

# Oracle Server X7-8

## Dual Four-Socket Configuration



x86 SERVERS

With the highest reliability, availability, and serviceability features, Oracle Server X7-8 in a dual four-socket configuration is the ideal x86 platform for consolidating enterprise applications and running in-memory databases. This server has Oracle's new industry-leading 5U form factor enabling installations of up to 16 four-socket servers in a 42U rack. This dual four-socket configuration provides complete electrical isolation between the two servers while still achieving 52 percent higher rack-level core density and 20 percent higher rack-level memory density than the previous generation four-socket server. Oracle Server X7-8 is coengineered to work with Oracle software, making it the best platform for running Oracle operating systems, Oracle Database, Oracle Fusion Middleware, and Oracle Applications.



### KEY FEATURES

- Unique compact 5U chassis design that accommodates dual four-socket enterprise-class servers
- Modular design that allows full front and rear access to all serviceable components
- Four Intel Xeon Gold 6100 or Platinum 8100 series processors per server
- Forty-eight DIMM slots with maximum memory of 3 TB per server
- Eight hot-pluggable PCIe Gen3 I/O expansion slots per server
- Four onboard 10GBase-T ports per server
- One dedicated Oracle Integrated Lights Out Manager (Oracle ILOM) per server

### Product Overview

Oracle Server X7-8 dual four-socket configuration is powered by Intel® Xeon® Gold 6100 or Platinum 8100 series processors, with up to 3 TB of memory per server. Each four-socket server can be configured with up to 25.6 TB of NVM Express (NVMe) flash and supports four additional drive bays for solid-state drives (SSDs) or HDDs. Combining the latest high-performance processors from Intel and the highest memory bandwidth with a large farm of I/O expansion slots in a single server, Oracle Server X7-8 provides a perfect balance of compute power, memory density, and I/O footprint, making this an ideal system for virtualized environments.

The unique design houses up to two four-socket servers in a single chassis to reduce its data center footprint without compromising reliability and serviceability. All serviceable components have front or rear access to reduce service times and increase asset utilization. To ensure that a catastrophic failure in one server does not impact the functioning of the other server, these servers are designed to be electrically isolated. A pair of power supplies is dedicated to each server to deliver power in a 1+1 redundant configuration. All PCIe slots, HBAs, and service processors, along with the BIOS and OS, are independent and unique to each server.

With Oracle's optimized memory subsystem design, Oracle Server X7-8 supports 12 DIMMs per socket across six memory channels, each operating at 2,666 million transfers (MT) per second. This memory subsystem is ideal for running Oracle Database In-Memory, and the 3 TB per server memory footprint provides adequate capacity to run large virtual machines (VMs). This results in a 25 percent increase in memory bandwidth compared to the previous generation.



**KEY BENEFITS**

- Minimized real estate costs due to compact system design
- Maximized asset utilization through decreased service-related downtime
- Increased VM density with balanced CPU, memory, and I/O capabilities
- Ability to deploy large databases using Oracle Database In-Memory.
- Increased application uptime by allowing PCIe card replacement while the server is running
- Increased network bandwidth and reduced cost through four onboard 10GBase-T ports per server
- Reduced operating expenses through a common system management stack across Oracle's systems portfolio

Oracle continues to engineer Oracle Database together with the latest NVMe devices, operating systems, device drivers, and server technology to deliver unbeatable performance and reliability by innovatively using flash technology. Oracle Server X7-8 in a four-socket configuration uniquely supports up to 25.6 TB of NVMe flash (four per server) in an LP-PCIe form factor. This design delivers an aggregate bandwidth of 64 GB per second, which is double the bandwidth achievable using an equivalent number of standard NVMe SSDs. Oracle Server X7-8 offers integration for application and database acceleration. Oracle Flash Accelerator F640 PCIe Card delivers 700,000 IOPS, significantly reducing SQL query latencies and turbo-charging flash-aware applications.

