E-Business Suite Manufacturing and Cost Management Applications for Engineered Systems
Executive Overview.................................................................................................................. 2
Introduction to Engineered Systems ....................................................................................... 2
Oracle Exalogic .......................................................................................................................... 3
Oracle Exadata Database Machine ......................................................................................... 3
Oracle Exalytics ....................................................................................................................... 4
Oracle SPARC SuperCluster ..................................................................................................... 6
Technical Benefits of Oracle’s Engineered Systems ................................................................. 6
  Overview ............................................................................................................................... 6
  Exadata Unique Features ....................................................................................................... 8
  Exalogic Unique Features ...................................................................................................... 9
Business Benefits of Deploying EBS Manufacturing and Cost Management Applications on Engineered Systems ........................................................................................................... 10
  1. Shorten Run-time to Period Close .................................................................................. 10
  2. Rapid Product Cost or Rate Change Impact Analysis .................................................. 12
  3. Instant Parts Reuse Analysis ......................................................................................... 13
  4. Reduced Manufacturing Cycle Times ......................................................................... 14
  5. Rapid Root Cause Analysis for Manufacturing Defects .............................................. 15
  6. Shorter Product Information Processing Cycle Times ................................................. 16
Conclusion ............................................................................................................................... 17
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Executive Overview

Manufacturing enterprises deal with complexity and variability at all times. Raw materials, production resources and delivery schedules are prone to constant change in today's increasingly complex supply chains and manufacturing processes. In this environment, manufacturers seek real-time visibility into Yield, Variances, Defects, Scraps and Rejects to assess the overall impact to manufacturing operations and their value chain to achieve greater synchronization and predictability in order to get the right products to the right customers at the right time.

Manufacturers typically generate large amounts of information from their production facilities, machinery, quality systems and warehouse operations. As businesses ramp up and transaction volumes exponentially increase, it becomes paramount for manufacturers to ensure that their IT systems are able to scale accordingly to accommodate the future demand and growth and continue to ensure enhanced operational excellence and user productivity. Ability to make timely decisions based on analysis of large amounts of ERP and non-ERP data becomes a critical success factor in terms of getting a competitive edge or preempt potential downstream impacts to other dependant business processes.

This white paper describes the significant benefits that manufacturers would achieve when E-Business Suite Manufacturing and Cost Management applications are deployed on Engineered Systems.

Introduction to 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 Oracle 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-nines availability, with fault tolerance and zero-down-time maintenance.

Exalogic dramatically improves performance of Oracle Applications, Fusion Middleware and 3rd party applications without requiring code changes and reduces costs across the application lifecycle, from initial set-up to on-going maintenance, as compared to conventional hardware platforms. Oracle has made unique optimizations and enhancements in Exalogic firmware, Exalogic software, and in Oracle’s middleware and Oracle 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 Oracle Applications. Templates to simplify install, 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 making the need for speed and efficiency 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/second and up to 10x columnar compression, TimesTen for in-memory analytics delivers faster reports & dashboards for departmental as well as enterprise wide consumption.
Figure XX: Engineered Systems: Exalogic, Exadata, Exalytics; Applications, Database and Analytics. The fastest, easiest path to unbeatable application performance

References

*Oracle Exadata Database Machine* Brochures and Data Sheets

*Oracle Tech Network Oracle Exadata Database Machine*

*Oracle Exalogic Elastic Cloud Overview*
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.
Business Benefits of Deploying EBS Manufacturing and Cost Management Applications on Engineered Systems

This section describes the significant benefits that manufacturing enterprises will achieve when E-Business Suite Manufacturing and Cost Management applications are deployed on Oracle’s Engineered Systems. It also details the processes, user interfaces, batch programs within these applications that will see remarkable performance improvements to enable these benefits.

1. Shorten Run-time to Period Close

Closing supply chain accounting periods on time is critical to all types of businesses. Federal and Statutory reports and information that help analyze the health and profitability of the business are generated during period close and this makes period close a time sensitive activity. Most enterprises also setup new costs for the succeeding period. Period end activities by their nature are computationally intensive and require processing of large volumes of data and typically need to include transactions being generated up to the last minutes of the period. Most manufacturing businesses now have a global footprint in their operations. Period close activity for global manufacturing enterprises adds additional challenges because of the necessity to consolidate manufacturing and financial data across business units and legal entities. Historically, most customers struggle to close periods on time because of the above complexities. This problem gets compounded by poor IT infrastructure that is unable to scale in terms of the processing horse power that is needed to process large volumes of transactions during the period end. Timely period close allows enterprises to perform cost planning, maximize margins, minimize variances, and maintain lean inventory and enables business to submit statutory reports within Federal deadlines. Any technological advances that would enable organizations to process cost information and reduce runtime for period close will lead to tremendous business benefits.

