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Oracle Tuxedo and Exalogic: Best Platform for Mission Critical C, C++, COBOL Applications

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Executive Overview

Proliferation of online services, mobile devices, data explosion, and cloud enablement has caused a dramatic shift in IT. To compete effectively in 21st century, organizations need to rethink their application infrastructures to accommodate real time response needs, exploding transaction rates, heightened security and availability requirements of mission-critical applications, all while reducing infrastructure, maintenance, development, and management costs as part of broader enterprise right-sizing.

Traditional infrastructures may not be sufficient to accommodate the diversity and complexity of mission critical applications in this new era. Vertical silos within IT take too long and cost too much to provision a new server, network connections, storage, and other infrastructure dependencies. Customers deploying or migrating their C, C++, and COBOL applications to Oracle Tuxedo on Oracle Exalogic Elastic Cloud & Oracle Exadata Database Machine benefit from an environment that's fine-tuned all the way from the hardware to the application layer to deliver on performance, business agility, lower total cost of ownership and faster time to market. Together these products provide complete and best-of-breed solutions for running high performance, mission critical C, C++, COBOL applications.

Introduction

In its third decade of reliable performance across tens of thousands of deployments, Oracle Tuxedo is one of the world's most respected high-end computing platforms. It combines the peace of mind that comes from years of reliability, performance, and maturity with the latest standards and technologies needed to make your mission-critical application a first-class participant in private cloud and/or traditional data center environment. Whether you're modernizing an existing C or C++ application, re-hosting a mainframe C or COBOL/CICS, batch, or IMS application, or building new Java application services with extreme transaction processing needs, Oracle Tuxedo remains the dependable choice. As organizations need to continually deliver innovative solutions to differentiate themselves from competition in global markets and address explosive growth in data volumes and transactions, Tuxedo continues to innovate in order to deliver unprecedented performance, flexibility and continue to help customers reduce the total cost of ownership. A new approach where every layer of the infrastructure right from the hardware to application layer is engineered to work together is needed to deliver this next generation platform.

Demands of the Next Generation Application Platforms

Cloud Infrastructure Solutions

Cloud-hosted solutions can sound like the nirvana to lowering in-house complexity, reducing costs and hastening time-to-market. When done right, it can result in lower barrier to introduction of new products and services and allow organizations to focus on core competencies. However, cloud deployments bring with them a heightened demand for better reliability, flexibility, management and performance of the underlying platform supporting mission critical applications. While hosting a cloud platform as a service, addressing performance, manageability and security issues can be a challenge, and if not handled properly can turn away customers. Customers may opt for private enterprise cloud, public cloud, or a hybrid solution but in all three cases, the same issues surrounding performance, manageability and security remain significant.

Increasing Demands of Existing Enterprise Applications

Organizations are looking to differentiate themselves from the competitors and deliver on increased customer demands with improved operational execution. The volume of information and transactions is constantly on the increase with market globalization and IT becoming the primary medium for business. For example:

- Mobile service provider in Japan is processing up to 600,000 mobile payments per second
- Financial messaging solution needs to connect 10,000 financial institutions around the world processing over \$7 trillion in payments daily,
- US Government benefits agency needs to handle over 1.5M benefit-related transactions per hour,
- A global bank needs to scale payments throughput 4X and handle over 1.1M financial messages an hour,
- A horse racing/sports betting company in Europe needs to handle bets coming from 200,000 terminals, averaging 3,000 per second in the last 5 minutes before the main race of the day
- Insurance processor in France needs to support 80,000 people submitting health care claims online,
- Credit card processor in China needs to handle over 13,000 transactions per second, and
- Retail chain needs to manage, monitor and support 7,000 geographically distributed stores in North America from a central location.

Across industries the demand for better performance, scalability, and uninterrupted 24x365 operations is growing. While the processing volume is growing rapidly, the costs cannot. Doing more with less is the mantra in today's business, and it is particularly pervasive in IT. Organizations that can step up to these requirements can better retain customers and increase their market share and wallet share at the expense of the competitors who are failing to keep up.

Reduce Cost and Accelerate Modernization of Mainframe Applications

Rapid changes in today's economic environment drive organizations to reduce the costs of their IT infrastructure and operations, improve their ability to react to changing business demands, and minimize reliance on legacy systems and retiring mainframe skills. In order to improve competitiveness and better align IT with business priorities companies face increasing pressure to deliver more business value and better services from their IT spending and free up funding for new initiatives. In this environment reducing mainframe costs and modernizing legacy applications have become top-of-mind concerns for CIOs and CFOs alike. Business-critical mainframe applications are invaluable assets: their embedded business logic represents many years of development and evolution. Among large enterprises, these assets represent 60% - 70% of all business-critical applications consuming two-thirds of IT's operations budget. Migrating these applications from mainframes to open systems can dramatically reduce the infrastructure and operations costs and unlock the business logic for faster integration and evolution. Organizations with mission-critical mainframe applications are increasingly looking for fast, low-risk migration approaches that can generate quick ROI followed by extending the legacy application with new modern components – creating a composite application to meet new requirements without re-writing the legacy COBOL.

