

# Oracle Server X5-4



With the highest reliability, availability, and serviceability features in the four-socket space, Oracle Server X5-4 is the ideal x86 platform for consolidating enterprise applications and for running in-memory databases that require large amounts of memory and I/O. Oracle Server X5-4 packs 20 percent more cores. Oracle Server X5-4 is coengineered to work with Oracle software, making it the most compact four-socket platform for running Oracle operating systems, Oracle Database, Oracle Fusion Middleware, and Oracle Applications. Oracle's unique industry-leading 3U form factor allows for 40 percent higher rack-level core and dual inline memory module (DIMM) slot density than the competition.



## KEY FEATURES

- Compact 3U enterprise-class server
- Four Intel Xeon processor E7-8895 v3 processors
- Ninety-six DIMM slots with maximum memory of 3 TB
- Six 2.5" disk drive bays for HDDs or SSDs (four NVM Express SSD-enabled bays for high-bandwidth flash)
- Eleven PCIe Gen3 I/O expansion slots
- Hot-swappable and redundant disks, cooling fans, and power supply units
- Oracle ILOM and Oracle System Assistant

## Product Overview

This server is powered by two or four Intel Xeon processor E7-8895 v3, 18-core, 2.6 GHz, 45 MB LLC CPUs, with up to 3 TB of memory, and options for up to 6.4 TB of solid-state drive (SSD) NVM Express (NVMe) flash, 2.4 TB of conventional SSDs or 7.2 TB of hard disk drives (HDDs). By offering a combination of the highest performance processor and memory bandwidth coupled with a large farm of I/O expansion slots in a single server, Oracle Server X5-4 provides a perfect balance of compute power, memory density, and I/O footprint. It delivers outstanding virtualization capacity to increase server utilization, and it can reduce your data center footprint accommodating up to 14 Oracle Server X5-4 systems in a 42U rack compared to only 10 servers from the competition.

Oracle Server X5-4 averages more than 40 GB of memory capacity, more than 5 GB/sec of memory bandwidth, and more than 3 GB/sec I/O bandwidth per core, enabling consolidation of both small and large virtual machines. When combined with Oracle Fabric Interconnect and Oracle SDN, Oracle Server X5-4 server packs in the most VMs per rack while enabling faster live migration and cable consolidation.

Oracle Server X5-4 continues to support the flexible processor that allows a server to be reconfigured and repurposed remotely for varying workloads, without changing the physical components. This flexible processor technology simplifies infrastructure requirements and enables greater server reuse. The ability to choose between maximum threads and single-thread performance in a single design makes Oracle Server X5-4 the most flexible four-socket x86 architecture on the market, with the highest uptime.

#### KEY BENEFITS

- Accelerate Oracle Database with hot-swappable flash using Oracle's unique NVM Express design
- Minimize real estate costs with the most compact system design
- Boost application performance, improve business response, and reduce power consumption with Oracle's enterprise flash technology
- Reduce energy consumption with Oracle Advanced System Cooling
- Increase network bandwidth and reduce cost with four onboard 10GBase-T ports
- Reduce operating expenses through a common system management stack across Oracle's systems portfolio
- Maximize IT productivity and minimize operational expenses by running Oracle software on Oracle hardware

## Higher Performance, Less Power Consumption

With Oracle's optimized memory subsystem design, Oracle Server X5-4 runs as fast as and consumes no more power than the previous four-socket server and competitive four-socket servers. In performance mode, the DIMMs achieve 1,600 MT/sec at one DIMM per channel (1DPC) and 2DPC, and 1,333 MT/sec at 3DPC, all with low-voltage DIMMs.

Oracle Server X5-4 continues to offer two flash integration options for application and database acceleration: standard SSDs and the new NVMe SSDs. NVMe SSDs deliver increased bandwidth equal to 2.6 times that of traditional SSDs and decreased latency for faster data access, and they are hot swappable. Flash technology turbo-charges applications while eliminating bottlenecks and reducing power consumption. In addition, an increase of 20 percent in processor cores and threads produces better performance at the same maximum system power, making this server the densest and fastest performing in its class.

## Oracle Advanced System Cooling

With an advanced cooling system unique to Oracle, Oracle Server X5-4 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 appropriate fan usage in zones that include power supply units, PCIe slots, Ethernet ports, exiting air, entering air, and thermal diodes. Oracle Advanced System Cooling helps reduce energy consumption in a way that other servers cannot.

## Simple System Management

System management is simplified with Oracle Integrated Lights Out Manager (Oracle ILOM), which comes standard in every Oracle Server X5-4. Oracle ILOM centralizes system management locally or remotely to ease system configuration, software provisioning, and updates, providing a consistent interface across the entire x86 product line.

All Oracle servers ship with full-function server management tools at no additional cost. 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.

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 of Oracle's application-to-disk system management tool, 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.

## Optimal Performance and Reliability

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, as well as everything you need for a cloud deployment. Every one of Oracle's x86 systems comes complete with virtualization, choice of operating systems, cloud provisioning, and Oracle's unique application-to-disk management environment—all at no extra charge—resulting in lower overall TCO. Oracle's x86 systems also serve as a key building block for Oracle's engineered systems, such as Oracle Exadata and Oracle Exalytics, which have achieved a 10 times performance gain through integration and optimization.

## Trade-In Program

The Upgrade Advantage Program (UAP) is a trade-in program that offers up-front discounts on new Oracle systems for the trade-in of older, eligible systems from Oracle and competitors. Oracle also provides free return shipping and free state-of-the-art recycling of the old system so you needn't worry about the disposal of hazardous waste.