The above benefit can be realized because the following E-Business Suite processes will experience significant performance and scalability improvements when run on Engineered Systems.

a. Cost Processing and Sub Ledger Accounting of Supply Chain Transactions (Manufacturing, Procurement, Logistics)

All transactions created as part of the business processes like Order-to-Cash, Procure-to-pay and Manufacturing need to be accounted for in the respective sub ledgers because business needs clear view of costs and profits to help close books. An organization follows one of the two cost management approaches; either Perpetual or Periodic. Each cost management approach has its own set of period end activities. For periodic costing approach, cost calculations and accounting are done during period close. Both activities are extremely performance intensive processes that need to sift through large volumes of data to identify correct transactions, calculate starting balances, calculate quantity balances, and execute complex cost calculations based on quantity balances and incoming
costs of the item. Typically costing algorithms process all the data as opposed to subsets of data and the cost computations are cyclic in nature and require lots of IO intensive read and write operations. Following are examples of processes/activities happening at the period end:

- Accounting Pre-Processor – to calculate the costs
- Create Accounting – to calculate and post the accounting in Sub ledgers
- Transfer accounting to General Ledgers

In perpetual methods, cost calculations and accounting of transactions are performed throughout the period. Though cost calculation and accounting processes are not period end activities, other activities listed below have similar performance challenges involving intensive calculations while processing large amounts of data. Following are examples of processes/activities happening at the period end:

- Inventory Balance Summarization
- Transfer Sub ledger to General Ledgers
- Setup new costs with ‘Mass Edit Costs’ to derive new costs, then perform cost rollup to create new cost structure and update costs to implement the new cost structure for the next period.

b. Financial and Reconciliation Reports

During every period, customers need to track, investigate and analyze differences between value in financial books, physical inventory balances and discrepancy between the two. Period end values are used as the baseline for cost calculations for the next period and for inventory planning. During period close it is critical that the ERP system be able to produce these valuation reports in a timely fashion to enable business users to analyze this information and act accordingly. Reconciliation reports, listed below, are extremely data intensive as they need to process huge amounts of data from many different products and have complex algorithms. For example, purchase order matching to payments is done throughout the period and it is usually inevitable that the valuation of payments to actual receipts occur. These activities require detailed information from matching data at the time of close.

- Un-Invoiced Receipts
  - Inventory Value
- Material Distribution
  - Detail/Summary
- WIP Account
  - Detail/Summary
- Receiving Account
  - Distribution
- All Inventories Value
- Accrual Reconciliation
- Period Close Value Summary
- Purchase Price Variance
- Invoice Price Variance
- Discrete Job Value
- Repetitive Value
- Intransit Value
- Sub inventory Value
- Receiving Value
- WIP Value
- Receiving Value by Destination
- Expense Job Value
Given the typical large volumes of PO receipts and payments, detailed sequential transaction scan and reporting is time consuming. Cost Accountants need to ensure that balances are accurate to the highest degree of precision. These reports by their nature have always had long runtimes. Though information processed by these reports is required during the processing of period close, historically long running nature of these critical reports has been considered acceptable.

c. Margin Analysis Report

Customers use the Margin Analysis Report to publish sales revenue, costs of goods sold, and gross margin information for each item shipped/invoiced over a period of time. It compares earned revenue with recognized COGS and users can get both summary and detailed information by customer, order, and line number.

Cost of goods sold is a key indicator for manufacturers to identify and monitor. When same goods are made at multiple plants/ countries, accountants want accurate picture of the COGS and impact on gross margins.

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2. Rapid Product Cost or Rate Change Impact Analysis

Most business track their gross profits and margins very closely. Margins and gross profits are calculated on the cost of manufacturing and operations. High accuracy of costs translates to accurate numbers for margins and gross profits. Thus any change in cost of purchased components or manufacturing resources directly impacts the margins and gross profits of the business. Thus businesses demand a rapid analysis of change impact due to cost changes and further impact on margins and seek to minimize deviations from projected margins by incorporating changes in costs and updates to price lists.

