Oracle Server X6-2L

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x86 SERVERS

Oracle Server X6-2L is the ideal 2U platform for databases and enterprise storage solutions. Supporting the standard and enterprise editions of Oracle Database, this server delivers best-in-class database reliability in single-node configurations. With support for up to nine high-bandwidth NVM Express (NVMe) flash drives, Oracle Database can be accelerated using Database Smart Flash Cache, a feature of Oracle Database. Optimized for compute, memory, I/O, and storage density simultaneously, Oracle Server X6-2L delivers extreme storage capacity at lower cost when combined with Oracle Solaris and ZFS file system compression. Each server comes with built-in, proactive fault detection, and advanced diagnostics, along with firmware that is already optimized for Oracle software, to deliver extreme reliability.

Product Overview

Oracle Server X6-2L is powered by two Intel® Xeon® processor E5-2600 v4 product family CPUs and 24 memory slots. With up to 22 cores per socket, this server supports the highest performing processor and the most flexible storage options in a 2U enclosure. With more than 20 percent increase in processing power versus the previous generation, Oracle Server X6-2L provides optimal core, memory, and storage density combined with matched I/O throughput.

Built for the demands of enterprise workloads, this server offers six PCIe 3.0 expansion slots (two 16-lane and four 8-lane slots) for maximum I/O card and port density. The four embedded 10GBase-T ports free up PCIe slots for additional network and storage connectivity. Each Oracle Server X6-2L comes with a choice of either a SAS-3 (12 Gb/sec) RAID controller or a SAS-3 host bus adapter. This SAS-3 HBA occupies one of the 8-lane PCIe slots. With 138 gigabytes per second of bidirectional I/O bandwidth, Oracle Server X6-2L can handle the most demanding enterprise workloads.

Oracle Server X6-2L offers best-in-class reliability, serviceability, and availability (RAS) features that increase overall uptime of the server. This extreme reliability makes Oracle Server X6-2L the best choice for single-node Oracle Database deployments in remote or branch office locations. Real-time monitoring of the health of the CPU, memory, and I/O subsystems, coupled with off-lining capability of failed components, increases the system availability. Building on the firmware-level problem detection, Oracle Linux and Oracle Solaris are enhanced to provide fault detection capabilities when running on Oracle Server X6-2L. In addition, exhaustive system diagnostics and hardware-assisted error reporting and logging enable identification of failed components for ease of service.

KEY FEATURES

• Energy-efficient and storage-dense enterprise-class server with flexible disk options

• Highest levels of security enabled out of the box

• Two Intel® Xeon® processor E5-2600 v4 product family CPUs

• Twenty-four DIMM slots with maximum memory of 1.5 TB

• Six PCIe Gen 3 slots plus four 10GBase-T ports

• Four NVM Express SSD-enabled slots, for high-bandwidth flash in standard configurations

• Nine NVM Express SSD-enabled slots, for high-bandwidth flash in the all-flash configuration

• Hot-swappable and redundant disks, cooling fans, and power supply units

• Oracle ILOM

KEY BENEFITS

• Optimize for either storage capacity

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- or storage performance with multiple disk-cage and tiered-storage options
- Reduce vulnerability to cyber-attacks
- Improve reliability with built-in diagnostics and fault detection from Oracle Linux and Oracle Solaris
- Accelerate Oracle Database with hot-swappable flash using Oracle's unique NVM Express design
- Satisfy demands of enterprise applications with extreme I/O card and port density
- Increase storage capacity 15x, combining extreme compute power with Oracle Solaris and ZFS compression
- Maximize system power efficiency with Oracle's optimized memory implementation
- Maximize IT productivity by running Oracle software on Oracle hardware

To help users achieve accelerated performance for Oracle Database, Oracle Server X6-2L supports hot-swappable, high-bandwidth flash that combines with Database Smart Flash Cache to drive down cost per database transaction. Using Oracle's unique NVM Express design, Oracle Server X6-2L supports up to nine small form factor NVMe drives for a total capacity of 28.8 TB in its all-flash configuration.

The four disk-cage options offer a choice between maximizing storage capacity or storage IOPS. With the 8-disk and 24-disk configurations, Oracle Server X6-2L allows for three types of 2.5 inch small form factor devices: 10 K RPM hard drives, conventional solid-state drives (SSDs), and NVMe SSDs (up to four or nine in the all-flash configuration). The SSD and NVMe options allow for tiered storage—ideal for accelerating enterprise applications. With the 12-disk configuration, the server maximizes storage capacity using 3.5 inch large form factor disks.

With a maximum of 98.4 TB of direct-attached storage, Oracle Server X6-2L is equally ideal as a storage server. The compute power of Oracle Server X6-2L can be used to extend storage density even further with Oracle Solaris and ZFS file system compression and achieve up to 15x compression of data without significant performance impact. The server also is well suited for storage server implementations, such as video compression and transcoding, which require a combination of compute power and storage capacity at the same time.

