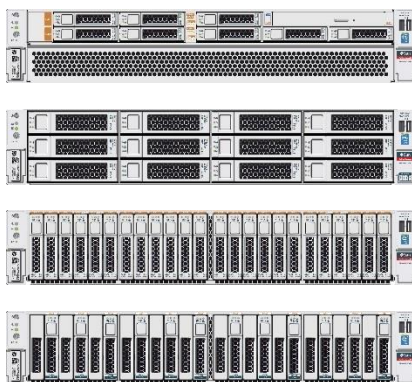


Oracle Server X5-2L



Oracle Server X5-2L 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 four high-bandwidth NVMe 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 X5-2L 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.



KEY FEATURES

- Energy-efficient and storage-dense enterprise-class server with flexible disk options
- Two Intel® Xeon® processor E5-2600 v3 product family CPUs
- Twenty-four DIMM slots with maximum memory of 768 GB
- Six PCIe Gen 3 slots plus 10GBase-T ports
- Four NVMe Express SSD-enabled slots, for high-bandwidth flash
- Hot-swappable and redundant disks, cooling fans, power supply units
- Oracle ILOM and Oracle System

Product Overview

Oracle Server X5-2L is powered by two Intel® Xeon® processor E5-2600 v3 product family CPUs and 24 memory slots. With up to 18 cores per socket, this server supports the highest performing processor and the most flexible storage options in a 2U enclosure. When compared with the previous-generation server, this system increases memory capacity by 50 percent, to 768 GB, and increases memory bandwidth by 33 percent. With more than 50 percent increase in processing power and 13 percent increase in I/O bandwidth versus the previous generation, Oracle Server X5-2L 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) 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 X5-2 includes choice of either a RAID-capable SAS3 (12 Gbps) controller or a SAS3 (12Gbps) controller in one of the 8-lane PCIe slots and includes eight small form factor drive bays. With 138 gigabytes per second of bidirectional I/O bandwidth, Oracle Server X5-2L can handle even the most demanding enterprise workloads.

Oracle Server X5-2L offers best-in-class reliability, serviceability, and availability features that increase overall server uptime. This extreme reliability makes Oracle Server X5-2L 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 have been enhanced to provide fault detection capabilities when running

Assistant

KEY BENEFITS

- Optimize for either storage capacity or storage performance with multiple disk-cage and tiered-storage options
- 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
- Improve reliability with built-in diagnostics and fault detection from Oracle Linux and Oracle Solaris
- Maximize system power efficiency with Oracle's optimized memory implementation
- Maximize IT productivity by running Oracle software on Oracle hardware

on Oracle Server X5-2L. In addition, exhaustive system diagnostics and hardware-assisted error reporting and logging enable identification of failed components for ease of service.

To help users achieve accelerated performance for Oracle Database, Oracle Server X5-2L introduces hot-swappable, high-bandwidth flash that is ideal as Database Smart Flash Cache. Using Oracle's unique NVM Express design, Oracle Server X5-2L supports up to four small form factor NVMe drives for a total capacity of 6.4 TB.

The three disk-cage options offer a choice between maximizing storage capacity or storage performance. With the 8-disk and 24-disk configurations, Oracle Server X5-2L allows for three types of 2.5 inch small form factor drives: 10 K RPM hard drives, conventional solid state drives (SSDs), and NVMe flash drives (up to four). The small form factor hard drives provide more spindles in the chassis and higher I/O operations per second (IOPS) than large form factor disks. In addition, 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 X5-2L is equally ideal as a storage server. The compute power of Oracle Server X5-2L 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 that require a combination of compute power and storage capacity at the same time, such as for video compression and transcoding.

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. The integrated Oracle System Assistant guides system administrators through rapid server deployment, firmware updates, hardware configuration, and operating system installation with hardware drivers certified by Oracle.

With an advanced system cooling unique to Oracle, Oracle Server X5-2L 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 have been 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.

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 X5-2L System Specifications

Oracle Server X5-2L 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.

