Hardware and Software

ORACLE

Engineered to Work Together

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Oracle Exalogic An Engineered Systems Approach

Owen Hughes, Exalogic Director EMEA

The Value of Not Doing It Yourself

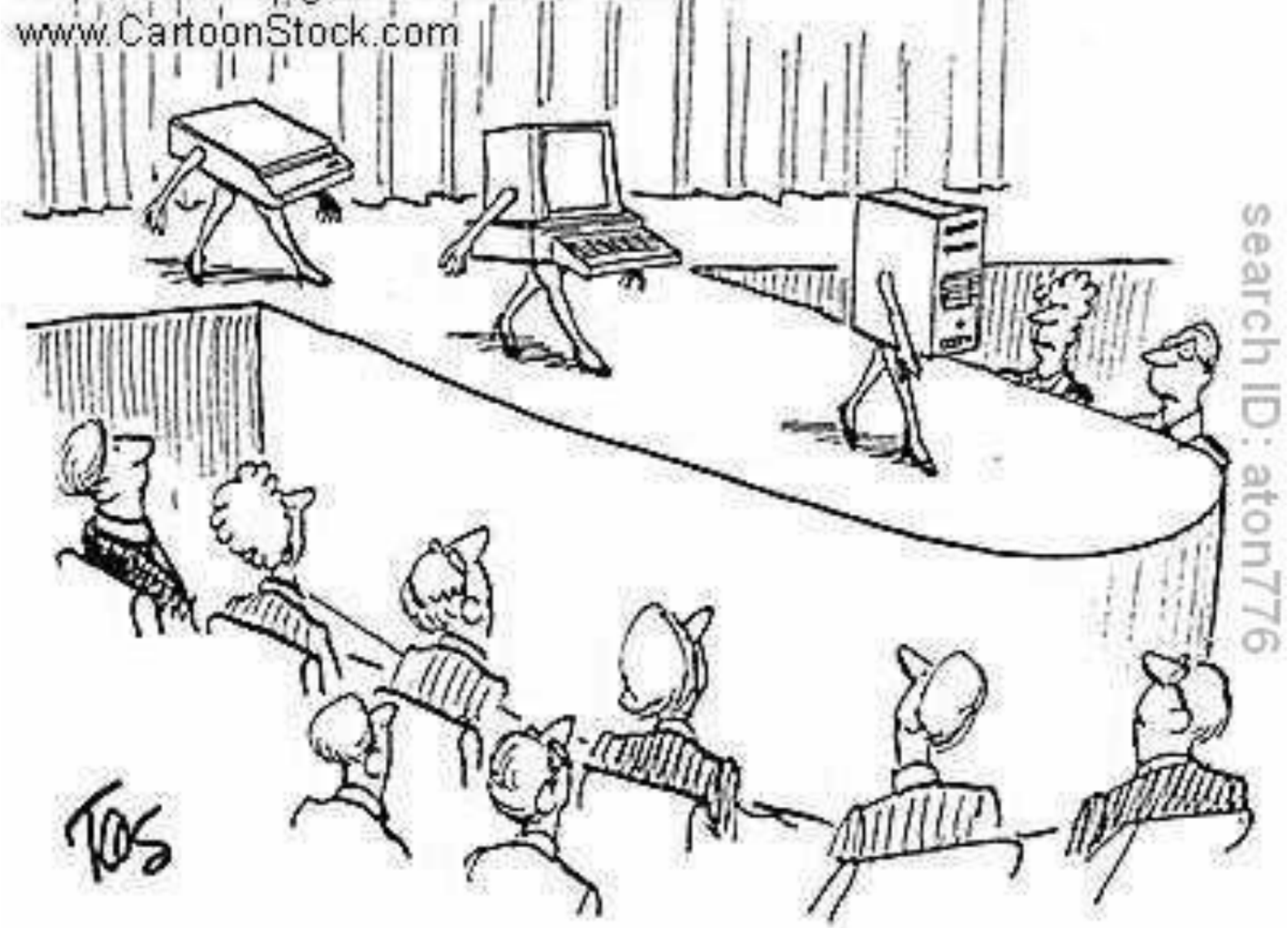
If an activity does not add value over and above what is available at the same or lower cost in the market, it should be perceived as adding negative value.

The Value of Not Doing It Yourself

If an activity does not help an organisation differentiate itself, it adds no value at best and negative value at worst.

The Value of Not Doing It Yourself

- What is the opportunity cost in engaging in the activities described above. What else could you be doing?
- What is your competition doing while you are doing the 'heavy lifting' that could be done by someone else...better and at lower cost



- **You need a new system for application X**
- **You want to take as little risk as possible**
- **You know that initial costs are the smallest part of the TCO**
- **You want to protect future investment**
- **You want to do this quickly**

Is this how we buy cars?