Oracle Server X7-8 dual four-socket configuration has four 10GBase-T ports and eight configurable PCIe slots—four 16-lane and four 8-lane per server. These PCIe slots are housed in Oracle's unique PCIe card carrier modules that enable hot pluggability of standard PCIe cards. This design approach allows for maximum application uptime by enabling hot-plug service of the I/O subsystem.

Oracle Server X7-8 ships with the all new Oracle ILOM 4.x, a cloud-ready service processor designed for today's security challenges. Oracle ILOM provides real-time monitoring and management of all system and chassis functions as well as enables remote management of Oracle servers. The newest version of Oracle ILOM uses advanced service processor hardware with built-in hardening and encryption as well as improved interfaces to reduce the attack surface and improve overall security. Oracle ILOM has improved firmware image validation through the use of improved firmware image signing. This mechanism provides silicon-anchored service processor firmware validation that cryptographically prevents malicious firmware from booting. After Oracle ILOM's boot code is validated by the hardware, a chain of trust allows each subsequent firmware component in the boot process to be validated. Finally, with a focus on security assurance, using secure coding and testing methodologies, Oracle is able to maximize firmware security by working to prevent and remediate vulnerabilities prior to release.

With an advanced cooling system unique to Oracle, Oracle Server X7-8 achieves system efficiencies that result in significant 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, and entering air.

Oracle Premier Support customers have access to My Oracle Support and multiserver management tools in Oracle Enterprise Manager 13c. Oracle Enterprise Manager 13c, a critical component of Oracle's applications-to-disk system management tool, coordinates servers, storage, and networking for a complete cloud infrastructure as a service (IaaS). Oracle Enterprise Manager 13c also features an automated service request capability, whereby potential issues are detected and reported to Oracle's support center without user intervention, ensuring the maximum service levels and simplified support.

With industry-leading in-depth security spanning its entire portfolio of software and systems, Oracle believes that security must be built in at every layer of the IT

environment. In order to build x86 servers with end-to-end security, Oracle maintains 100 percent in-house design, controls 100 percent of the supply chain, and controls 100 percent of the firmware source code. Oracle's x86 servers enable only secure protocols out of the box in order to prevent unauthorized access from the point of installation. For even greater security, customers running Oracle Ksplice on Oracle's x86 servers will benefit greatly from zero-downtime patching of the Oracle Linux kernel.

Oracle is driven to produce the most reliable and highest performing x86 systems, with security-in-depth features layered into these servers, for two reasons: Oracle Public Cloud including infrastructure as a service (IaaS), Bare Metal Cloud Services, platform as a service (PaaS), and software as a service (SaaS), and Oracle engineered systems. At their foundation, these rapidly expanding cloud and converged infrastructure businesses run on Oracle's x86 servers. To ensure that Oracle's SaaS, PaaS, and IaaS offerings operate at the highest levels of efficiency, only enterprise-class features are designed into these systems, along with significant co-development among cloud, hardware, and software engineering. Judicious component selection, extensive integration, and robust real-world testing enable the optimal performance and reliability critical to these core businesses. All the same features and benefits available in Oracle's cloud are standard in Oracle's x86 standalone servers, helping customers to easily transition from on-premises applications to cloud with guaranteed compatibility and efficiency.

## Oracle Server X7-8 Dual Four-Socket Configuration Specifications (per Server)

Oracle Server X7-8, powered by four Intel® Xeon® 6100 or 8100 series processors, up to 3 TB of memory, and up to 4.8 TB of internal storage per node, is the best platform for consolidating enterprise applications and running in-memory databases.

### RELATED PRODUCTS

Oracle Server X7-8 eight-socket configuration

Oracle Server X7-2L

Oracle Server X7-2

### RELATED SERVICES

The following Oracle Support services are available:

- Support
- Installation
- Eco-optimization services

### ARCHITECTURE

#### Processors

- 4 CPU modules, each with one Intel® Xeon® Platinum 8100 or Gold 6100 series processor
- Up to 24 cores per processor
- Intel® Xeon® Platinum 8168 processor: 2.7 GHz, 24 cores, 205 watts, XCC, 33 MB L3 cache
- Intel® Xeon® Platinum 8160 processor: 2.1 GHz, 24 cores, 150 watts, XCC, 33 MB L3 cache
- Intel® Xeon® Gold 6140 processor: 2.3 GHz, 18 cores, 140 watts, XCC, 24.75 MB L3 cache
- Intel® Xeon® Gold 6128 processor: 3.4 GHz, 6 cores, 115 watts, XCC, 19.25 MB L3 cache