RELATED PRODUCTS

- Oracle Server X5-2
- Oracle's Sun Server X4-4
- Oracle's Sun Server X4-8

RELATED SERVICES

The following services are available from Oracle Customer Support:

- Support
- Installation
- Eco-optimization services

ARCHITECTURE

Processor

- One or two processors from the Intel® Xeon® processor E5-2600 v3 product family (two processors required for maximum memory and I/O configurations)
- Up to 18 cores per processor

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 45 MB shared inclusive L3 cache per processor

Main Memory

- Twenty-four DIMM slots provide up to 768 GB of DDR4 ECC DIMM memory
- RDIMM options: 8 GB at DDR4-2133 and 16 GB at DDR4-2133
- Load-reduced DIMM option: 32 GB at DDR4-2133

INTERFACES

Standard I/O

- Four onboard auto-sensing 100/1000/10000 Base-T Ethernet ports
- USB: Six 2.0 USB ports (two front, two rear, 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
- 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 Gbps RAID HBA supporting levels: 0, 1, 5, 6, 10, 50, 60 with 1 GB of DDR3 onboard memory with flash memory backup via embedded internal SAS3 HBA PCIe Card
- 12 Gbps SAS HBA with direct access to up to 8 internal SAS3 HDDs and SSDs

High-Bandwidth Flash

- Uses Oracle-unique NVMe Express (NVMe) design that allows for flash to be front accessible and hot swappable
- Available in eight-disk and twenty-four-disk chassis only
- Up to four small form factor NVMe drives (6.4 TB total capacity)
- Four of the disk drive bays are predesignated as NVMe enabled
- NVMe functionality requires an Oracle NVMe enabling kit that consumes one PCIe slot

Graphics

- VGA 2D graphics controller embedded: 8MB
- 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 the 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, mouse redirection*
 - *Full remote management through command-line, IPMI, and browser interfaces*
 - *Remote media capability (USB, DVD, CD, ISO image)*
 - *Advanced power management and monitoring*
 - *Active Directory, LDAP, RADIUS support*
 - *Dual Oracle ILOM flash*
 - *Direct virtual media redirection*
 - *FIPS 140-2 mode using OpenSSL FIPS certification (#1747)*
-

Installation

- *Oracle System Assistant provides:*
 - *Task-driven hardware updating and configuration*
 - *OS installation*
 - *Simple download of latest Oracle firmware, drivers, tools, and documentation*
 - *Cross-OS command-line tools for RAID, BIOS, and Oracle ILOM configuration*
 - *Cross-OS firmware updating tool*
-

Monitoring

- *Comprehensive fault detection and notification*
 - *In-band, out-of-band, and side-band SNMP monitoring v1, v2c, and v3*
 - *Syslog and SMTP alerts*
 - *Automatically create a service request for key hardware faults with Oracle automated service request (ASR)*
-

Oracle Enterprise Manager Ops Center

- *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*
 - *Connects to Oracle Enterprise Manager Cloud Control application management*
 - *Enables control of native Oracle Solaris, Oracle Linux, Red Hat Linux, SUSE Linux, and Microsoft Windows when running in virtual machines*
-

SOFTWARE

OPERATING SYSTEMS

- *Oracle Solaris (preinstalled option)*
- *Oracle Linux (preinstalled option)*
- *Red Hat Enterprise Linux*
- *SUSE Linux Enterprise Server*
- *Microsoft Windows Server*

For more information on software go to: [Systems Wiki](#)

VIRTUALIZATION

- *Oracle VM (preinstalled option)*
 - *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 X5-2L Power Calculator](#)

REGULATIONS^{1,2}

- 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^{1,2}

- 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:
 - 8-disk configuration: 24.5 kg (54 lbs.) fully populated
 - 12-disk configuration: 29.9 kg (66 lbs.) fully populated
 - 24-disk configuration: 29.0 kg (64 lbs.) fully populated
-

INCLUDED INSTALLATION KITS

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

¹ All standards and certifications referenced are to the latest official version. For additional detail, please contact your sales representative.

² Other country regulations/certifications may apply.

Warranty

Oracle Server X5-2L system comes with a one-year warranty. For more information, visit oracle.com/sun/warranty for Oracle's global warranty support.

Services

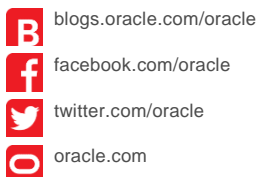
Only Oracle offers a single point of accountability and complete, integrated support for the entire Oracle stack including 24/7 hardware service, expert technical support, proactive tools, and software updates. Visit oracle.com/sun/services for information on Oracle's service program offerings for Oracle's products.



CONTACT US

For more information about Oracle Server X5-2L, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

CONNECT WITH US



Hardware and Software, Engineered to Work Together

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