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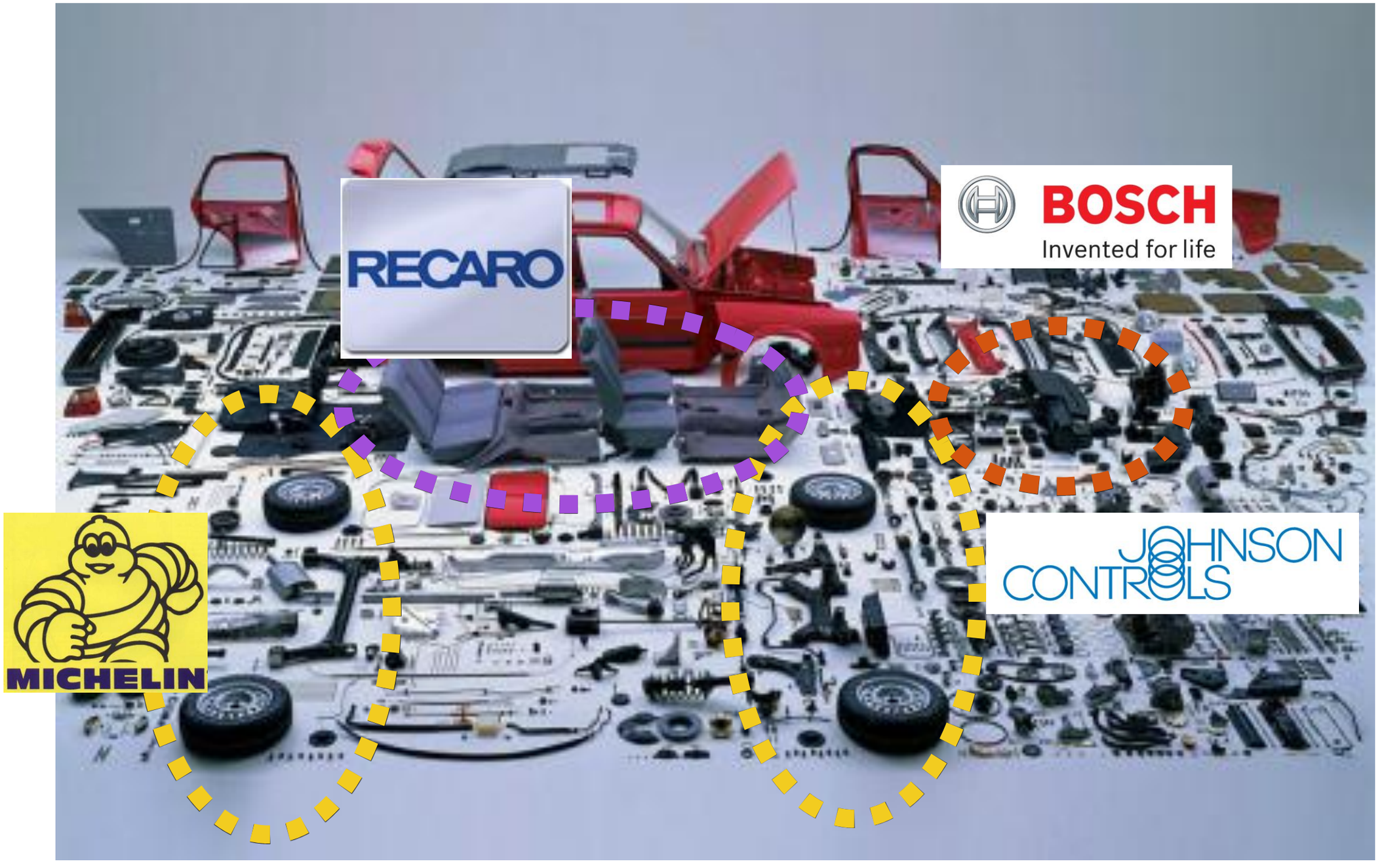
Why buy IT systems like this?



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Oracle Exalogic Elastic Cloud

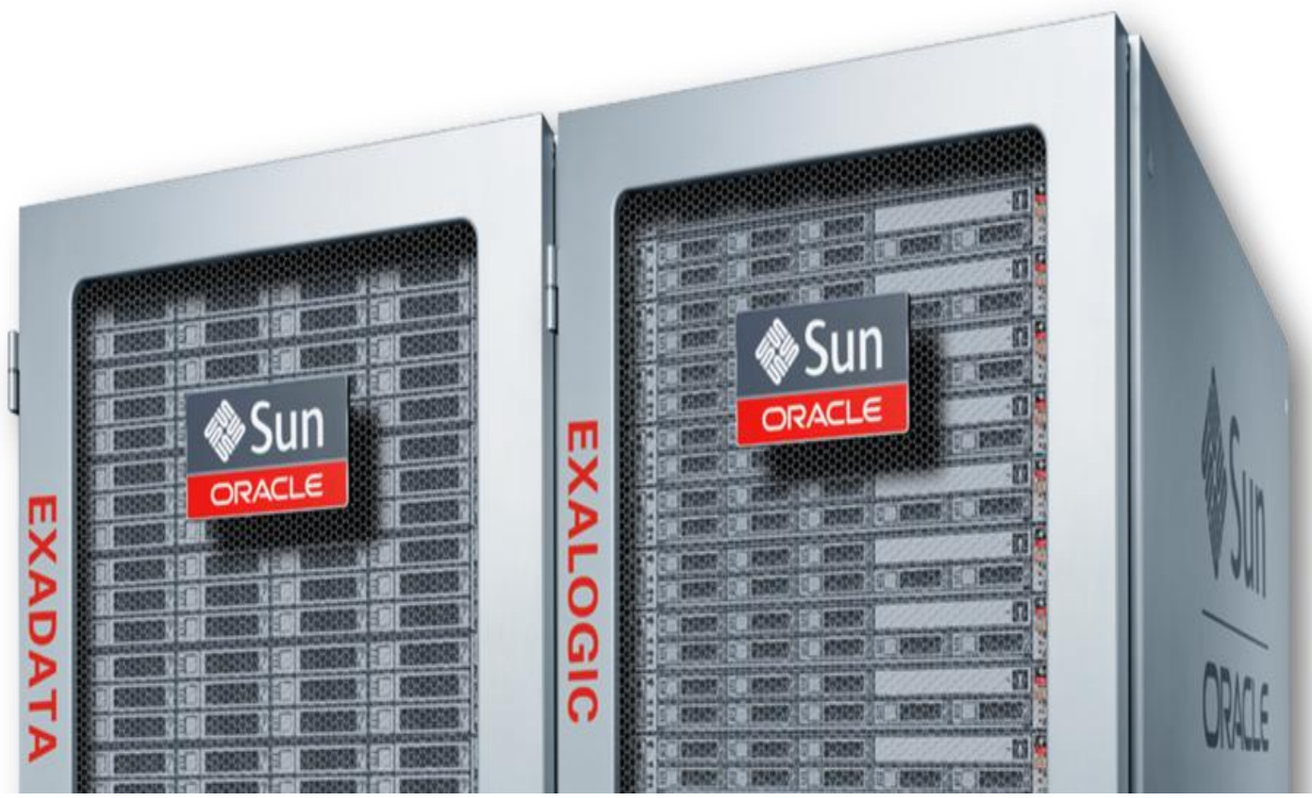
Software. Hardware. Complete.

Building the 21st Century Datacenter

Characteristics of Engineered Systems

Hardware and software working in harmony

- State-of-the-art hardware components
- Tuned and optimized software
- High-performance networking
- Dense compute clusters
- Efficient storage
- Balanced system design



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What Type of Private Platform and Infrastructure Cloud Services Is Your Company Providing?

