

ORACLE EXALOGIC ELASTIC CLOUD



Oracle Exalogic Elastic Cloud is a datacenter building block designed to allow enterprises to rapidly deploy and provision mission-critical, high performance private and public clouds. Exalogic is an Engineered System, integrating compute, networking and storage hardware with virtualization, operating system and management software. Exalogic provides breakthrough performance, reliability, availability, scalability and investment protection for the widest possible range of business application workloads, from middleware and custom applications to packaged applications from Oracle and hundreds of 3rd party vendors.

KEY FEATURES

- **Hardware:**
Intel Xeon x86 compute nodes, InfiniBand and Ethernet switches, integrated Network Attached Storage
- **Operating Systems:**
Choice of Oracle Linux or Solaris
- **Cloud Software:**
Complete Infrastructure-as-a-Service (IaaS) management
- **Server Virtualization:**
High-performance type 1 hypervisor
- **Storage Software:**
Complete storage management, including clones, snapshots and replication
- **Management Tools:**
Configuration management, diagnostics and remote health monitoring
- **Oracle Enterprise Manager Integration:**
Integrated support for end-to-end Oracle middleware and application management

Exalogic: The Logical Choice for Running Business Applications

Today many organizations are limited in their ability to process business transactions at a speed their business requires. This forces them into a restricted business model that prohibits seizing market opportunities. It supports consolidation of multiple applications on the same system for delivery as a private or public cloud, while eliminating security concerns. Exalogic offers value to customers across three key dimensions:

Seize Market Opportunities

- For back office applications, close business up to 10X faster with applications tuned for blazing performance
- For front-office applications, improve the customer buying experience by dramatically reducing application response time and improving usability
- Respond rapidly to market needs by provisioning applications up to 5X faster than on traditional platforms

Lower Business Risk and Protect Your IT Investment

- Protect your sensitive data with true application isolation
- Reduce application deployment and maintenance complexity while maximize application availability and user productivity
- Enjoy peace of mind with an industry-leading 'Platinum Support for Engineered Systems' 5-minute support SLA, at no extra charge

Reduce Cost and Complexity of Application Deployments

- Deploy and/or consolidate mission-critical business applications and middleware with push-button simplicity onto a virtualized environment
- Simplify application delivery with easy-to-use, built-in load balancing
- Align application resources to business priorities with built-in apps-to-disk management

Exalogic Elastic Cloud Software

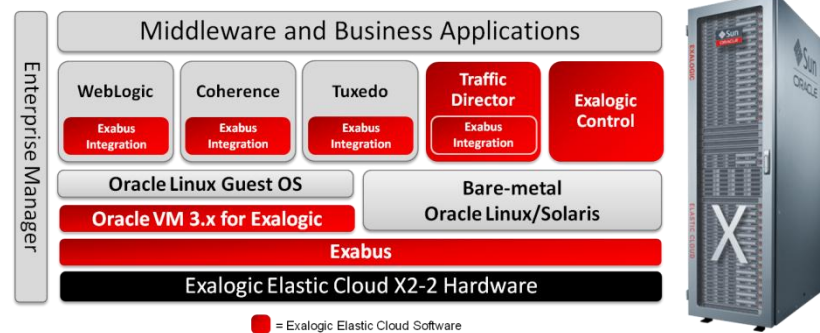


Figure 1: Key Components of Exalogic Elastic Cloud 2.0 software

Oracle Exalogic Elastic Cloud 2.0 software includes:

- Exabus:** This is a communication fabric connecting compute, storage and networking components of Exalogic. It comprises of firmware, device drivers and application APIs built on top of Oracle's InfiniBand technology that underpins Exalogic's extreme performance and resource efficiency. Exabus provides applications complete Ethernet network emulation and, via special integration with Oracle's Cloud Application Foundation middleware, ultra-low latency Remote Direct Memory Access.
- Oracle VM Server for Exalogic:** This is a highly optimized, Exabus-enabled type I hypervisor which allows Exalogic to host virtual servers (called vServers) running the Exalogic-optimized version of Oracle Linux. Oracle VM for Exalogic offers the highest performance and lowest overhead of any virtualization technology and is the only type II hypervisor fully supported in production deployments of Oracle's entire software portfolio.
- Traffic Director:** This is an integrated Application Delivery Controller (ADC) capable of doing everything from standard load-balancing to complex traffic shaping, traffic metering and security enforcement. Traffic Director features native Exabus integration for maximum performance, manageability and security and is eliminates need for costly, external, load-balancing appliances.
- Exalogic Control:** This allows users to manage and monitor the systems hardware, perform firmware and software upgrades, create user accounts and users, create and manage virtual resource (virtual servers, virtual networks and virtual storage) and monitor utilization of all system resources in real-time. Exalogic Control runs directly on the Exalogic hardware and is accessible via a GUI, command line or Java API. This provides systems administrators, cloud administrators and cloud users comprehensive cloud management capabilities.
- Operating Systems:** Exalogic includes special extensions to Oracle Linux UEK and Oracle Solaris operating systems to provide enhanced application performance and manageability without compromising compatibility with existing Linux and Solaris applications. This means that all Oracle software certified for the appropriate Oracle Linux or Solaris versions is fully supported and optimized for Exalogic.
- Storage Management Software:** Exalogic includes a complete storage management system, including snapshots, volume cloning and remote replication for backup and disaster recovery

