

# Oracle Server X6-2



x86 SERVERS

Oracle Server X6-2 is designed to be the most secure and reliable two-socket x86 server available in the market today. It is ideal for running Oracle Database in deployments using SAN/NAS, and for delivering infrastructure as a service (IaaS) in cloud and virtualized environments that require an optimal balance between core density, memory footprint, and I/O bandwidth. With support for up to 12.8 TB of high-bandwidth NVMe Express (NVMe) flash drives, Oracle Database can be accelerated using Database Smart Flash Cache, a feature of Oracle Database. Each server comes with built-in, proactive fault detection, and advanced diagnostics, along with firmware that is already optimized for Oracle operating systems and Oracle platform software, to deliver extreme reliability for enterprise applications. With a compute capacity of up to 1,760 cores and 64 PB of memory in a single rack, this compact 1U server is an ideal building block for standing up density-efficient compute infrastructure without compromising reliability, availability, and serviceability (RAS).



## KEY FEATURES

- Compact and energy-efficient 1U enterprise-class server
- Highest levels of security enabled out of the box
- Two Intel® Xeon® processor E5-2600 v4 product family CPUs
- Twenty-four dual inline memory module (DIMM) slots with maximum memory of 1.5 TB
- Four PCIe Gen 3 slots plus four 10GBase-T ports
- Four NVMe Express SSD-enabled slots, for high-bandwidth flash
- Hot-swappable and redundant disks, cooling fans, and power supply units
- Oracle ILOM

## Product Overview

Oracle Server X6-2 is powered by two Intel® Xeon® processor E5-2600 v4 product family CPUs, and has 24 memory slots. With up to 22 cores per socket, this server supports the highest performing Intel Xeon processor and delivers extreme compute density in a compact 1U enclosure. With more than 20 percent increase in processing power versus the previous generation, Oracle Server X6-2 provides the optimal balance of cores, memory, and I/O throughput, making it the highest performing server in its class for enterprise applications.

Built for the demands of enterprise and virtualization workloads, this server offers four PCIe 3.0 expansion slots (two 16-lane and two 8-lane slots). The four embedded 10GBase-T ports free up PCIe slots for additional network and storage connectivity. Each Oracle Server X6-2 includes a SAS-3 (12 Gb/sec) RAID controller (in one of the 8-lane PCIe slots) and includes eight small form factor drive bays. The server can be configured with up to 9.6 TB of hard disk drive (HDD) capacity or up to 3.2 TB of conventional solid state drive (SSD) flash capacity. Four of these drive bays can accommodate NVMeExpress SSDs, each with a capacity of 3.2 TB of low-latency, high-bandwidth flash.

Designed as an optimal server for running Oracle Database with existing SAN/NAS storage solutions, customers can reap the benefits of Oracle's investments in



**KEY BENEFITS**

- Accelerate Oracle Database with hot-swappable flash using Oracle's unique NVM Express design
- Reduce vulnerability to cyberattacks
- Improve reliability with built-in diagnostics and fault detection from Oracle Linux and Oracle Solaris
- Maximize I/O bandwidth for VM consolidation of enterprise applications
- Reduce energy consumption with Oracle Advanced System Cooling
- Maximize IT productivity by running Oracle software on Oracle hardware

engineering Oracle Server X6-2 with Oracle's operating systems and database. Oracle Server X6-2 systems can be combined with Oracle Real Application Clusters (Oracle RAC) to enable high availability and scalability. In order to achieve accelerated performance for Oracle Database, Oracle Server X6-2 uses hot-pluggable, high-bandwidth flash that is engineered to work together with Oracle's Database Smart Flash Cache. Using Oracle's unique NVM Express design, Oracle Server X6-2 supports up to four small form factor NVMe drives for a total capacity of 12.8 TB.

With 106 GB/sec of bidirectional I/O bandwidth, combined with the high core and memory density, Oracle Server X6-2 is an ideal server for standing up enterprise applications in a virtual environment. With a standard, efficient power profile, Oracle Server X6-2 can be deployed easily into existing data centers as the building block of a private cloud or IaaS implementation.

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 can benefit greatly from zero downtime patching of the Oracle Linux kernel.