IOUG ResearchWire

*	**Application server platform as a service**	**24.7%**	PaaS
*	**Database platform as a service**	**21.4%**	PaaS
	Identity as a service	4.7%	PaaS
	Compute as a service	10.2%	IaaS
	Storage as a service	18.1%	IaaS
	Software development and test as a service	14.9%	IaaS
	Don’t know/unsure	20.5%	
	None	37.2%	

* Most popular:
Application Server as a service
Database as a service

Engineered Systems

Driving trend in IT for the next decade

Oracle Exalogic Elastic Cloud

One platform for the whole enterprise

x86 Compute Nodes

- 30 compute servers
- 360 2.93 GHz Xeon cores
- 2.8 TB DRAM
- 960 GB mirrored solid-state disk

or

SPARC Compute Nodes

- 30 compute servers
- 480 1.6 GHz high-efficiency cores
- 3.8 TB DRAM
- 960 GB mirrored solid-state disk

Integrated Storage

- Central storage for system images
- Clustered for HA
- 40 TB SAS disk
- 4 TB read cache
- 72 GB write cache

InfiniBand Interconnect

- 40 Gb/sec
- 1.2 microsecond latency
- 10 Gigabit Ethernet connectivity to datacenter

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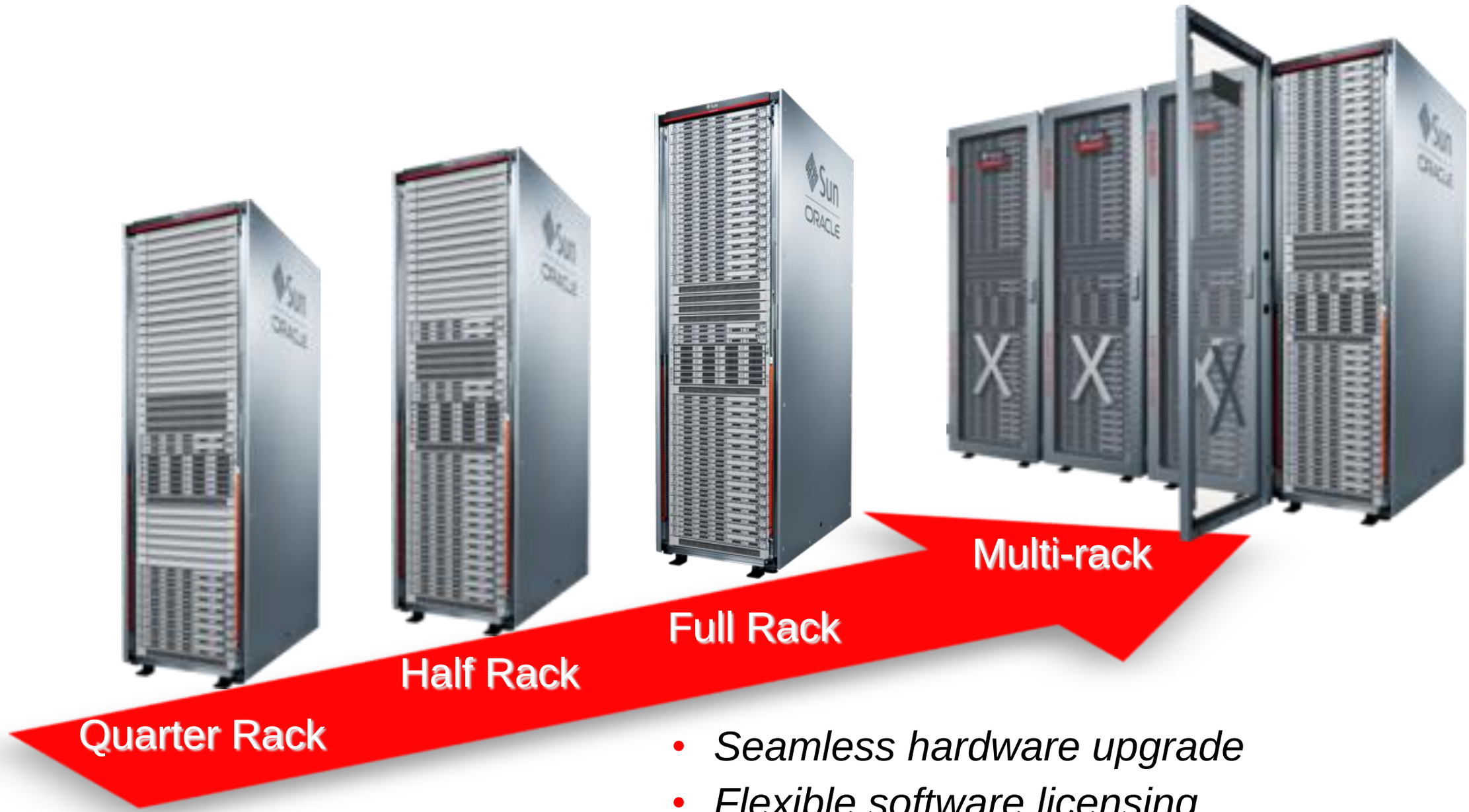
Scale from One Application to Cloud

Start small and grow



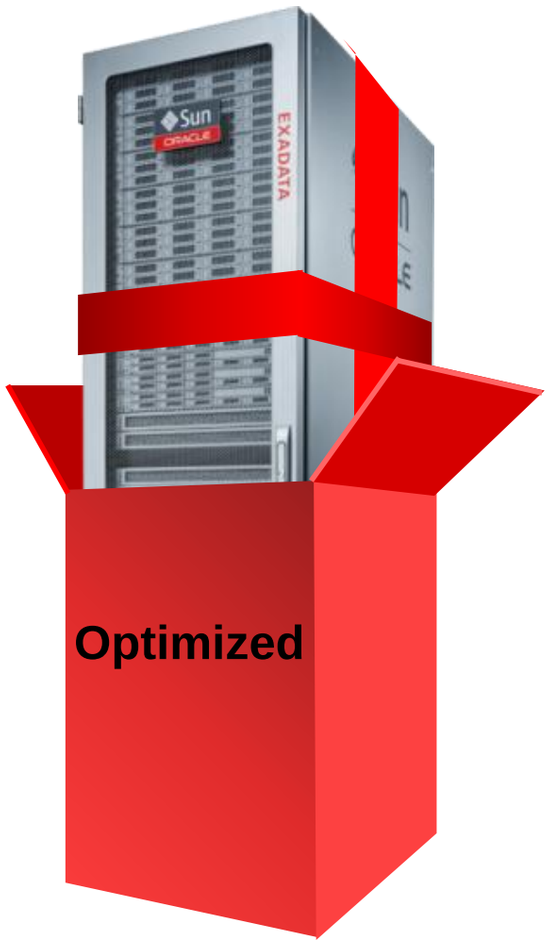
- *Seamless hardware upgrade*
- *Flexible software licensing*