Exalogic Elastic Cloud Hardware

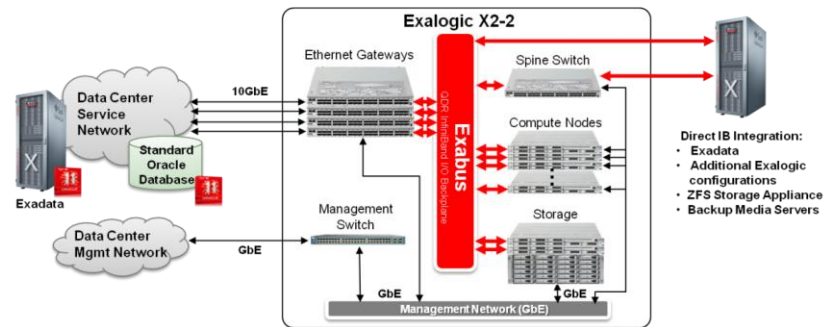


Figure 2: Key Components of Exalogic Elastic Cloud X2-2 hardware

Oracle Exalogic Elastic Cloud X2-2 hardware includes:

- Converged Fabric:** The foundation of Exalogic is its ultra-high performance converged I/O backplane which has been specially developed using Oracle's QDR InfiniBand hardware and software. Each Exalogic hardware configuration contains multiple QDR InfiniBand switches, which serve as gateways to the data center's Ethernet network and connect all of the components inside the Exalogic system. This converged fabric supports not only access to shared storage, but also serves as the physical platform for creation of virtual Ethernet networks that allow applications on the cloud to connect to any other application accessible over the data center's standard Ethernet network. The Exalogic fabric offers extremely low latency (typically 10X faster speeds than Ethernet), 40Gb/s throughput, full redundancy, integrated end-point security and massive scalability (without no down-time) up to thousands of virtual and physical servers with no or immaterial degradation of performance.
- Compute Nodes:** Exalogic compute nodes are small self-contained servers containing Intel Xeon CPUs, high-speed DIMM memory, redundant InfiniBand Host Channel Adapters (HCAs) and redundant Solid State Disks (SSDs). Each compute node is capable of running a single instance of Oracle Linux, Oracle Solaris or Oracle VM Server hypervisor. Compute nodes may be added or removed from Exalogic configurations without any down-time.
- Integrated Storage:** Exalogic features a fully integrated, enterprise-grade ZFS Storage Appliance which is used as the primary shared storage for the entire Exalogic cloud. This storage subsystem is built using Oracle's enterprise class storage products and technology and is designed to be fully redundant for maximum fault tolerance and serviceability in production. The Exalogic storage subsystem is loaded with high performance DIMM and Flash memory for optimal read/write performance under the most demanding file storage workloads.

