards for departmental as well as enterprise wide consumption.
Oracle SPARC SuperCluster

Similar to Engineered Systems such as Exadata, Exalogic, Oracle E-Business Suite can be deployed on Oracle’s SPARC SuperCluster to achieve high availability, performance, scalability and environment consolidations. Here is a brief description of Oracle’s SPARC SuperCluster’s technical capabilities.

Oracle’s SPARC SuperCluster is the world’s most efficient multi-purpose engineered system, delivering extreme efficiency, cost savings, and performance for consolidating mission critical applications and rapidly deploying cloud services. Oracle’s SPARC SuperCluster represents a complete, pre-engineered, and pre-tested high-performance enterprise infrastructure solution that is faster and easier to deploy than a collection of individual database and application servers. The system combines innovative Oracle technology—the computing power of Oracle’s SPARC servers, the performance and scalability of Oracle Solaris, the Sun ZFS Storage Appliance, the optimized database performance of Oracle Database accelerated by Oracle Exadata Storage Servers, and a high-bandwidth, low-latency InfiniBand network fabric—into a scalable, engineered system that is optimized and tuned for consolidating mission-critical enterprise applications.

Oracle’s SPARC SuperCluster provides both the capacity for growth, as well as the fine-grained server virtualization needed to isolate individual application components. Deployment speed, application performance, and availability can all be optimized with the multiple layers of enterprise application infrastructure consolidated onto a high-performance, highly available SPARC SuperCluster system. Designed as a pre-configured, pre-tested, and ready-to-deploy SPARC
SuperCluster engineered system, the solution provides a complete and optimized infrastructure solution for applications, built around robust compute, networking, storage, virtualization, and management resources. The result is a system that is orders of magnitude easier to manage, and up to five times faster to deploy than alternatives, all while occupying considerably less real estate requiring less power. Furthermore, the SPARC SuperCluster system provides full built-in redundancy resulting in a highly reliable infrastructure without single point of failure. An issue with one component will not impact other components of the system offering true isolation. Customers can consolidate multiple Oracle E-Business Suite environments with minimum disruption, without fear of performance degradation, and the ability to achieve required service levels.

Technical Benefits of Oracle’s Engineered Systems

Overview

Internal benchmarking indicates that Oracle E-Business Suite running on Oracle’s Engineered Systems performs 3 to 10 times faster for forms and self service applications depending upon the concurrency load profile. And linear scaling allows for very large deployments and multiple applications to run simultaneously while maintaining consistent response times. Oracle’s Engineered Systems are architected to deliver maximum availability, high performance, and scalability helping Oracle E-Business Suite customers to consolidate environments, and reduce server footprint resulting in an overall reduction in cost of application ownership.

Here are some of the technical benefits delivered by Engineered Systems:

- Oracle E-Business Suite applications consists of many batch processing programs that create large workloads. These workloads are highly CPU intensive. High concurrency of these workloads requires systems with large memory capacity with large Systems global area (SGA) and Program global area (PGA) capable of processing high speed disk input/output (I/O). Oracle’s Engineered Systems are architected to deliver these superior technical capabilities to manage such large workloads.

- Engineered systems can handle twice as many users per core compared to other servers delivering the scalability required to add more application users during growth and expansion.

- Linear Scaling easily supports very large deployments.

- Resource Manager can help consolidation of database and application environments by controlling CPU usage, managing CPU contention via instance caging, controlling disk I/O usage, and managing contention via IORM’s inter-database resource plans. Customers can achieve higher throughputs as more transactions can be processed using single Exadata core compared to other servers.

- Exalogic has been engineered to leverage a technique known as Single-Root I/O Virtualization to eliminate virtualization overhead and deliver maximum performance and scalability. Mission-critical server virtualization offers a whole new level of consolidation where multiple virtual machines are sharing a single physical server in order to maximize the utilization of server hardware, while minimizing associated cost.
• Oracle VM template for Exalogic reduces installation and configuration time and allows rapid deployment of Oracle E-Business Suite applications.