One Platform for the Whole Enterprise

Performance, reliability and simplicity

- **Fastest Java Performance**
  - Application performance improved up to 10X
- **Foundation for Mission Critical Cloud**
  - Best for application consolidation
  - Best for elastic capacity on demand
- **Engineered System**
  - Lowest cost to deploy and operate
  - Fastest path to production

Balanced and Optimized



Optimized End-to-End

- **Custom systems do not achieve full performance**
  - Component imbalance, mis-configuration, bottleneck
- **Exalogic is engineered and optimized end-to-end**
  - Double-digit GB/sec transfers of data
    - Disk, flash, controller, bus, HBA, network, CPUs, etc
  - Software optimized with firmware, drivers, OS, network
  - Years of tuning
  - No bottleneck
- **Move I/T talent to higher value business needs**
  - Not designing, tuning, maintaining hardware configs

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Engineered System

One standard platform for all workloads

- **100+ person years of Oracle system engineering investment**
  - Built in and available on day one
- **Engineered system**
  - Java Middleware stack
  - Device firmware
  - Drivers
  - OS kernel modifications
  - IO configuration
- **Move enterprise IT talent to higher value work**

Standardized

One standard platform for all workloads

- **Every unit is identical**
  - Pre-built, tested, standard, supportable configuration
  - Identical to configurations used by Oracle Software Engineering
- **Runs existing applications**
  - Entire Fusion Middleware portfolio
  - Any Linux 5 or Solaris 11 application
  - No Exalogic certification required
- **Leverages Oracle ecosystem**
  - Skills, knowledge base, people, partners