About Oracle Tuxedo

Oracle Tuxedo product family is a key product within Oracle Cloud Application Foundation. Built on standards-based technologies for portability, efficiency, and ease of integration, Oracle Cloud Application Foundation brings together key industry leading technologies that include Oracle WebLogic Server for Java EE, Oracle Tuxedo, Oracle Coherence in-memory data grid; Oracle JRockit and Hotspot Java SE solutions; Oracle Virtual Assembly Builder; and Oracle Traffic Director.

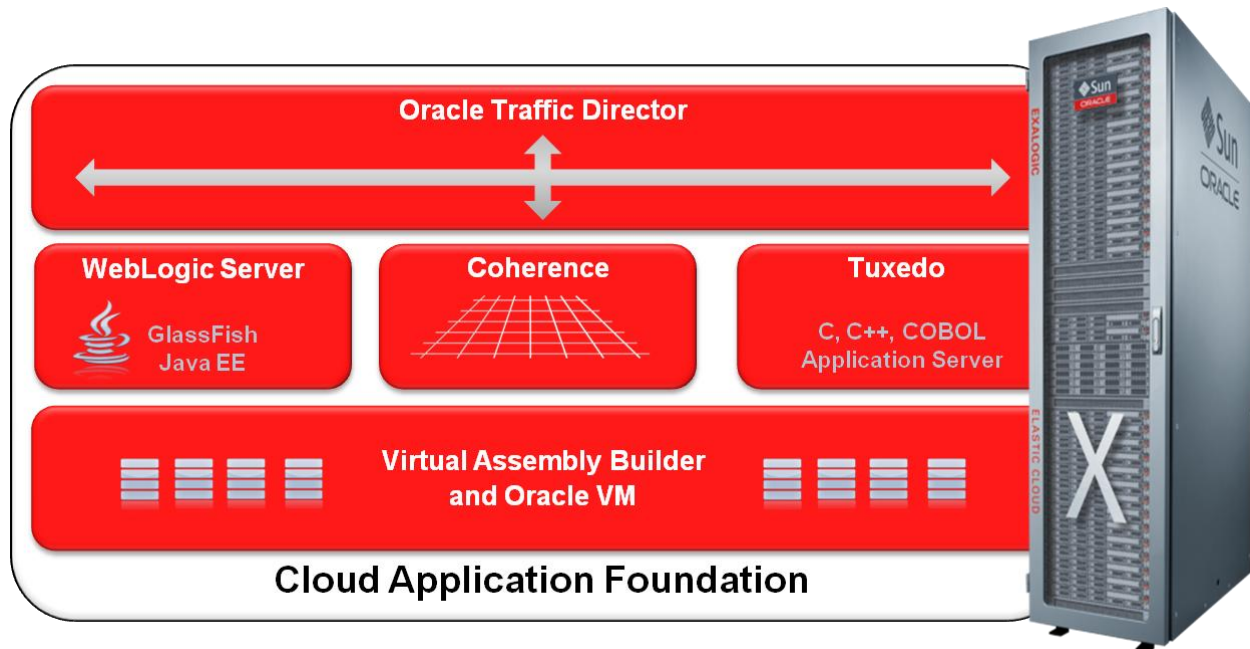


Figure 1: Could Application Foundation: Best of Breed, Pre-Integrated Cloud Infrastructure

Within Oracle Cloud Application Foundation, Oracle Tuxedo plays a strategic role by providing an application server primarily for C, C++ and COBOL. Oracle Tuxedo is today's solution of choice for mission critical applications on open, standards based software and hardware. Tuxedo has an established history as an industry-leading distributed transaction processing platform for mission critical applications and an application server for C, C++, COBOL applications. Extended with Application Runtimes for CICS, IMS, and batch, Tuxedo has proven to be a solid choice for re-hosting mainframe applications. With its SOA-enablement capabilities, Oracle Tuxedo extends the life of existing IT assets by making them fist-class citizens of modern SOA-based implementations.

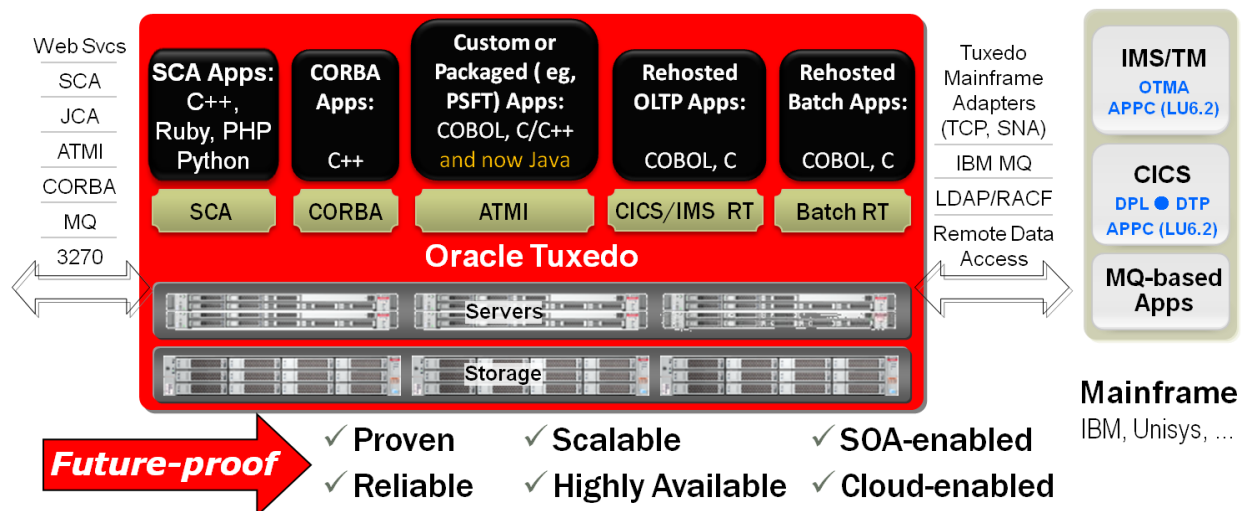


Figure 2: Oracle Tuxedo – 21st Century Application Server for Composite, Multi-Language Applications