## Oracle Server X5-4 Specifications

### ARCHITECTURE

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#### Processor

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- Two or four Intel® Xeon® processor E7-8895 v3 processors
  - Up to 18 cores per processor
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#### Main Memory

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- Up to 96 DIMMs (24 DIMMs per processor)
  - 16 GB DDR3 ECC registered low-voltage DIMMs or 32 GB DDR3 ECC registered low-voltage LRDIMMs
  - Two memory riser cards required per processor
  - Maximum memory capacity of 3 TB
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### INTERFACES

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#### Standard I/O

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- Four 10 GbE on-board Ethernet copper ports
  - One dedicated 10/100/1000Base-T Ethernet copper management port
  - One RS-232 RJ-45 serial port
  - Six USB 2.0 ports (two front, two rear, two internal)
  - Eleven PCI Express (PCIe) slots: two x16 slots; nine x8 slots
  - Front-accessible DVD+/-RW drive slot (optional)
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#### Storage

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- Six 2.5" SAS-3 front-accessible, hot-swappable drive bays and optional DVD+/-RW
  - All bays can be populated with SAS-3 HDDs or SSDs
  - 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
  - Up to four NVMe SSDs
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#### Graphics

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- 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 Oracle ILOM)
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Oracle Server X5-4, which is powered by up to four Intel Xeon processor E7-8895 v3 processors, up to 3 TB of memory, and up to 7.2 TB of internal storage, is the best platform for enterprise consolidation and virtualization for business applications.

#### RELATED PRODUCTS

Oracle's Sun Server X4-8

#### RELATED SERVICES

The following services are available from Oracle support services:

- Support
- Installation
- Eco-optimization services

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## SYSTEMS MANAGEMENT

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### Interfaces

- *Dedicated 10/100/1000BaseT Ethernet network management port*
- *In-band, out-of-band, and sideband network management access via any one of the four main ports on the server or the dedicated port*
- *RJ-45 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 and out-of-band SNMP monitoring V1, V2c, V3*
- *Syslog and SMTP alerts*
- *Automatically create a service request for key hardware faults with Oracle's 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 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*

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## SOFTWARE

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### Operating Systems

- *Oracle Solaris (preinstall option)*
- *Oracle Linux (preinstall option)*
- *Red Hat Enterprise Linux*
- *Microsoft Windows Server*
- *For more information on software, go to: [Oracle Server X5-4 Options & Downloads](#)*

### Virtualization

- *Oracle VM (preinstall option)*
- *VMware*

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## ENVIRONMENT

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- *Operating temperature: 5° C to 35° C (41° F to 95° F) at sea level; 5° C to 31° C (41° F to 88° F) at altitude*
  - *Nonoperating temperature: -40° C to 68° C (-40° F to 154° F)*
  - *Operating relative humidity: 10%–90% relative humidity, noncondensing*
  - *Nonoperating relative humidity: 93% relative humidity, noncondensing*
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- *Acoustic noise: LwAd: 8.9 B (idle and operating, room temp.), 8.9 B (max. ambient); LpAm: 75 dBA (bystander position, max. ambient)*
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#### POWER

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- *Rated line voltage: 100–127 VAC (two-processor configuration); 200–240 VAC*
  - *Rated input current: 100–127 VAC 12A (two-processor configuration); 200–240 VAC 10A*
  - *Two hot-swappable rear accessible power supplies with N+N redundancy*
  - [Power Calculator](#)
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#### REGULATIONS

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- *Product Safety: UL/CSA 60950-1, EN 60950-1, IEC 60950-1 CB Scheme with all country differences*
  - *EMC: Emissions : FCC 47 CFR 15, ICES 003, EN55022, EN61000-3-2, EN61000-3-3*
  - *Immunity: EN55024*
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#### CERTIFICATIONS

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- *North America Safety (NRTL), European Union (EU), International CB Scheme, BIS (India), BSMI (Taiwan), RCM (Australia), MSIP (Korea), VCCI (Japan)*
  - *European Union Directives: 2014/35/EU Low Voltage Directive, 2014/30/EU EMC Directive, 2011/65/EU RoHS Directive, 2012/19/EU WEEE Directive*
  - *Energy Star*
  - *Other: Altitude:*
  - *Operating altitude: 0 m to 3,000 m\* (0 ft to 9,840 ft) maximum ambient temperature is derated by 1 degree C per 300 m above 900 m, except in China where regulations may limit installations to a maximum altitude of 2,000 m.*
  - *Nonoperating altitude: 0 m to 12,000 m (0 ft to 40,000 ft)*
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#### DIMENSIONS AND WEIGHT

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- *Height: 129.9 mm (5.1 in.)*
  - *Width: 436.5 mm (17.2 in.)*
  - *Depth: 732.0 mm (28.8 in.)*
  - *Weight: 40 kg (88 lb.) max.*
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#### INSTALLATION KITS

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- *Tool-less rack mounting slide rail kit*
  - *Cable management arm*
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## Warranty

Oracle Server X5-4 comes with a one-year warranty. For more information, visit [oracle.com/sun/warranty](http://oracle.com/sun/warranty) for Oracle's global warranty support.

## Support





Only Oracle offers single-point 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](http://oracle.com/sun/services) for information on Oracle's service program offerings for Oracle's products.



#### CONTACT US

For more information about Oracle Server X5-4, visit [oracle.com](http://oracle.com) or call +1.800.ORACLE1 to speak to an Oracle representative.

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#### Hardware and Software, Engineered to Work Together

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