#### Memory

- Forty-eight DIMM slots (12 per CPU module) provide up to 3 TB of DDR4 ECC DIMM memory
- RDIMM options: 16 GB at DDR4-2666 and 32 GB at DDR4-2666
- LRDIMM option: 64 GB at DDR4-2666

### INTERFACES

#### Standard I/O

- Four 10 GbE onboard Ethernet copper ports
- One 1 GbE onboard Ethernet copper port
- Two USB 3.0 ports (one external, one internal)
- Eight PCIe Gen 3 slots (four 16-lane; four 8-lane)
  - » Rear-serviceable and hot swappable using dual PCIe card carrier (DPCC)

#### Internal Storage

- Four 2.5-inch SAS-3 rear-accessible, hot-swappable drive bays
- All bays can be populated with SAS-3 HDDs or SSDs
- One embedded 12 Gb/sec SAS-3 RAID HBA supporting RAID levels 0, 1, 5, 6, 10, 50, and 60 with 2 GB of flash-backed write-back cache

### SYSTEMS MANAGEMENT

#### Interfaces

- Dedicated 10/100/1000Base-T 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 ILOM provides:

- Remote keyboard, video, and 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, and RADIUS support
- Dual Oracle ILOM flash
- Direct virtual media redirection
- FIPS 140-2 mode using OpenSSL FIPS certification (#1747)

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**Installation**

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- Cross-OS command-line tools for RAID, BIOS, and Oracle ILOM configuration
- Cross-OS firmware updating tool

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**Monitoring**

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- Comprehensive fault detection and notification
- In-band and out-of-band SNMP monitoring v2c and v3
- Syslog and SMTP alerts
- Automatic creation of service requests for key hardware faults with Oracle Auto Service Request

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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 generation
- Single pane of glass for management of all Oracle deployments, whether on premises or in Oracle Public Cloud

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**SOFTWARE**

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**Operating Systems**

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- Oracle Solaris
- Oracle Linux

For a complete list, go to [Oracle Server X7-8 Options & Downloads](#).

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**Virtualization**

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Oracle VM

For a complete list, go to [Oracle Server X7-8 Options & Downloads](#).

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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
- 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 limit installations to a maximum altitude of 2,000 m.
- Nonoperating altitude: 0 m to 12,000 m (0 ft to 40,000 ft)
- 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: 200–240 VAC (50/60 Hz)
- Rated input current: 23 A (12 A max per cord)
- Four hot-swappable front accessible power supplies (in two sets of 1+1 redundant power supplies) per 4-socket server
- For more information on power consumption, go to: [Oracle Server X7-8 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, EN55032, EN61000-3-11, EN61000-3-12
- Immunity: EN55024

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**CERTIFICATIONS**

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- North America Safety (NRTL)
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- *European Union (EU)*
- *International CB Scheme*
- *HSE Exemption (India)*
- *BSMI (Taiwan)*
- *RCM (Australia)*
- *MSIP (Korea)*
- *VCCI (Japan)*
- *Morocco*
- *Republic of Srpska*
- *Vietnam*

#### EUROPEAN UNION DIRECTIVES

- *2014/35/EU Low Voltage Directive*
- *2014/30/EU EMC Directive*
- *2011/65/EU RoHS Directive*
- *2012/19/EU WEEE Directive*

#### DIMENSIONS AND WEIGHT (two 4-socket servers)

- *Height: 219.25 mm (8.63 in.)*
- *Width: 445 mm (17.5 in.)*
- *Depth: 833 mm (32.8 in.)*
- *Weight: 114 kg (250 lb.) maximum*

#### INSTALLATION KITS

Tool-less static rack mounting rail kit



#### CONTACT US

For more information about Oracle Server X7-8, 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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