For over two decades Tuxedo has been the reliable application server platform for applications composed of loosely integrated C/C++ or COBOL services that need to provide mainframe-class performance, scalability, reliability and availability on an open, standards-based architecture. With the addition of mainframe-compatible application runtimes for CICS, IMS, and batch, Tuxedo has also become the premier platform for re-hosting mainframe applications on standards-based open systems. Its key attributes include:

- Multi-language containers transparently integrate into composite applications
- Very high throughput (exceeds 100K tps)
- Extremely low latency (service invocation in under 40 microseconds)
- Linear scalability in vertical and horizontal scale-up/scale-out configurations
- Built-in high availability clustering with dynamic load-balancing and fault-tolerant services
- Integrated management options state-of-the art monitoring, service level alerting, diagnosis, and administration
- Out-of-the-box SOA and legacy integration options

Tuxedo customers don't have to sacrifice performance, reliability, scalability, or manageability as they adopt open systems. Applications deployed on well-configured Tuxedo system can deliver the same or higher level of throughput and responsiveness as a mainframe system, for a fraction of the cost. There are myriad examples of mission critical applications such as ATMs and electronic funds transfer systems, airline reservation systems, trading exchanges, and telecom network systems that run on Oracle Tuxedo, including all of the examples in the "Increasing Demands of Existing Enterprise Applications" section above.

There are eight predominant usage patterns among existing and new Tuxedo customers:

Customers with Existing Tuxedo Applications	New Customers Adopting Tuxedo
<ol style="list-style-type: none">1. Scaling out mission-critical enterprise applications to meet new global requirements2. Adding service level monitoring and alerting to ensure operational visibility of business-critical services and autonomous response to critical events.3. Extending native or rehosted C/C++ or COBOL applications with Java, Python, Ruby, or PHP services to support new business needs with new development models and languages4. SOA-enabling native or rehosted mainframe applications in order to reduce the cost and simplify integration within the enterprise environment	<ol style="list-style-type: none">1. Migrating mainframe applications to Tuxedo using mainframe-compatible Application Runtimes for IBM CICS, IMS, and Batch2. Integrating mainframe-resident applications with the SOA world using Tuxedo Mainframe Adaptors to reduce the cost and simplify integration within the enterprise environment3. Developing and deploying XTP applications on Tuxedo to deliver mainframe-grade RASP at a fraction of the mainframe cost4. Migrating Unix C/C++ or COBOL applications developed on homegrown infrastructure to Tuxedo application server containers to improve their scalability, manageability, and operational characteristics.

In many of these use cases, deploying Tuxedo on Oracle Engineered Systems provides a distinct advantage. After introducing Engineered systems below, we will highlight these advantages.

Introducing Oracle Engineered Systems

Hardware and software engineered together can deliver on the promise for a next generation platform, optimized across all layers of the infrastructure – from hardware to the application. They provide business value with faster time to market, lowered operating costs and reduced business risks. They are the keys to delivering on infrastructure requirements that come from the new business imperatives handed down to IT.

Oracle Engineered Systems family of products are integrated systems where hardware and software are engineered together to provide high performance, reliability and scalability. Oracle designs engineered systems that are pre-integrated to reduce the cost and complexity of IT infrastructures while increasing productivity and performance. 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 has leveraged expertise in both areas of middleware and engineered systems to deliver a solution that helps organizations capitalize on the new wave of technology innovation.

Better performance, simplicity of management and agility are key benefits of engineered systems. They enable IT to become an innovation partner that delivers on business requirements with systems and applications that enable IT flexibility and business agility.

Oracle Exalogic Elastic Cloud (hereby referred to as Exalogic) and Oracle Exadata are members of the Oracle Engineered Systems family of products and deliver integrated platforms for running business applications, middleware and databases. Oracle offers a complete integrated suite of products for application development and deployment, with the ability to leverage all of the pre-integrated solution or any combination of products.

Oracle Exalogic is a complete hardware and software platform for Enterprise applications delivered as pre-assembled building blocks that are easy to buy, deploy and operate. What makes Exalogic an engineered system is a pre-integrated assembly of best-of-breed x86 compute nodes, storage, network fabric, operating system and software products that are integrated, tested, tuned, optimized, delivered and supported by Oracle as a single factory-assembled unit. In particular, Oracle Tuxedo 12c has introduced a number of specific optimizations to leverage Exalogic and its hardware configuration.

Oracle Exadata is a similar assembly of x86 compute nodes, RAM, PCI attached Flash, and storage, all pre-integrated and optimized for the purpose of running Oracle Database exceptionally well. Numerous changes have been made to Oracle Database to take specific advantage of this specific hardware configuration, so that Exadata delivers performance and scalability that is unattainable through other means.