All Oracle servers ship with full-function server management tools at no additional cost. Oracle Integrated Lights Out Manager (Oracle ILOM) utilizes industry-standard protocols to provide secure and comprehensive local and remote management. Oracle ILOM capabilities also include power management and monitoring, fault detection, and notification.

With an advanced system cooling unique to Oracle, Oracle Server X6-2L achieves system efficiencies that result in power savings and maximum uptime. Oracle Advanced System Cooling utilizes remote temperature sensors for fan speed control, minimizing power consumption while keeping optimal temperatures inside the server. These remote temperature sensors are designed into key areas of this server to ensure efficient fan usage by organizing all major subsystems into cooling zones. This feature helps reduce energy consumption in a way that other servers cannot.

Oracle Premier Support customers have access to My Oracle Support and multiserver management tools in Oracle Enterprise Manager Ops Center. Oracle Enterprise Manager Ops Center, a critical component that enables application-to-disk system management, coordinates servers, storage, and networking for a complete cloud infrastructure as a service (IaaS). Oracle Enterprise Manager Ops Center also features an automated service request capability, whereby potential issues are detected and reported to Oracle's support center without user intervention, assuring the maximum service levels and simplified support.

As the industry leader for building secure software and systems, Oracle believes that security should be built in, not bolted on. In order to build x86 servers with end-to-end security, Oracle owns 100 percent of the design and controls 100 percent of the supply chain and firmware source code. Oracle's x86 servers enable only secure protocols out of the box to prevent unauthorized access at point of install. For even greater security, customers running Oracle Ksplice on Oracle's x86 servers will benefit greatly from zero

Oracle Server X6-2L is the most versatile two-socket server for the enterprise data center, packing the optimal balance of compute power, memory capacity, and I/O capacity into a compact and energy-efficient 2U enclosure.

downtime patching of the Oracle Linux kernel.

Oracle's x86 systems are the best enterprise x86 platforms for running Oracle software. They provide optimal performance and reliability based on an integrated and fully-supported Oracle stack. Every x86 system from Oracle comes complete with virtualization, choice of operating systems, cloud provisioning, and Oracle's unique application-to-disk management environment—all at no extra charge. Oracle's x86 systems also serve as a key building block for Oracle's engineered systems, such as Oracle Exadata, which have achieved a 10x performance gain through integration and optimization.

Oracle Server X6-2L System Specifications

ARCHITECTURE

Processor

- *One or two processors from the Intel® Xeon® processor E5-2600 v4 product family (two processors required for maximum memory and I/O configurations)*
- *Up to 22 cores per processor*
- *E5-2699 v4, 2.2 GHz, 22 cores, 145 watts, 55 MB L3 cache*
- *E5-2690 v4 2.6 GHz, 14 cores, 135 watts, 35 MB L3 cache*
- *E5-2630 v4 2.2 GHz, 10 cores, 85 watts, 25 MB L3 cache*
- *E5 2643 v4 3.4 GHz, 6 cores, 135 watts, 20 MB L3 cache*

Cache

- *Level 1: 32 KB instruction and 32 KB data L1 cache per core*
- *Level 2: 256 KB shared data and instruction L2 cache per core*
- *Level 3: Up to 55 MB shared inclusive L3 cache per processor*

Main Memory

- *Twenty-four DIMM slots provide up to 768 GB of DDR4 DIMM memory*
- *RDIMM options: 16 GB at DDR4-2400 and 32 GB at DDR4-2400*
- *LRDIMM option: 64 GB at DDR4-2400*

INTERFACES

Standard I/O

- *Four onboard auto-sensing 100/1000/10000 M Base-T Ethernet ports*
- *USB: six 2.0 USB ports (two front, two rear, and two internal)*
- *Expansion bus: six PCIe 3.0 slots: two x16 and four x8 (one internal) slots*
- *Supports LP-PCIe cards including Ethernet, InfiniBand, FC, FCoE, and SAS HBAs*

Storage

Three disk chassis options:

- *Eight-disk chassis: eight 2.5-inch front hot-swappable disk bays and optional DVD-RW drive slot*
- *Twelve-disk chassis: twelve 3.5-inch front hot-swappable disk bays and an additional two 2.5-inch rear hot-swappable disk bays*
- *Twenty-four-disk chassis: twenty-four 2.5-inch front hot-swappable disk bays and an additional two 2.5-inch rear hot-swappable disk bays*

- *The 2.5-inch disk bays can be populated with either HDDs, SSDs, or high-bandwidth flash.*
- *The 3.5-inch disk bays can be populated only with HDDs.*
- *12 Gb/sec RAID HBA supporting levels: 0, 1, 5, 6, 10, 50, and 60 with 1 GB of DDR3 onboard memory with flash memory backup via embedded internal SAS-3 HBA PCIe card*
- *12 Gb/sec SAS HBA with direct access to up to eight internal SAS-3 HDDs and SSDs*

High-Bandwidth Flash

- *Uses Oracle-unique NVM Express (NVMe) design that allows for flash to be front accessible and hot swappable*