Oracle's Elastic Cloud Foundation

Application Grid, OS, Enterprise Manager and hardware

Oracle Enterprise Manager

Grid Control

Ops Center

WebLogic Server

Coherence

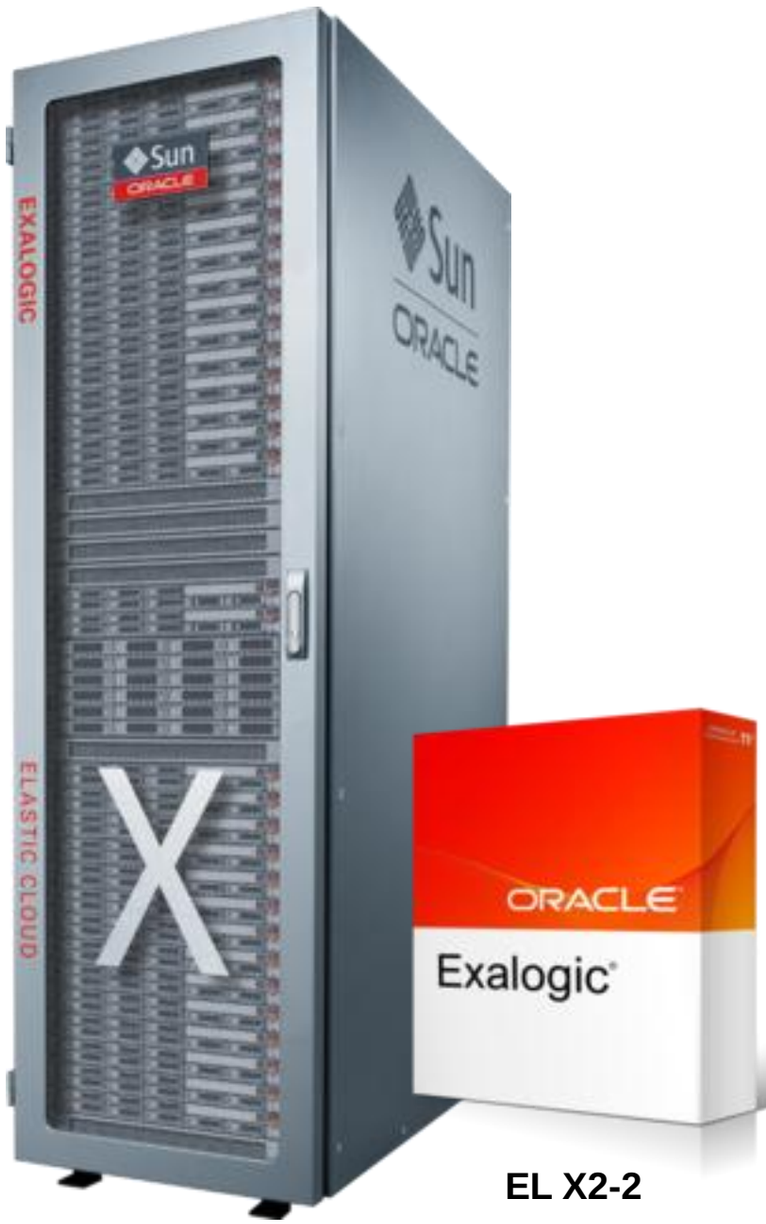
JRockit and HotSpot

Tuxedo

Exalogic Elastic Cloud Software

Oracle Linux or Solaris

Exalogic Elastic Cloud Hardware



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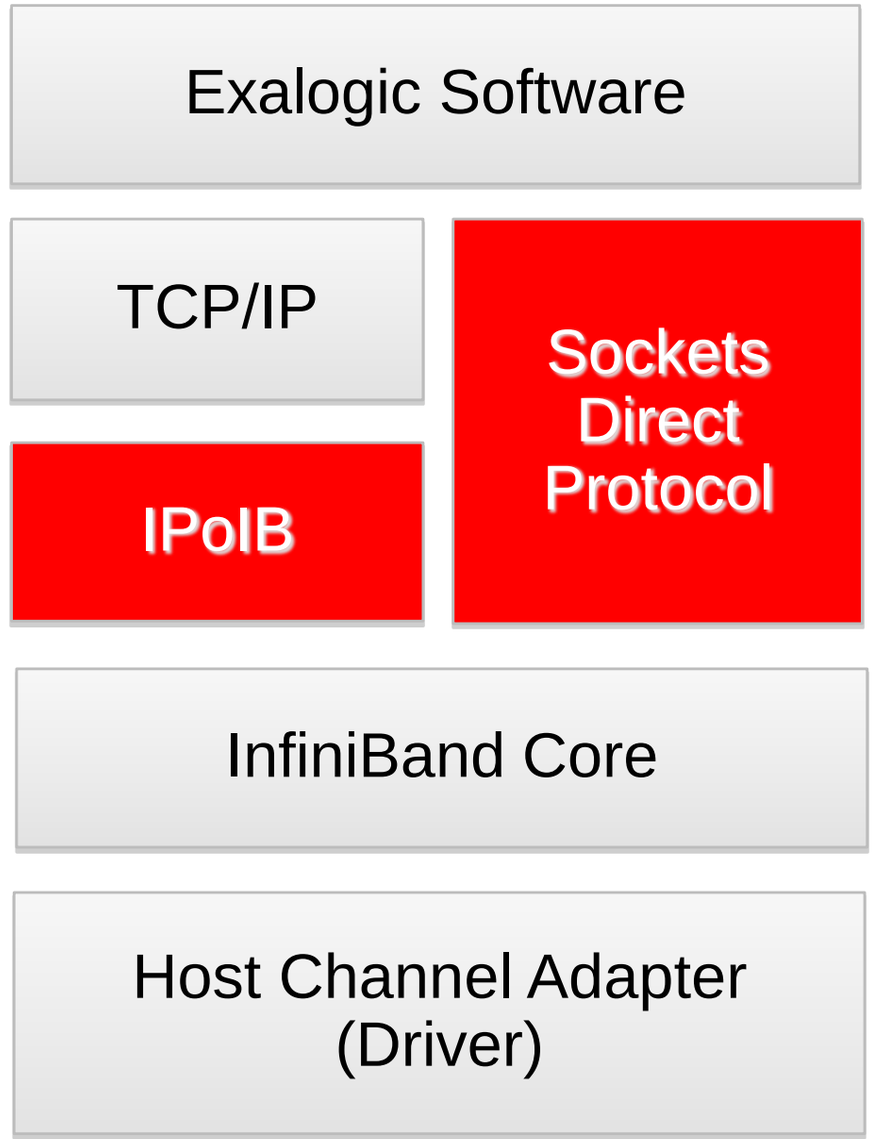
InfiniBand Performance Advantage

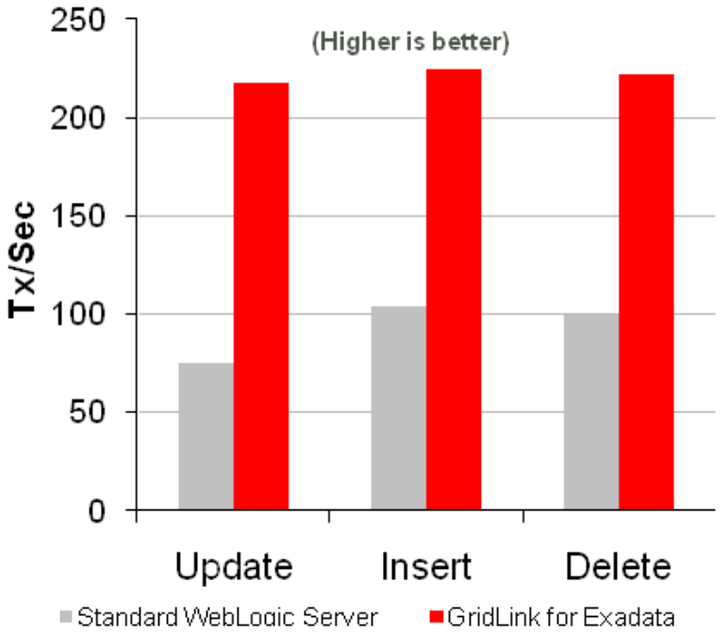
Up to 12x Performance

- **Network IO is critical**
  - #1 limiting factor for application performance and scale
- **Eliminate buffer copies**
  - From four to zero
- **Use larger packet size to reduce network overhead**
  - 64K instead of 4K packets
- **Optimized for InfiniBand**
  - 3x throughput over 10 GbE
  - 50% less latency via native SDP