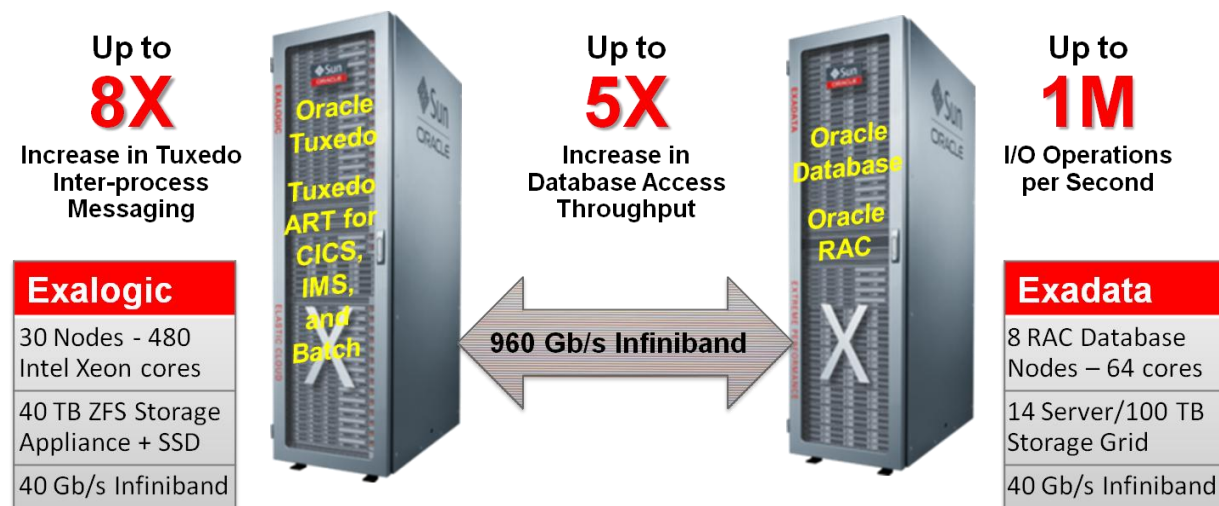


Figure 3: Advantages of Engineered Systems: Unmatched RASP

Oracle Delivers Next Generation of Application Server Platform

Oracle is in a unique position in the industry as a proven leader in application platform provider as well as engineered systems. Rethinking system architecture from disk to application enabled Oracle to optimize existing products and introduce a number of innovative new capabilities and products.

Oracle Exabus: InfiniBand is a communication link for high performance computing and is the standard for both internal and external communication on both Exalogic and Exadata. A defining feature of Exalogic is the near-elimination of input/output (I/O) bottlenecks through a subsystem called Oracle Exabus. This subsystem is a collection of technology including InfiniBand switches, gateways, host channel adapters, firmware, device drivers, operating system extensions and software protocols. Exabus allows data to travel faster through the Exalogic system, e.g. from one Tuxedo node to another, by leveraging Remote Direct Memory Access (RDMA) protocol and bypassing several layers of the stack. It also enables much faster connections between Tuxedo applications and Oracle database on Exadata using Sockets Direct Protocol (SDP).

Oracle Enterprise Manager is a single fully integrated apps-to-disk management and monitoring solution, for both Oracle and non-Oracle products. It offers complete lifecycle management for all Oracle products, while improving SLAs and deployment flexibility. Now integrated with Tuxedo System and Application

Monitor Plus management plug-in, it is the best-of-breed management solution for Tuxedo applications on Exalogic.

Oracle Traffic Director is a robust and scalable software-based load balancer that is built into Oracle Exalogic, Oracle's hardware platform for Oracle applications. Oracle Traffic Director eliminates the need to use web servers for load balancing, which makes it easier to scale up or down based on real time demand. Because it's hardware-accelerated and natively leverages the InfiniBand network found in Oracle Exalogic, the performance is unbeatable.

Oracle HTTP Server is a web server based on the Apache HTTP server. It sits behind Oracle Traffic Director and is responsible for serving static content (e.g. images, JavaScript files, CSS files, etc) up to a Content Delivery Network (CDN).

Oracle Virtual Assembly Builder makes it possible for administrators to quickly configure and provision entire multi-tier enterprise applications including Oracle Tuxedo and Tuxedo applications onto virtualized and cloud environments. It provides a framework for automatically:

- Capturing the configuration of existing software components and packaging them as self contained software appliances
- Composing configurable blueprints of multi-tier application topologies called assemblies
- Provisioning whole assemblies onto a pool of virtual and cloud resources with minimal user input.

In addition to these value-add capabilities of Exalogic, the two core Oracle application servers – Oracle Tuxedo and Oracle Weblogic have been specifically optimized to take advantage of Exalogic features, particularly the Exabus, to deliver significant performance gains, scalability improvements, life-cycle management features, and time-to-market benefits.