The above benefit can be realized because the following E-Business Suite processes will experience significant performance and scalability improvements when run on Engineered Systems.

a. Supply Chain Cost Rollup

Supply Chain Cost Rollup program is used to calculate assembly costs of all finished goods and sub-assemblies across multiple organizations, costing methods, and currencies connected to sourcing rules. Costs from different sources such as make, buy, and transfer items, usage quantities of components across all bill levels; are merged into rolled up cost in the organization making this an extremely data and computationally intensive process.

b. Compare Bills of Material (BOM)

Customers use BOM Compare user interface to compare the structure of any two manufactured assemblies. This user interface provides the ability to compare the primary to an alternate bill, same bill across organizations, or current revision of an item to a future revision. You can compare primary bills, manufacturing and engineering bills, alternates, and different revisions.
BOM comparison algorithms need to process large volumes of data and perform intensive computations that are cyclic in nature and require lots of read/write IO operations. User Interface presented to manufacturing users to dynamically interact with complex multilevel BOMs also requires processing of complex algorithms that explode the BOMs as the user navigates through different levels of the bills.

3. Instant Parts Reuse Analysis

Components are used to make final product or subassemblies. Understanding where a particular component is used across product assemblies and subassemblies is critical when it comes to analyzing 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. By maximizing part reuse, manufacturing organizations can realize significant design and manufacturing cost savings. Inefficient part reuse can lead to duplicate part proliferation which can add to inventory carrying costs in addition to consuming time and resources for redundant part design and manufacture.

The above benefit can be realized because the following E-Business Suite processes will experience significant performance and scalability improvements when run on Engineered Systems.

a. Product advanced search

In a product centric enterprise, searching for a product or part is the most fundamental activity that any user in any function performs on a daily basis. Ability to quickly get access to the right part results in shrinking the overall time it takes to perform the entire business process. With large sets of attributes being held against every product, the combination of various parameters that a user could use to filter down to the right product is exhaustive. Product hub provides easy keyword based search and advanced parametric search capabilities based on user-defined attributes. As new items are created and existing items updated, product hub updates the inter-media text index to provide up-to-date search results. Advanced search allows flexible search based on extensible attributes. It provides the ability to create and save search criteria, create display formats and export search results to spreadsheets.

b. Product ‘Where Used’ Report

E-Business Suite Manufacturing provides the product ‘Where used’ feature that fully explodes the Bill of Materials (BOM) of all the assemblies and subassemblies to figure out where a particular part is used. For manufactured products with very deep and wide BOM structures, this analysis is a
computationally intensive activity as it ends up exploding the BOM structures up to the leaf (lowest) levels resulting in hundreds or even thousands of parts. Getting quick response times to such queries helps speed up decision making during design time and parts replacement analysis.

4. Reduced Manufacturing Cycle Times

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. 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 product.

The above benefit can be realized because the following E-Business Suite processes will experience significant performance and scalability improvements when run on Engineered Systems.

a. Importing Manufacturing work orders from external systems

Manufacturing plants typically deploy a number of home grown or 3rd party MES systems that are used by shop floor operators on a daily basis to enter material, resource and lot/serial transactions captured during the production process. EBS Manufacturing provides the ability to load planned orders, planned order update recommendations, and suggested repetitive schedules from any source - planning systems, order entry systems, finite scheduling packages, production line sequencing programs, spreadsheets, and even custom entry forms - into the Work Order Interface. For example, if your plant directly feeds to your customer's plant, you can take demands directly from your customer rather than waiting for the next MRP run thus reducing response time and eliminating unnecessary overhead. Reducing the overall timeframes to bring in the work order information from external MES or planning systems into EBS Manufacturing will ensure timely and accurate costing, accounting and planning. It will also provide real-time visibility of manufacturing operations for shop floor managers and executives.

b. Work Order-less Completions

EBS allows completion of assemblies using the Work Order-less Completions functionality without having to create a job or repetitive schedule, or a flow schedule. Assembly Pull, Operation Pull, and Push components are automatically backflushed when completing assemblies. Lots for backflush components under lot number control can be identified manually or automatically. For backflush
components under serial or lot and serial control, you can manually identify which lots/serial numbers to backflush. Production is recorded with the Work Order-less Completion transaction against flow schedules created with the Line Scheduling Workbench. Completions can be either unscheduled or scheduled against a flow schedule. The system backflushes all components and performs resource and overhead transactions upon recording completion of the finished product. Timely processing of these large backflush transactions is the key to accurate ATP (Available to Promise) and Planning.