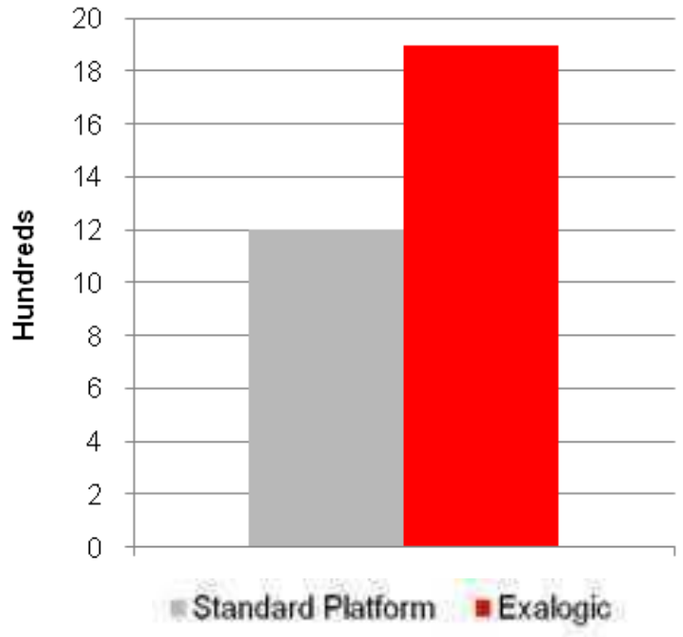


Extreme Java

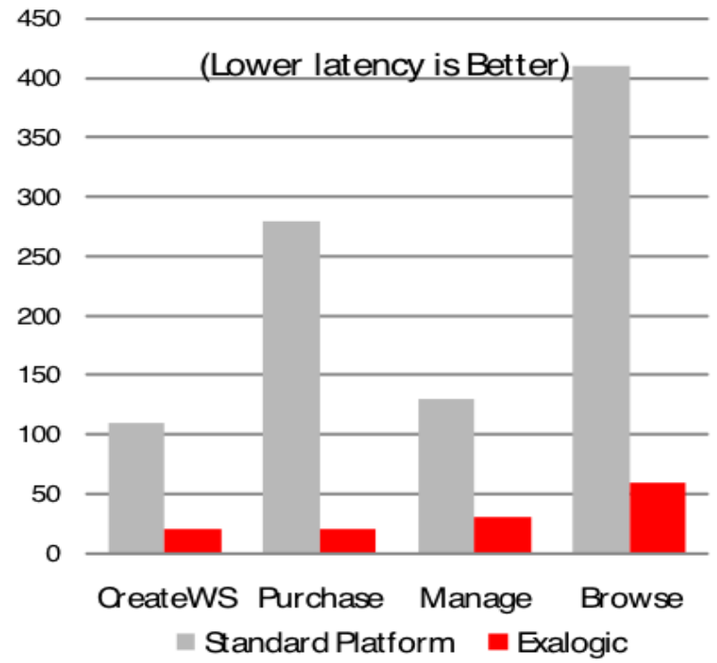
The power of the Oracle Exalogic Elastic Cloud Software



2-3X improvement
in Database OLTP



60% more
Java Operations/sec.



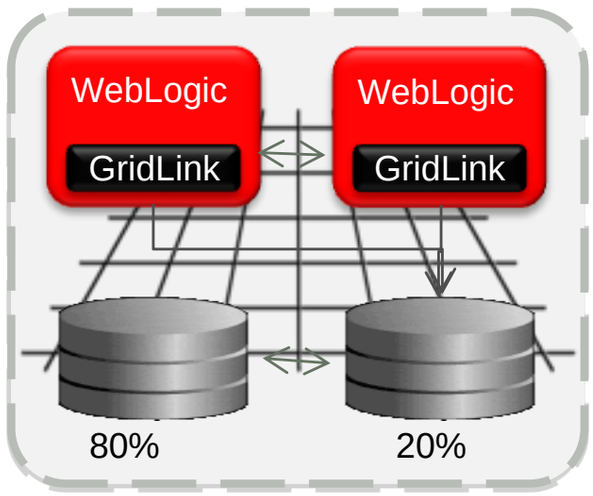
Up to 10X faster
response time

- Run-time connection load balancing
- JDBC over SDP
- Enhanced buffer handling for InfiniBand
- Optimized multi-core scheduler
- Cluster IPC multiplexing over SDP
- Scatter-gather IO

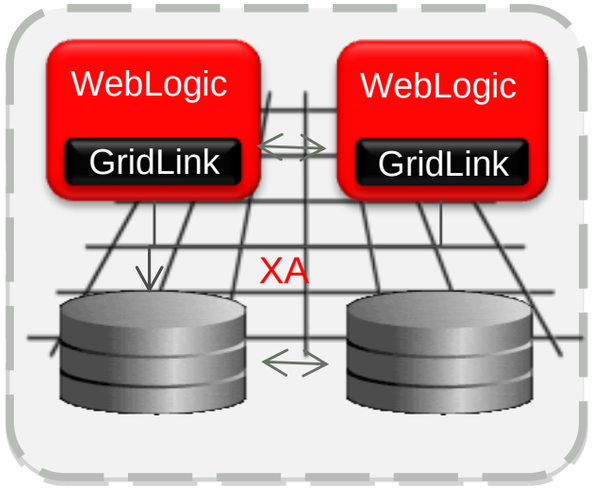
Exalogic GridLink for Exadata

Unique Oracle RAC integration and OLTP fault tolerance

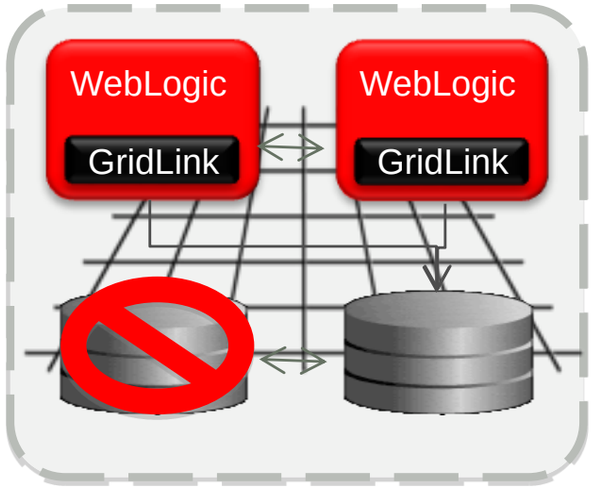
- Integrated Exalogic and Exadata clusters
- Dynamic load balancing of requests to RAC nodes
- RAC node transaction affinity for data locality
- Maximum JDBC performance with SQLNet over native InfiniBand protocol (SDP)
- Instant load balancing and failover with RAC changes