Performance

One of the primary reasons customers deploy Oracle Tuxedo on Exalogic is for performance. Oracle Tuxedo has been architected to leverage the underlying high performance infrastructure provided by Exalogic and Exabus. This combination as the infrastructure for the application tier together with Exadata as the infrastructure for the database tier, can take application performance to a whole different level. Oracle Tuxedo's performance on Exalogic benefits from:

- Exalogic platform features at the hardware and operating system level, including faster storage in the integrated SAN, larger memories and core density in compute nodes, solid state drives (SSDs), QDR Infiniband networking between compute nodes and with the Exadata, etc. These features are transparent to Tuxedo applications and provide significant benefits in performance.
- Tuxedo optimizations specific to leveraging Exalogic and Exadata infrastructure. Tuxedo has been specifically engineered to take advantage of Exalogic infrastructure. When these optimizations are enabled on Exalogic, Tuxedo leverages certain optimized processing paths that are not available on other hardware. These optimizations are in Tuxedo core routing and other lower level functions, and applications do not need to be changed in order to benefit from them.

In this section we'll take a look at the Exalogic/Exadata features and Tuxedo optimizations specifically implemented for Exalogic to enhance application performance.

Exalogic/Exadata Features Benefiting Tuxedo Applications

Exalogic combines hardware, software, storage, and network components that ensure enterprise grade qualities of service, such as high availability, fault tolerance, high performance, and scalability – straight out of the box. Each Exalogic system contains the optimal amount of RAM (Random Access Memory), SSD (Solid State Drive), and storage so that the system is balanced for maximum performance.

One of the major strengths of Exalogic platform is its use of QDR Infiniband technology as a network fabric that interconnects all compute nodes and storage. Tuxedo applications running on Exalogic have 40Gb/s bandwidth available to them as opposed 1Gb or 10Gb Ethernet used to connect compute nodes on the datacenter floor. Many Tuxedo applications benefit from this increase in network bandwidth as Tuxedo applications are generally data sensitive and often saturate network and frequently update data. All of the components in Tuxedo take advantage of Infiniband, whether it is between compute nodes clustered in an MP mode domain, or it is domain to domain communication, or if applications use /WS clients, Jolt clients, or talking with WebLogic server. Leveraging 40Gb/s network fabric enables Tuxedo applications to perform up to 6 times better on Exalogic compared to regular network environment.

Oracle Tuxedo applications with database access also benefit from increased database access performance when Oracle Database is running on Oracle Exadata and OCI libraries are used. OCI library is optimized to use Socket Direct Protocol or SDP over Infiniband connection between Exalogic and Exadata. Because of Infiniband's much lower latency using SDP reduces context switches between kernel and user mode and hence provides significant performance advantages over TCP/IP. Tuxedo applications perform up to 5x better when talking to Oracle Exadata using optimized OCI libraries provided by SQL*Net.

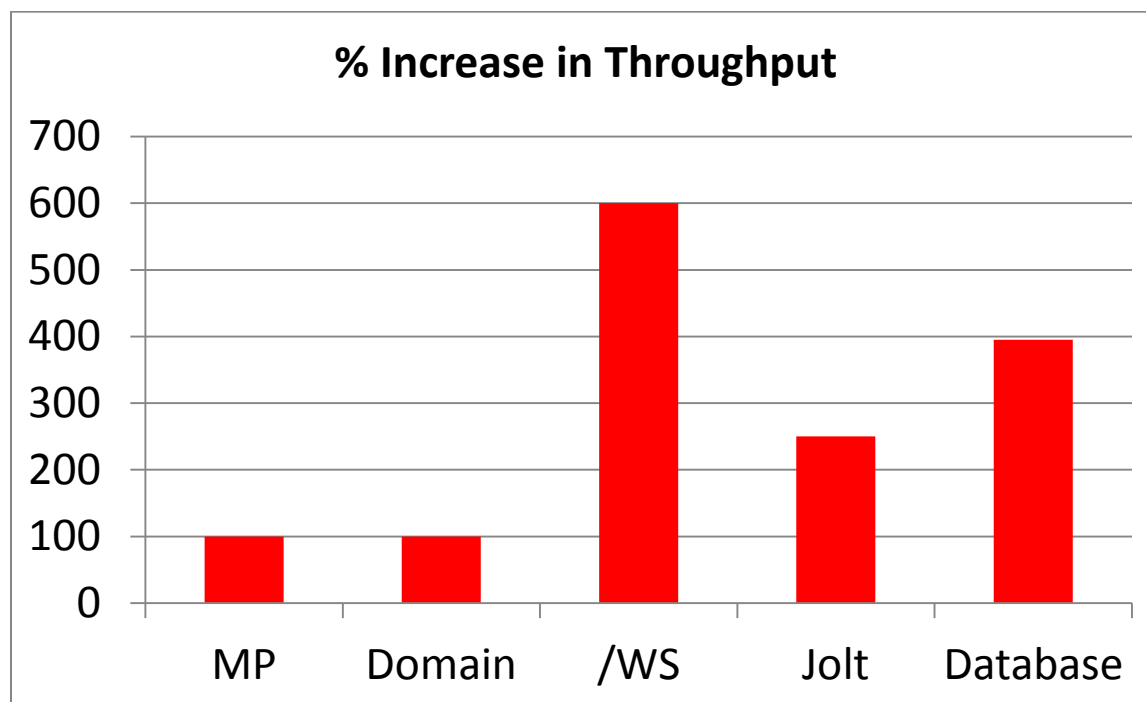


Figure 4: Tuxedo Applications gain up to 6x throughput with Exalogic

Tuxedo Optimizations for Exalogic

In addition to Exalogic's intrinsic benefits, Tuxedo's core has been enhanced with specific optimizations when it is running on Exalogic. These include:

- Shared memory-based queues instead of IPC message queues for routing intra-node requests
- RDMA protocol for routing inter-node requests in MP mode
- Automatically tuned SPINCOUNT for user mode semaphores
- SDP protocol for use on all network connections based on configuration

Shared memory-based queues: In traditional configurations Tuxedo uses IPC Message Queues for inter process communication among clients and servers located on the same Tuxedo node. On Exalogic with much larger memory configurations than typically found on regular servers, Tuxedo can use shared memory queues, which allow the sender and receiver processes to exchange pre-allocated messages in shared memory, thus eliminating the need to copy messages between user mode and kernel buffers up to eight times before the message reaches its intended target. This zero-copy configuration results in much better throughput and lower latency – delivering up to 8X performance gain.