- *Available up to four (max of 12.8 TB) in the eight-disk and twenty-four disk chassis and up to nine (max of 28.8 TB) in the all-flash configuration*
- *NVMe functionality requires an Oracle NVMe enabling kit that consumes one PCIe slot.*
  - *This is a required option in the 8-disk and 24-disk chassis.*
  - *This NVMe kit is included in the all-flash configuration base chassis.*

Graphics

- *VGA 2D graphics controller embedded: 8 MB*
- *Resolution: 1,600 x 1,200 x 16 bits @ 60 Hz via the rear HD15 VGA port (1,024 x 768 when viewed remotely via Oracle ILOM)*

SYSTEMS MANAGEMENT

Interfaces

- *Dedicated 10/100/1000 Base-T network management port*
- *In-band, out-of-band, and side-band network management access*
- *RJ45 serial management port*

Service Processor

Oracle Integrated Lights Out Manager (Oracle ILOM) provides:

- *Remote keyboard, video, and mouse redirection*
- *Full remote management through command-line, IPMI, and browser interfaces*
- *Remote media capability (USB, DVD, CD, and ISO image)*
- *Advanced power management and monitoring*
- *Active Directory, LDAP, and RADIUS support*
- *Dual Oracle ILOM flash*
- *Direct virtual media redirection*
- *FIPS 140-2 mode using OpenSSL FIPS certification (#1747)*

Monitoring

- *Comprehensive fault detection and notification*
- *In-band, out-of-band, and side-band SNMP monitoring v1, v2c, and v4*
- *Syslog and SMTP alerts*
- *Automatic creation of a service request for key hardware faults with Oracle automated service request (ASR)*

Oracle Enterprise Manager

- *Deployment and provisioning of server bare metal*
- *Cloud and virtualization management*
- *Inventory control and patch management*
- *OS observability for performance monitoring and tuning*
- *Automated service request (ASR) generation*
- *Single pane of glass for management of all Oracle deployment whether on premises or in Oracle Cloud*

SOFTWARE

OPERATING SYSTEMS

- *Oracle Solaris*
- *Oracle Linux*
- *Red Hat Enterprise Linux*
- *Microsoft Windows Server*

For more information on software go to: Systems Wiki

VIRTUALIZATION

- *Oracle VM*
- *VMware*

ENVIRONMENT

- *Operating temperature: 5°C to 35°C (41°F to 95°F)*
- *Nonoperating temperature: -40°C to 70°C (-40°F to 158°F)*
- *Operating relative humidity: 10% to 90%, noncondensing*

- *Nonoperating relative humidity: up to 93%, noncondensing*
- *Operating altitude: up to 9,840 feet (3,000 m*) maximum ambient temperature is derated by 1°C per 300 m above 900 m (*except in China where regulations may limit installations to a maximum altitude of 6,560 feet or 2,000 m)*
- *Nonoperating altitude: up to 39,370 feet (12,000 m)*
- *Acoustic noise: 8.1 Bels A-weighted operating, 5.8 Bels A-weighted idling*

POWER

- *Two hot-swappable and redundant power supplies, rated 91% efficiency*
- *Rated line voltage: 100 to 240 VAC*
- *Rated input current 100 to 127 VAC 12 – 8.5 A and 200 to 240 VAC 5.7 A*

For more information on power consumption, go to: Oracle Server X6-2L Power Calculator

REGULATIONS

- *Product Safety: UL/CSA-60950-1, EN60950-1-2006, IEC60950-1 CB scheme with all country differences*
- *EMC*
    - *Emissions: FCC CFR 47 Part 15, ICES-003, EN55022, EN61000-3-2, and EN61000-3-3*
- *Immunity: EM55024*

CERTIFICATIONS[1]

- *North America Safety (NRTL)*
- *European Union (EU)*
- *International CB Scheme*
- *BIS (India)*
- *BSMI (Taiwan)*
- *RCM (Australia)*
- *CCC (PRC)*
- *MSIP (Korea)*
- *VCCI (Japan)*

EUROPEAN UNION DIRECTIVES

- *2006/95/EC Low Voltage Directive*
- *2004/108/EC EMC Directive*
- *2011/65/EU RoHS Directive*
- *2012/19/EU WEEE Directive*

DIMENSIONS AND WEIGHT

- *Height: 87.6 mm (3.5 in.)*
- *Width: 445.0 mm (17.5 in.)*
- *Depth: 737.0 mm (29.0 in.)*
- *Weight:*
    - *Eight-disk configuration: 24.5 kg (54 lb.) fully populated*
    - *Twelve-disk configuration: 29.9 kg (66 lb.) fully populated*
    - *Twenty-four-disk configuration: 29.0 kg (64 lb.) fully populated*

INCLUDED INSTALLATION KITS

- *Tool-less rackmounting slide rail kit*
- *Cable management arm*

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[1] All standards and certifications referenced are to the latest official version. For additional detail, please contact your sales representative. Other country regulations/certifications may apply.

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Integrated Cloud Applications & Platform Services

Oracle is committed to developing practices and products that help protect the environment