RAC Node Load Aware
Connection Requests



RAC Node Affinity
For Transactions



Continuous Connections
Even with RAC Changes

Application Support and Certification

Optimized for enterprise Java, ready for everything

Runs 1000's of existing applications

Extreme Performance

ORACLE®

FUSION MIDDLEWARE

No Certification Required

ORACLE®

LINUX

ORACLE®

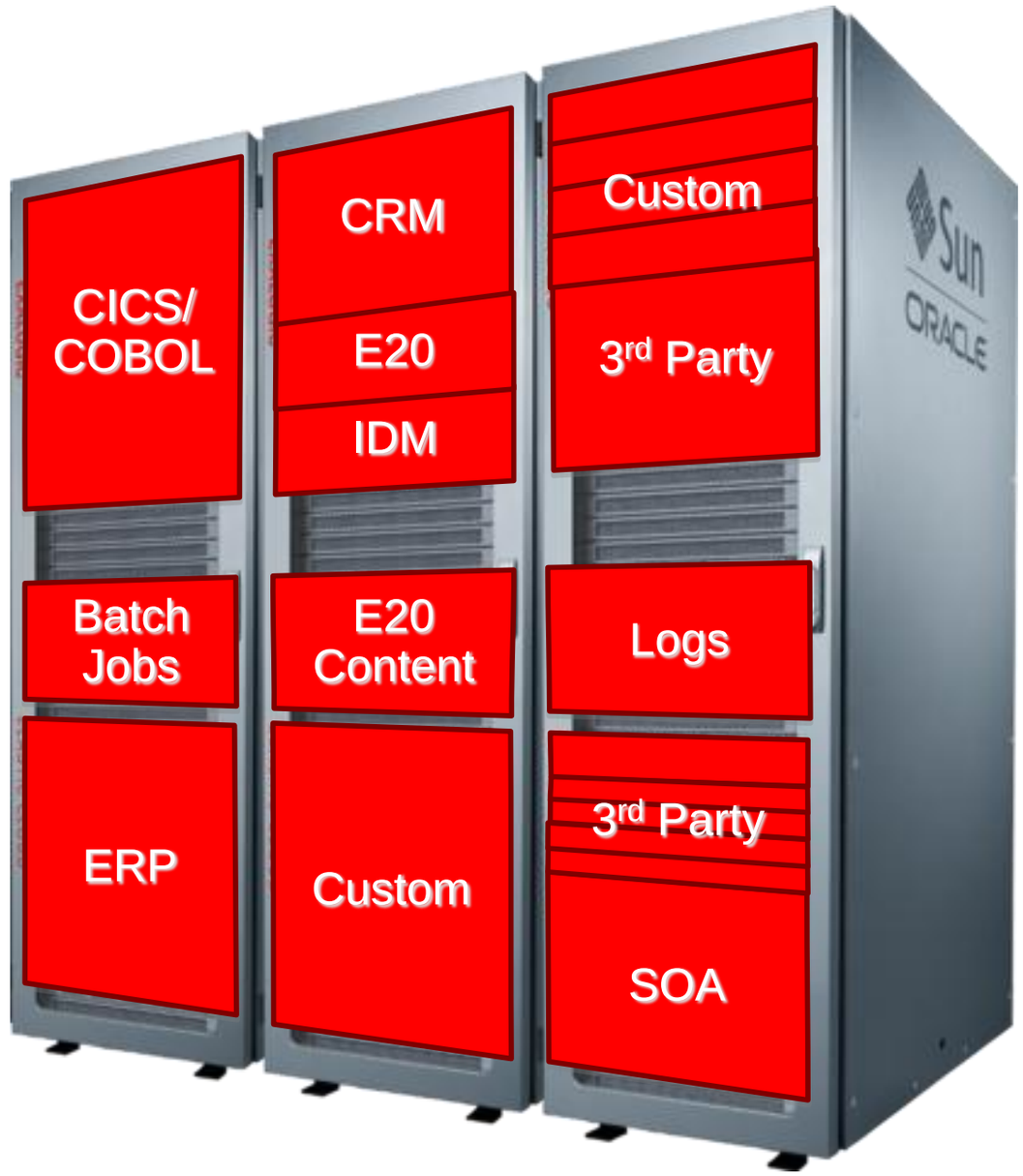
SOLARIS

Oracle Exalogic Elastic Cloud

Enterprise Application Consolidation

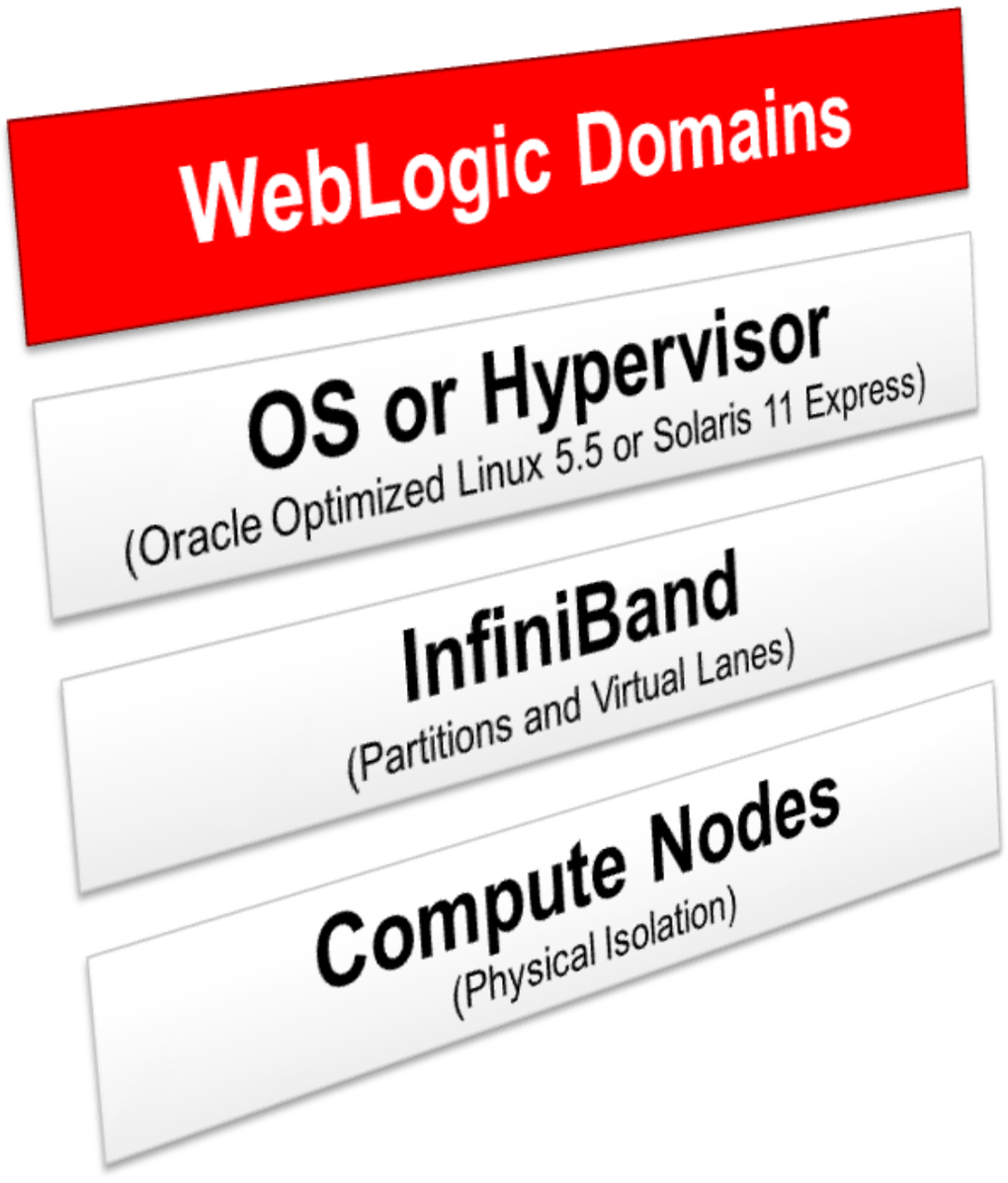
One platform engineered for the whole enterprise