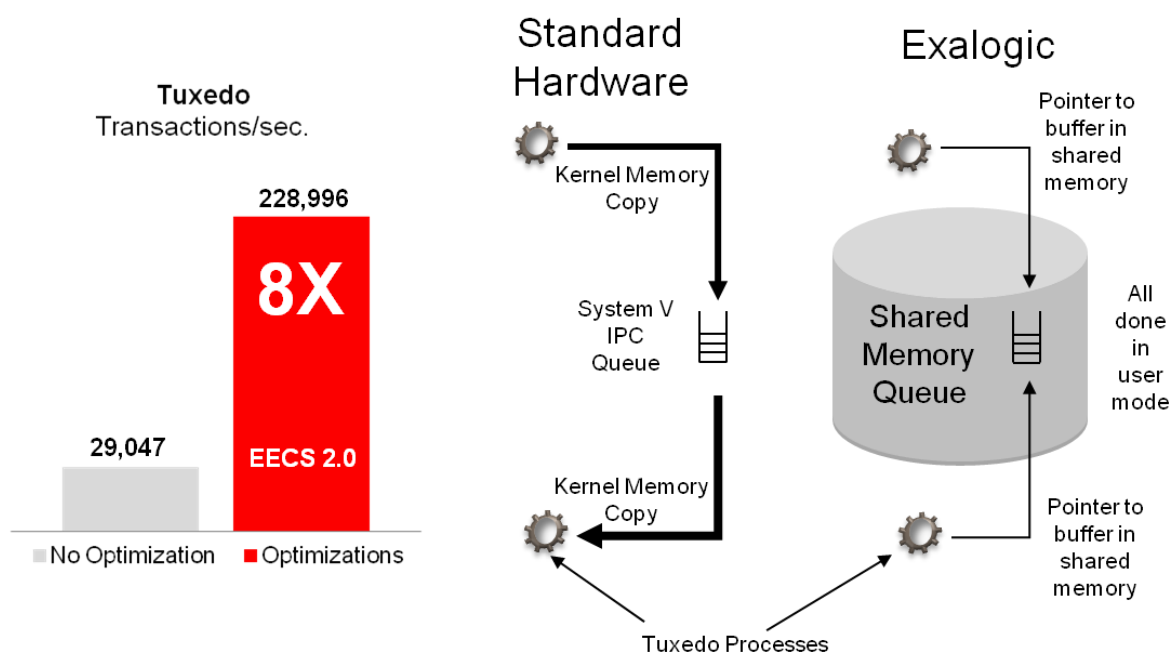


Figure 5: 8X throughput gains with Tuxedo on Exalogic using shared memory based queues

RDMA Protocol for Intra-domain and Inter-domain Routing: Tuxedo provides clustered configuration (also known as MP mode) in which service invocations are routed to a remote machine. In traditional configurations, this routing is done using Bridge processes on each node, which communicate over TCP/IP. On Exalogic, Exabus provides Remote Direct Memory Access (RDMA) facilities leveraging InfiniBand, which allows Tuxedo applications to directly access remote server's queues. Thus when a client needs to place a request on a remote server's queue, it uses these RDMA based message queues to directly place the message on the server's request queue. Likewise the server's reply message is directly written to the client's reply queue. This reduces the round trip latency for remote service invocation from around 1 millisecond in

typical MP clusters to 150 microseconds. The 40Gb/s Infiniband throughput further benefits applications which exchange large message buffers as part of service requests.

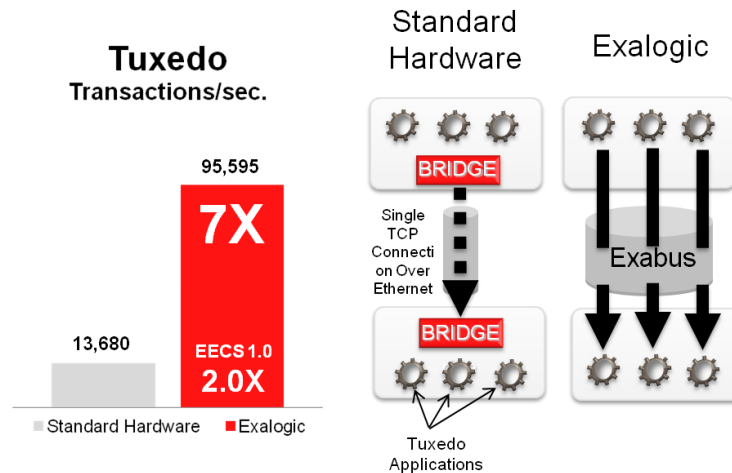


Figure 6: 7X throughput gains with Tuxedo on Exalogic when using Exabus for intra-domain communication

Likewise, applications running in two separate Tuxedo domains, Exabus is used for direct communication between the applications. Application running in a Tuxedo domain directly accesses the queue of application's processes running in another domain using Exabus/RDMA technology, bypassing domain gateway (GWTDOMAIN) and thus reducing latency of message transfer between Tuxedo domains and can improve application messaging throughput up to 4x.

