ORACLE DATA SHEET

Oracle Server X7-2

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x86 SERVERS

Oracle Server X7-2 two-socket x86 server is designed for maximum security, reliability, and performance for Oracle Database, and it is an ideal building block for running Oracle software in the cloud. Oracle Server X7-2 is engineered 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 among core density, memory footprint, and I/O bandwidth. With support for up to 51.2 TB of high-bandwidth NVM Express (NVMe) flash drives, Oracle Server X7-2 can store either the entire Oracle Database in flash for extreme performance or accelerate I/O performance using Database Smart Flash Cache, a feature of Oracle Database. Each server includes built-in proactive fault detection and advanced diagnostics to deliver extreme reliability for Oracle applications. With a compute capacity of over 2,000 cores and 64 TB of memory in a single rack, this compact 1U server is an ideal framework 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 Scalable Family processors
- Twenty-four dual inline memory module (DIMM) slots with maximum memory of 1.5 TB
- Four PCIe Gen 3 slots plus two 10 GbE ports or two 25 GbE SFP ports
- Eight NVM Express (NVMe) SSD-enabled slots, for high-bandwidth flash
- Oracle ILOM

KEY BENEFITS

Product Overview

Oracle Server X7-2, which has 24 memory slots, is powered by two Platinum, Gold, or Silver Intel® Xeon® Processor Scalable Family processors. With up to 24 cores per socket, this server delivers extreme compute density in a compact 1U enclosure. With more than 35 percent increase in processing power versus the previous generation, Oracle Server X7-2 provides the optimal balance of cores, memory, and I/O throughput 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). Each Oracle Server X7-2 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 6.4 TB of conventional solid-state drive (SSD) flash capacity. This system can be configured with up to eight 6.4 TB NVM Express SSDs, for a total capacity of 51.2 TB of low-latency, high-bandwidth flash. In addition, Oracle Server X7-2 supports 960 GB of optional on-board flash storage for OS boot.

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 engineering Oracle Server X7-2 with Oracle's operating systems and database. Oracle

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- Accelerate Oracle Database with hot-swappable flash using Oracle's unique NVM Express design
- Build a more secure cloud and prevent cyber attacks
- 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

Server X7-2 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 X7-2 uses hot-pluggable, high-bandwidth flash that is engineered to work together with Oracle's Database Smart Flash Cache.

With up to 156 GB/sec of bidirectional I/O bandwidth, combined with the high core and memory density, Oracle Server X7-2 is an ideal server for standing up enterprise applications in a virtual environment. With a standard, efficient power profile, Oracle Server X7-2 can be deployed easily into existing data centers as the building block of a private cloud or IaaS implementation.

Oracle Linux and Oracle Solaris running on Oracle Server X7-2 include RAS features that increase overall server uptime. Real-time monitoring of the health of the CPU, memory, and I/O subsystems, coupled with offlining 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.

Oracle Server X7-2 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.

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 that enables application-to-disk system management, coordinates servers, virtual machines, storage, and networking for an IaaS solution complete with monitoring, provisioning, and metering. 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, assuring 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 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 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 X7-2 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 X7-2L
- Oracle Server X7-8

RELATED SERVICES

The following services support Oracle Server X7-2:

- Support
- Installation
- Eco-optimization services

Oracle Server X7-2 System Specifications

ARCHITECTURE

Processor

- *One or two processors from the Intel® Xeon® Processor Scalable Family processors (two processors required for maximum memory and I/O configurations)*
- *Up to 24 cores per processor*
- *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® Silver 4114 processor: 2.2 GHz, 10 cores, 85 watts, LCC, 13.75 MB L3 cache*
- *Intel® Xeon® Gold 6128 processor: 3.4 GHz, 6 cores, 115 watts, XCC, 19.25 MB L3 cache*

Cache

- *Level 1: 32 KB instruction and 32 KB data L1 cache per core*
- *Level 2: 1 MB shared data and instruction L2 cache per core*
- *Level 3: up to 1.375 MB shared inclusive L3 cache per core*

Main Memory

- *Twenty-four DIMM slots provide up to 1.5 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

- *Two 10 GbE ports (RJ45) or two 10/25 GbE ports (SFP28)*
- *USB: two 3.0 USB ports (one rear, one internal)*
- *Expansion bus: four PCIe 3.0 slots: two x16 and two x8 (one internal) slots*
- *Supports LP-PCIe cards including Ethernet, InfiniBand, FC, and SAS HBAs*

Storage

- *Eight 2.5-inch front hot-swappable disk bays*
- *HDDs or conventional SSDs, or NVMe SSDs*
- *Optional: 12 Gb/sec SAS-3 RAID HBA supporting levels: 0, 1, 5, 6, 10, 50, and 60 with 2 GB of flash-backed write-back cache*

High-Bandwidth Flash

- *Uses NVM Express (NVMe) design that allows for flash to be front accessible and hot swappable*
- *Up to eight small form factor NVMe drives (6.4 TB per drive)*

SYSTEMS MANAGEMENT

Interfaces

- *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*

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 v2c and v3*
- *Syslog and SMTP alerts*
- *Automatic creation of a service request for key hardware faults with Oracle's 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 deployments, whether on premises or in Oracle Public Cloud*

SOFTWARE

Operating Systems

- *Oracle Solaris*
- *Oracle Linux*
- *For software complete list, go to: Oracle Server X7-2 Options & Downloads*

Virtualization

- *Oracle VM*
- *For software complete list, go to: Oracle Server X7-2 Options & Downloads*

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: 8.8 Bels A-weighted operating, 7.7 Bels A-weighted idling*

POWER

- *Two 1,200 watt hot-swappable and redundant power supplies, rated 96% efficiency*
- *Rated line voltage: 100 to 240 VAC*
- *Rated input current 100 to 127 VAC 10 A and 200 to 240 VAC 7 A*

For more information on power consumption, go to: Oracle Server X7-2 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,EN55032, KN32, EN61000-3-2, and EN61000-3-3*
- *Immunity: EN55024, KN35*

CERTIFICATIONS

- *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

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

DIMENSIONS AND WEIGHT

- *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*

INCLUDED INSTALLATION KITS

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

CONTACT US

For more information about Oracle Server X7-2, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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