- **Cost containment and IT agility**
  - One system to buy, deploy and maintain
  - Increase velocity and flexibility
- **The path to mission critical cloud**
  - Open platform
  - Support varied workloads
  - Application isolation
  - Scalability and elasticity



Essential Application Multi-tenancy

Maximum security and fine-grained resource allocation



- **Multi-level application isolation**
  - Balance performance, availability, security and density per Application or Line of Business as required
- **Security and resource allocation aligned, separable**
  - Seamless integration with existing processes and organization

Complete and Integrated Management

One button patching from application to disk

Maintain

Remote Management
- Telemetry

Phone Home
- Proactive Support

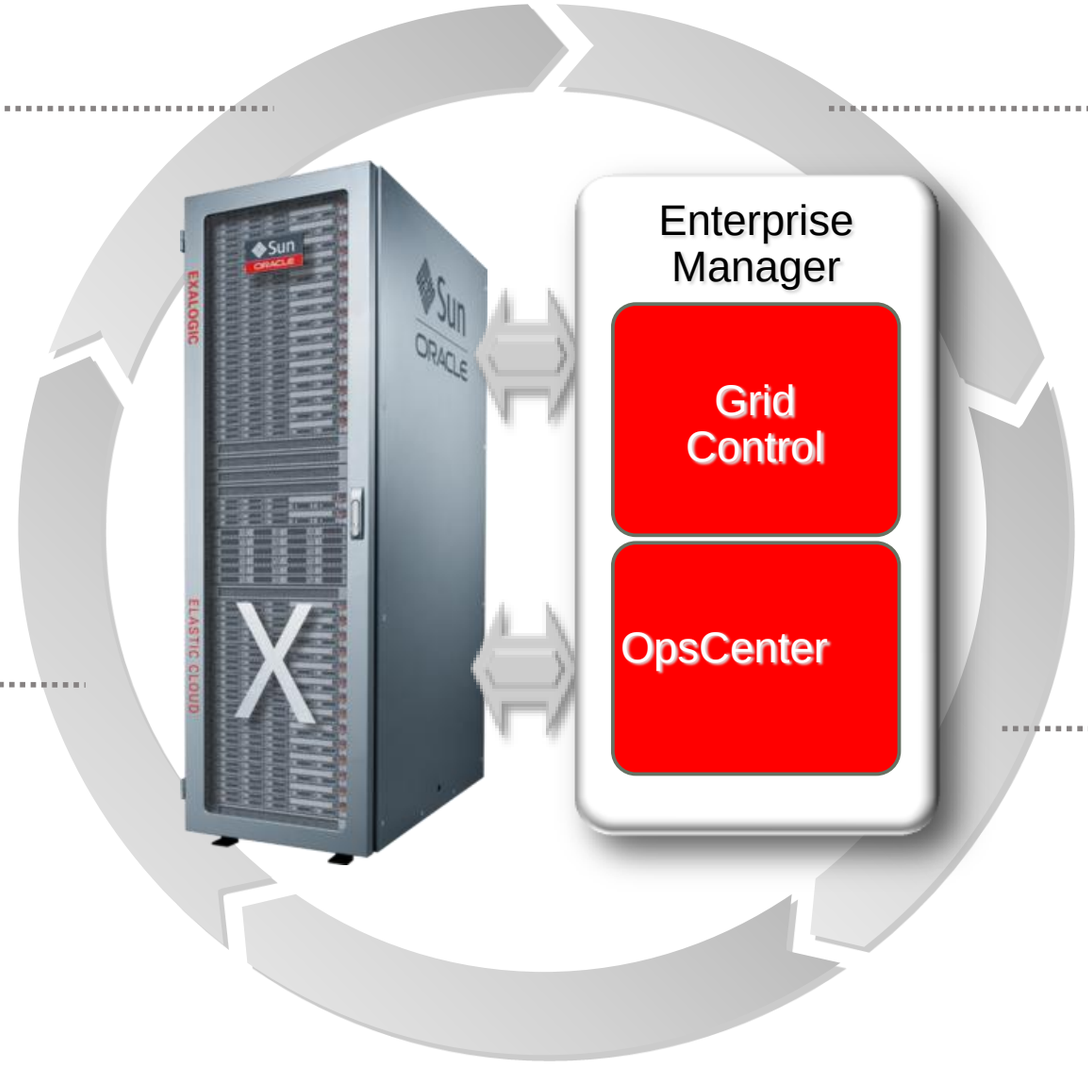
My Oracle Support Integration

Manage

End-to-End Diagnostics
- Service Levels
- Root Cause

Configuration Mgmt
- Change Tracking

Patch Automation
- Firmware, OS



Deploy

Provisioning of Firmware, OS, Middelware, and Applications

Clone and Scale-out

Test

Functional Testing

Load Testing

Test Management

Monitor

Application-to-Disk, Heat and Power

Exalogic Monitoring Integration
- System, Compute Nodes, Switch, Storage

Things to Remember

Extreme performance, high availability for varied workloads

- Hardware designed to run our software, software optimised to run on our hardware
- Huge savings by deploying engineered systems
- Reduced ongoing costs by collective experience of all deployed systems
- Extreme performance achievable through enhancements through entire App Grid stack

EL X2-2

Oracle Exalogic Elastic Cloud

Delivering real business value

Extreme Java Performance

Improved up to

12X

Mission Critical Cloud

Operational Cost Reduced up to

60%

Integrated System

Time to Deploy Reduced

90%

For More Information

Contact

- Your local Oracle sales organization

Resources

- www.oracle.com/exalogic
- www.oracle.com/exadata

Hardware and Software

ORACLE

Engineered to Work Together

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