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5. Rapid Root Cause Analysis for Manufacturing Defects

Identification and resolution of quality problems needs to happen the moment they occur - before the issue of recalls; before customers complain; before problems happen in the field. 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. Recalls cost manufacturers billions of dollars each year in production losses and damage to their brands’ reputation. Organizations are coming under increasing pressure to comply with ever-changing regulatory and laboratory certification requirements. For highly regulated industries, such as Pharmaceuticals and Food and Beverage, the stakes are even higher. Authorities such as FDA can levy heavy fines, and even close down plants for failure to comply with certifications or meeting the latest Good Manufacturing Practices (GMP).

The above benefit can be realized because the following E-Business Suite processes will experience significant performance and scalability improvements when run on Engineered Systems.

a. Search Quality Results

Non-conformances are the failure to comply with requirements of an organization's quality system. Non-conformances can arise at any time during the manufacturing process and need to not only be detected quickly, but also need to be analyzed rapidly to determine the root cause and stop the issue from occurring again.

Oracle Quality and Oracle Process Manufacturing Quality applications help document and track product and process defects, non–conformances problems, manufacturing quality defects and general quality issues. You can determine what quality data to collect, track, and report using user–definable collection plans. For example, you can collect quantitative information, such as defective quantities or measurements, or qualitative information, such as critical test results and defect cause codes. You can document what defects occurred, what you did with the nonconforming material, and what corrective action you took. In addition, you can attach your ISO 9000 documentation and standard operating procedures to your collection plans so that users can access these documents on–line while they're collecting quality data.

With time, the amount of information kept within Quality modules will grow significantly. However, it is essential to have quick access to quality results for rapid root cause analysis.

b. Import manufacturing quality data from external systems
In order to meet the stringent demands of ever changing quality regulations, many organizations choose best-of-breed Quality Management Systems or Laboratory Information Management Systems (LIMS) for immediate compliance needs, and integrate information back to their ERP for further analysis and maintaining a single source of truth for the information. In such instances, the ability to import the data in these home grown/3rd party quality systems into EBS Manufacturing Quality application is of utmost importance to enable rapid analysis of large set of quality data in real-time for root cause of manufacturing defects to proactively prevent future quality incidents and poor products from being produced.

6. Shorter Product Information Processing Cycle Times

Creating and maintaining accurate view of product information in global organizations with complex supply chains, high M&A activity and constant product changes can be a long and challenging process. With competitive pressures and customers looking for real-time information, retailers cannot afford any delay in product updates and need to make updates to millions of SKUs on a daily basis. In other industries like Telco, the product information may be generated in several systems making daily consolidation and timely distribution of clean, accurate product information a critical activity. This problem is compounded when the number of products, attributes and rules grow over time. Reducing the processing cycle times of consolidation, matching and cleansing product data from multiple sources accelerates revenue realization, builds competitive advantage and reduces product introduction maintenance costs.

The above benefit can be realized because the following E-Business Suite processes will experience significant performance and scalability improvements when run on Engineered Systems.

a. Import and consolidate product data from multiple systems

Import Catalog Items batch program is a heavily used concurrent program used by all EBS and Product Hub customers. For all new items and product updates coming through item interface, it validates and defaults item attributes (including extensible attributes), executes user defined business rules, executes match to avoid duplicates, manages category assignments, creates cross references and enforces change order policies and creates change orders depending on the parameters. Product definition not only consists of its attributes but is also spread over in the form of revisions, serial and lot information, categorization, related items, substitutes etc. Item import is the key to keep all this information in sync and up-to-date. Since multiple instances of this program can be launched in parallel, the large number of CPUs and memory in Engineered Systems means you can process more items in parallel and compress the processing cycle times.
Conclusion

Ability to manage and analyze exponentially growing data in a timely fashion and ensuring that businesses processes are optimally performing against these large data sets will continue to be the critical areas of focus for Manufacturing IT organizations. Fine tuning certain aspects of the infrastructure to meet these demands will only provide limited relief. It is essential for enterprises to look at the holistic picture of IT systems that can support these growing business needs.