Automatically Tuned SPINCOUNT: On Exalogic Tuxedo automatically tunes the value of SPINCOUNT based on the application workload. SPINCOUNT, generally a static configuration parameter, controls how long Tuxedo should spin for a user mode semaphore before falling back to kernel mode semaphore. Auto tuning of SPINCOUNT reduces CPU utilization by application processes by reducing context switches between user and kernel modes.

Socket Direct Protocol (SDP): Tuxedo can use Sockets Direct Protocol or SDP on all network connections and the determination is made by how network addresses are defined in the Tuxedo configuration. SDP provides a socket level interface that bypasses the standard TCP and IP stacks. This is possible because InfiniBand technology assures in-order guaranteed delivery of messages, thus eliminating overhead associated with the TCP and IP protocols. Use of SDP provides better performance under most conditions by lowering CPU utilization.

Enhanced Support for Oracle Database RAC

Tuxedo on Exalogic optimizes support for Oracle Database Real Application Clusters or RAC enhancing the performance and availability of Tuxedo applications.

Transaction Affinity

Tuxedo tracks Oracle database instances that are participating in a global transaction and uses this information to provide transaction affinity. Tuxedo attempts to route requests to Tuxedo servers that already have a connection to the instance or instances that are already part of the transaction. This helps reduce the number of participants in a global transaction speeding up the commit processing. It also improves database

performance as the requests end up on instances where the transaction and its associated locks and data are already in memory.

Common XID

On Exalogic, Tuxedo tries to use a common branch qualifier across multiple groups within a domain whereas on non-engineered systems each group participating in the transaction would use a unique branch qualifier. With this feature all groups in the transaction connecting to the same Oracle database instance will use the same branch qualifier.

One Phase Commit

Because of the transaction affinity and common XID features, in many scenarios where the only resource manager actually participating in the transaction is Oracle Database, a one phase commit can be performed, even though the transaction spans multiple groups or domains. Using a one phase commit eliminates the need for a transaction log write and dramatically improves the performance of applications using distributed transactions.

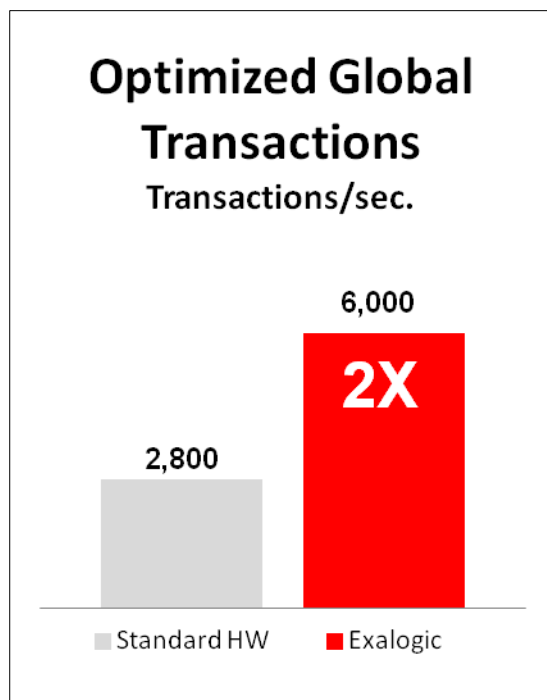


Figure 7: Global transaction optimizations on Exalogic provide up to 2x throughput

Oracle Database FAN Support

On Exalogic, Tuxedo makes use of Oracle RAC's Fast Application Notification or FAN facility to track the topology of a RAC database to know what database services are available on each instance and the status of each instance. Tuxedo uses this information to spread the database connections to all available instances based on Realtime Load Balancing or RLB events that FAN generates. When an instance is being brought down, Tuxedo will automatically redirect connections to an available instance, ensuring no interruption to Tuxedo application and thus reducing downtime for planned or unplanned outages.

Scalability

Oracle Tuxedo is known for its own almost linear scalability on any standard hardware. Oracle Exalogic provides a scalable hardware solution, which can be scaled from a few cores to up to thousands of cores operating as a single unit. When we combine Tuxedo and Exalogic, we have an easy to scale solution, with which an application can start with one Tuxedo node in an Exalogic rack and scale up to 8 interconnected racks of Exalogic or 240 nodes, each node with 12 core. With Tuxedo and Exalogic, IT has can scale applications quickly without having to go through details of component interoperability, support, configuration, etc. and without a need to provision new machines and without painfully ensuring to not exceed network capacity and availability. Instead, IT can quickly provision hardware to scale up mission-critical applications to respond quickly to growing business demand.