Oracle Linux and Oracle Solaris running on Oracle Server X6-2 include RAS features that increase overall server uptime. 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. These are driven by firmware-level problem detection capabilities that are engineered into Oracle Integrated Lights Out Manager (Oracle ILOM) and the operating systems. In addition, exhaustive system diagnostics and hardware-assisted error reporting and logging enable identification of failed components for ease of service.

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. With an advanced cooling system unique to Oracle, Oracle Server X6-2 achieves system efficiencies that result in power savings and maximum uptime. Oracle Advanced System Cooling utilizes temperature sensors for fan speed control, minimizing power consumption while keeping optimal temperatures inside the server. These temperature sensors are designed into key areas of this server to ensure efficient fan usage by organizing all major subsystems into cooling zones. This capability 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 an IaaS solution complete with monitoring, provisioning, and metering. 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 Server X6-2 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 1U enclosure.

#### RELATED PRODUCTS

- Oracle Server X6-2L
- Oracle Server X5-4
- Oracle Server X5-8

#### RELATED SERVICES

The following services support Oracle Server X6-2:

- Support
- Installation
- Eco-optimization services

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 needed for a cloud deployment. 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. In addition, Oracle can reduce high capital and operating expenses of private cloud deployment through hybrid cloud enablement. The hybrid cloud guarantees infrastructure and software tools commonality between the private and public cloud patches. This allows the flexibility to overflow workloads to the secure public cloud. In addition the public cloud domain can be used for software development and test environments that reduce on-premises capital expenses. 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 X6-2 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 ECC 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: four PCIe 3.0 slots: two x16 and two x8 (one internal) slots
- Supports LP-PCIe cards including Ethernet, InfiniBand, FC, FCoE, and SAS HBAs

#### Storage

- Eight 2.5-inch front hot-swappable disk bays and optional DVD-RW drive
- All 2.5-inch disk bays can be populated with either HDDs or conventional SSDs
- 12 Gb/sec 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 SAS-3 HBA PCIe card

#### High-Bandwidth Flash

- Uses Oracle-unique NVM Express (NVMe) design that allows for flash to be front accessible and hot swappable
- Up to four small form factor NVMe drives (12.8 TB total capacity)
- Four of the disk drive bays are pre-designated as NVMe enabled
- NVMe functionality requires an Oracle NVMe-enabling kit that consumes one PCIe slot

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**Graphics**

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- *VGA 2D graphics controller embedded with 8 MB of dedicated graphics memory*
  - *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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**SYSTEMS MANAGEMENT**

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**Interfaces**

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

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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)*
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**Monitoring**

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- *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's automated service request (ASR)*
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**Oracle Enterprise Manager**

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- *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 deployments, whether on premises or in Oracle Cloud*
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**SOFTWARE**

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**Operating Systems**

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

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

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**Virtualization**

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- *Oracle VM*
  - *VMware*
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**ENVIRONMENT**

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- *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)*
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- *Acoustic noise: 7.0 Bels A-weighted operating, 7.0 Bels A-weighted idling*

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**POWER**

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- *Two hot-swappable and redundant power supplies, rated 91% efficiency*
- *Rated line voltage: 100 to 240 VAC*
- *Rated input current 100 to 127 VAC 7.2 A and 200 to 240 VAC 3.4 A*

For more information on power consumption, go to: [Oracle Server X6-2 Power Calculator](#)

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**REGULATIONS<sup>1,2</sup>**

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- *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*
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**CERTIFICATIONS<sup>1,2</sup>**

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

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

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- *Height: 42.6 mm (1.7 in.)*
  - *Width: 436.5 mm (17.2 in.)*
  - *Depth: 737.0 mm (29.0 in.)*
  - *Weight: 18.1 kg (40.0 lb.) fully populated*
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**INCLUDED INSTALLATION KITS**

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- *Tool-less rackmounting slide rail kit*
  - *Cable management arm*
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<sup>1</sup> All standards and certifications referenced are to the latest official version. For additional detail, please contact your sales representative.

<sup>2</sup> Other country regulations/certifications may apply.



#### CONTACT US

For more information about Oracle Server X6-2, visit [oracle.com](http://oracle.com) or call +1.800.ORACLE1 to speak to an Oracle representative.

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#### Integrated Cloud Applications & Platform Services

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