• Oracle E-Business Suite customers can load balance web and forms servers, configure parallel concurrent processing and configure Oracle RAC and Oracle Data Guard for high availability.

• Oracle Enterprise Manager Cloud Control (EM) helps with Exadata manageability and provides a composite view of all health indicators of a cell or cell group to diagnose and troubleshoot performance problems efficiently.

Oracle E-Business Suite customers will benefit from using following unique features of Oracle’s Engineered Systems:

Exadata Unique Features

Exadata Smart Flash Cache

Exadata Smart Flash Cache uses Flash memory to dramatically reduce the time to read and write database and log records. The intelligence in Smart Flash Cache transparently moves active database blocks from disk to flash in real time, thus ensuring that "hot" data is in Flash memory when the next access occurs. Blocks that should not be in Flash are similarly recognized, maximizing the amount of space in Flash for active data.

Internal bench marks for Oracle E-Business Suite have shown following results as a result of Smart Flash Cache:

• Average I/O latency reduced by 58% and no special tuning is required to achieve I/O performance improvement.

• Log file sync events improved by 5% and no special tuning is required to achieve log file sync event improvements

Exadata Smart Scan

Exadata Smart Scan speeds up data-intensive queries by leveraging the processing power of Exadata Storage Servers to scan and filter out results. By moving queries to storage instead of moving the data to the database servers, long-running reports often complete 10 times faster than conventional systems.

InfiniBand

The use of InfiniBand as the networking fabric within Exadata ensures the lowest latency for messages and the highest bandwidth for data transfers. High-speed transactions as well as data-intensive queries and reports reap the benefits from InfiniBand. Oracle E-Business Suite benefits resulting from InfiniBand are:

• 30-40% lower CPU utilization and 100% or more throughput compared to Gigabit Ethernet

• 20% improvement in online transactions response times
• Easier scaling of E-Business Suite online transactional processing through low latency

**Exadata Scale-Out Storage**

Exadata Scale-Out Storage enables the full performance of Exadata to be realized against large and growing databases, without fear of bottlenecks. As the database size grows and storage capacity is added to Exadata, storage performance and networking bandwidth scale in equal proportion. As a result,

• Backups and Clones can be executed at a rate of 20TB/hour
• Faster incremental backups can be performed

**I/O Resource Manager (IORM)**

IORM allocates I/O bandwidth across different applications and databases, based on a prioritized allocation plan, to ensure that the most important applications get the performance they need when they need it. As a result, customers can consolidate database and application environments without worrying about resource contention and performance degradation.

**Exalogic Unique Features**

**Exalogic Exabus**

Applications running on Exalogic utilize Exabus, the underlying Infiniband fabric, which provides low latency and high throughput eliminating I/O bottlenecks in every application layer. Applications components are typically deployed in more than one server and Exabus provides low latency for I/O across nodes on same Exalogic rack. Access to ZFS storage device over Exabus greatly reduces latency for log file writes and other file access operations. For applications running on Exalogic and accessing the database tier on Exadata, Exabus delivers faster I/O, reduces CPU usage on both the mid-tier and DB-tier and providing higher connection pooling efficiency.

**Oracle VM for Exalogic**

Exalogic Oracle VM can sub-divide a physical compute node into multiple virtual machines to increase application deployment efficiency while maintaining application performance. Oracle VM has been engineered for tight integration with Exalogic Exabus I/O backplane using a technique called Single Root I/O Virtualization (SR-IOV) ensuring Oracle VM significantly outperforms comparable hypervisors from other leading vendors. The benefit of this approach is unmatched application performance. In an Exalogic configuration, the impact of virtualization on application throughput and latency is negligible.
Benefits Summary

The following table summarizes some of the technical benefits of deploying Oracle E-Business Suite on Oracle’s Engineered Systems, and how they translate to business benefits.