Integrated Manageability

Typically, IT spends over two-thirds of its budget just maintaining existing systems. Oracle changes this scene with integrated manageability from the hardware all the way to the application. Costs can be dramatically reduced and efficiency increased with manageability built directly into the entire technology stack, from applications to disk. Customers quickly benefit from zero-overhead instrumentation, integrated optimization advisory and complete lifecycle management. Oracle Enterprise Manager delivers end-to-end manageability and monitoring of Oracle Tuxedo and applications that are deployed on it and Oracle Engineered Systems (Exadata, Exalogic). The integrations between these best-of-breed products and unified management allows for unparalleled end-to-end visibility, management, monitoring and ease of maintenance resulting in reduced costs and complexity. Finally, embedded hardware diagnostic capabilities allow Exalogic to “phone home” to file Oracle Service Requests in case of hardware failures.

Oracle Tuxedo System and Application Monitor Plus or TSAM Plus provides comprehensive monitoring for Tuxedo applications and includes a plugin to monitor and manage Tuxedo applications from Oracle Enterprise Manager, allowing complete stack to be monitored from the same console from hardware to application.

Agility and Faster Time-to-Market

Enterprise Tuxedo applications sharing resources with other middleware applications have the option of server and application virtualization. This allows multi-tenancy on the same shared infrastructure, providing operating-system level isolation, resource level isolation, network level isolation and storage level isolation. Tuxedo applications can be deployed in various topologies on Exalogic. One application can be deployed over a span of several compute nodes, or multiple applications sharing the same compute node or even multiple applications sharing multiple compute nodes. Topology one chooses depends on business requirements including availability, security and performance factors. For example, if application needs to be highly available, it will be prudent to deploy it on more than one compute nodes to avoid single point of failure.

Tuxedo performance on a virtual node closely matches the performance on a physical node. Oracle Virtual Machine (OVM) with Tuxedo pre-installed speeds up the process of migrating to the virtual environment with pre-built templates that can speed up enterprise application deployment and simplify lifecycle management.

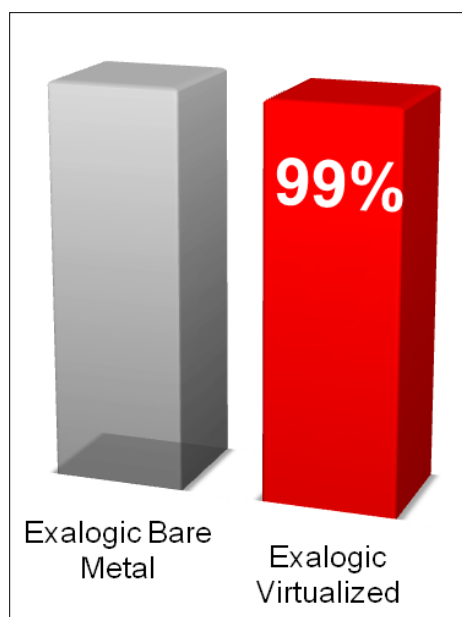


Figure 8: Exalogic Virtual performance is comparable to Exalogic Physical

A consolidated management framework from application-to-disk delivers business critical applications onto a fully virtualized environment and simplifies application delivery. In addition, it lowers risk by standardizing on infrastructure from development to testing to production without increasing costs. Patching and maintenance becomes easy as a single patch can cover all components from applications to disk.

Customer Success Story

Sterci

Headquartered in Geneva, Sterci Group is a market-leading financial messaging solutions company with subsidiary divisions in London, Brussels, Toronto, New York, Paris, Riyadh, Singapore and Zurich. Sterci's products and services provide banks, corporations and financial institutions with integrated business solutions for transactional banking, multi-bank connectivity, full data integration, reconciliation, cash management, zero balancing and market data management.

Sterci partners with Oracle to deliver mission critical and best-in-class solutions their clients can depend upon. Many of their customers were running old financial messaging switches on IBM mainframes and HP's Tandem type platforms that are very expensive to support. Sterci's view was to help those organizations lower their total cost of ownership. Sterci wanted an application server environment that had transactional monitoring capabilities that were robust, high performing, easy to distribute, and widely supported in the market.

Oracle Tuxedo was an obvious fit. Tuxedo is widely distributed, widely used, mature, highly available and highly performing. With Oracle Tuxedo and Exalogic, Sterci went from processing half a million to 3.5 million financial messages per hour while lowering the total cost of ownership. Not only that, Oracle Tuxedo on Exalogic and Exadata outperformed the nearest competitor by 4x. Watch a video, [Sterci Clients up to 7x Faster with Oracle Tuxedo](#), with Rob Kotlarz, Business Development Director, of Sterci to learn more.

Conclusion

A new wave of innovation that stems from widespread adoption of mobile devices and cloud enablement and proliferation of data is changing traditional operating models, requiring a next-generation IT platform for applications and services. The new business imperatives that are created from this wave of innovation require increased standards of performance, flexibility and reduced total cost of ownership. The combination of complete hardware and software engineered solution right from the application layer to the hardware delivers high-performance, low risk and easy manageability for all enterprise applications.

Oracle Tuxedo on Oracle Exalogic Elastic Cloud with Oracle Exadata is the next generation IT platform that allows organizations to capitalize on this new wave of innovation. Tuxedo on Exalogic engineered systems delivers 8X more throughput gains, unlimited scalability, reduced time to market for new applications, higher availability and much more, while lowering the total cost of ownership of the application.



White Paper: Oracle Tuxedo and Exalogic: Best Platform for Mission Critical C, C++, COBOL

Applications

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Hardware and Software, Engineered to Work Together