Exalogic X2-2 Hardware Specifications

Exalogic X2-2	Eighth Rack	Quarter Rack	Half Rack	Full Rack
Aggregate Specifications				
• Processor Cores	48	96	192	360
• Memory	384 GB	768 GB	1.5 TB	2.9 TB
• Integrated Disk Storage	60 TB	60 TB	60 TB	60 TB
Power				
• Maximum	4.347 kW 4.576 kVA	7.206 kW 7.585 kVA	10.897 kW 11.47 kVA	17.575 kW 18.5 kVA
• Typical	2.385 kW 2.511 kVA	5.258 kW 5.535 kVA	7.952 kW 8.37 kVA	12.825 kW 13.5 kVA
Cooling				
• Maximum	15614 BTU/hour 16457 kJ/hour	25881 BTU/hour 27278 kJ/hour	39137 BTU/hour 41250 kJ/hour	63124 BTU/hour 66533 kJ/hour
• Typical	8568 BTU/hour 9030 kJ/hour	18886 BTU/hour 19906 kJ/hour	28559 BTU/hour 30101 kJ/hour	46063 BTU/hour 48551 kJ/hour
Airflow (front to back)				
• Maximum	723 CFM	1198 CFM	1812 CFM	2922 CFM
• Typical	397 CFM	874 CFM	1322 CFM	2133 CFM
Weight				
• Installed	399.133 kg 880 lbs	491.240 kg 1083 lbs	679.481 kg 1498 lbs	966.605 kg 2131 lbs
• Shipping	400 kg 880 lbs	490 kg 1078 lbs	675.5 kg 1486 lbs	1049.09 kg 2308 lbs
10 GbE Network Drops (Max)	16	16	16	32
Power Distribution Units (PDU)				
• HV 3-Phase 24kVA	Y	Y	Y	Y
• LV 3-Phase 24kVA	Y	Y	Y	Y
• HV 1-Phase 22kVA	Y	Y	Y	Y
• LV 1-Phase 22kVA	Y	Y	Y	Y
• HV 3-Phase 15kVA	Y	Y	Y	N
• LV 3-Phase 15kVA	Y	Y	Y	N
• HV 1-Phase 15kVA	Y	Y	Y	N
• LV 1-Phase 15kVA	Y	Y	Y	N
Management Switch	1	1	1	1
• (48) GbE ports (BASE-T)				
Storage Subsystem	1	1	1	1
<ul style="list-style-type: none"> • (4) QDR InfiniBand ports (one active and one passive per storage head) • 2 TB solid state disk read cache (in each storage head) • 292 GB solid state disk write cache (in the disk array) • 60 TB Serial Attached SCSI (SAS) disks • (2) GbE management ports 				
InfiniBand Spine Switch(es)**	0	0	1	1
<ul style="list-style-type: none"> • (36) QDR InfiniBand ports (BASE-T) • (1) GbE management ports (BASE-T) 				
InfiniBand Gateway Switch(es)**	2	2	2	4
<ul style="list-style-type: none"> • (32) QDR InfiniBand ports (BASE-T) • (8) 10GbE ports (LC – SFP+) • (1) GbE management port (BASE-T) 				

Exalogic X2-2	Eighth Rack	Quarter Rack	Half Rack	Full Rack
Compute Node(s)	4	8	16	30
<ul style="list-style-type: none"> • (2) Intel 3.06 GHz Xeon (6-core) processors 96 GB 1333 MHz RAM (12x8GB) • (2) 100GB SSDs (RAID1) • (1) Dual-port QDR InfiniBand HCA (PCIe) • (1) GbE management port (BASE-T) • Redundant power supplies 				
Operating Temperature				
<ul style="list-style-type: none"> • 5 degrees Celsius to 32 degrees Celsius (59 degrees Fahrenheit to 89.6 degrees Fahrenheit), 10 percent to 90 percent relative humidity, non-condensing • Altitude operating temperature: Up to 3048 m, maximum ambient temperature is de-rated by 1 degree Celsius for every 300 m above 900 m 				
Physical Dimensions (Unpackaged)				
<ul style="list-style-type: none"> • Height: 42U, 78.66" - 1998 mm • Width: 23.62" – 600 mm • Depth: 47.24" – 1200 mm 				
Pre-installed Software				
<ul style="list-style-type: none"> • Oracle Exalogic Compute Node Base Images (pre-installed bootable disk images) for Linux • Oracle Exalogic Configuration Utilities 				
Regulations*				
Safety				
<ul style="list-style-type: none"> • 60950-1 2nd Ed, EN60950-1:2006 2nd Ed, CB Scheme with all country differences • RF/EM: FCC CFR 47 Part 15 Subpart B Class A, EN 55022:2006+A1:2007 Class A, EN 61000-3-11:2000, EN 61000-3-12:2005, ETSI EN 300 386 V1.4.1 (2008) 				
Immunity				
<ul style="list-style-type: none"> • EN 55024:1998+A1:2001:+A2:2003 				
* In some cases, as applicable, regulatory and certification compliance were obtained at the component level.				
Certifications*				
<ul style="list-style-type: none"> • Safety: UL/cUL, CE, BSMI, GOST R, S-Mark, CSA C22.2 No. 60950-1-07 2nd Ed, CCC • EMC: CE, FCC, VCCI, ICES, KCC, GOST R, BSMI Class A, AS/NZ 3548, CCC • Other: Complies with WEEE Directive (2002/96/EC) and RoHS Directive (2002/95/EC) 				
* In some cases, as applicable, regulatory and certification compliance were obtained at the component level.				

Contact Us

For more information about Oracle Exalogic Elastic Cloud, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.



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Hardware and Software, Engineered to Work Together