<table>
<thead>
<tr>
<th>Technical Benefits</th>
<th>Business Benefits</th>
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<tbody>
<tr>
<td><strong>High Availability</strong></td>
<td>• Maximum productivity from uninterrupted mission critical business processes</td>
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<tr>
<td>Oracle’s Engineered Systems are architected with built-in redundancy to minimize downtimes</td>
<td>• Reduced business disruption</td>
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<td></td>
<td>• Reduced risk of failures</td>
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<td></td>
<td>• Increased regulatory compliance</td>
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<td><strong>High Performance</strong></td>
<td>• Increased competitiveness through quick, informed decisions based on real-time access to business insights</td>
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<td></td>
<td>• Quick business problem solution and new opportunities development</td>
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<td></td>
<td>• New end user applications deployment that was not possible before, to improve business processes and employee productivity</td>
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<tr>
<td></td>
<td>• Improved employee productivity by dramatically improving end user responsiveness</td>
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<tr>
<td></td>
<td>• Ability to manufacture more products, fulfill more orders, react to changes quickly by reducing or eliminating the batch processing times for critical applications</td>
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<tr>
<td></td>
<td>• Increased revenue opportunities by timely completion of orders or services</td>
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<td></td>
<td>• Customer retention by increased customer satisfaction by delivering on-time services or goods and complying with service level agreements</td>
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<tr>
<td></td>
<td>• Reduced total cost of ownership due to reduced need for developers or third party consultants required for tuning custom applications</td>
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<tr>
<td><strong>Scalability</strong></td>
<td>• Instance consolidation</td>
</tr>
<tr>
<td>Oracle’s Engineered Systems can scale to increase in users and transaction volumes</td>
<td>• Global expansions</td>
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<td></td>
<td>• Efficient, rapid, low cost assimilation during Mergers and Acquisitions</td>
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<tr>
<td></td>
<td>• Increased business units, users or transactions without worrying about performance degradation</td>
</tr>
<tr>
<td><strong>Standardization</strong></td>
<td>• Reduced total cost of ownership</td>
</tr>
<tr>
<td></td>
<td>• Simplified deployments</td>
</tr>
<tr>
<td></td>
<td>• Rapid deployments across enterprise in multiples business units and multiple regions</td>
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</tbody>
</table>
**Storage improvements for Analytics**

Oracle’s Engineered Systems provide several advanced methods of compression technologies

- IT costs savings by reduced storage costs
- Reduced IT costs by consolidations

**Summary**

Oracle E-Business Suite has become the backbone of hundreds of companies across the globe. Along with the high availability and high performance levels of Oracle E-Business Suite to perform their day-to-day operations, business owners expect instant business insights to make informed decisions. Oracle’s Engineered Systems such as Exadata, Exalogic and Exalytics compliment the Oracle E-Business Suite to meet this need, by delivering accelerated application performance to create new opportunities and business capabilities while reducing total cost of application ownership.

**References**

This paper summarizes the benefits of deploying Oracle E-Business suite and several performance sensitive applications on Oracle’s Engineered Systems. For more in depth analysis of each of these applications you can refer to the following white papers:

- Oracle E-Business Suite Manufacturing & Costing on Engineered Systems
- Oracle E-Business Suite Spend Classification & Analysis on Engineered Systems
- Oracle E-Business Suite Warehouse Management on Engineered Systems
- Oracle E-Business Suite Order Management & Advanced Pricing on Engineered Systems
- Oracle E-Business Suite Projects on Engineered Systems
- Oracle E-Business Suite Financial Accounting HUB on Engineered Systems
- Oracle E-Business Suite Human Capital Management on Engineered Systems
- Oracle E-Business Suite Field Service Advanced Scheduler on Engineered Systems
- Oracle E-Business Suite Incentive Compensation on Engineered Systems

Refer to the following for detailed information on Engineered Systems:

- Oracle Exadata Database Machine Brochures and Data Sheets
- Oracle Tech Network Oracle Exadata Database Machine
- Oracle Exalogic Elastic Cloud Overview

Refer to the following for the Technical Solution overview:
• Oracle High Availability Architecture White Paper October 2012