Oracle Database Appliance
X7-2-HA

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DATABASE APPLIANCE

The Oracle Database Appliance X7-2-HA is an Oracle Engineered System that saves time and money by simplifying deployment, maintenance, and support of high availability database solutions. Optimized for the world's most popular database— Oracle Database—it integrates software, compute, storage, and network resources to deliver high availability database services for a wide range of custom and packaged online transaction processing (OLTP), in-memory database, and data warehousing applications. All hardware and software components are engineered and supported by Oracle, offering customers a reliable and secure system with built-in automation and best practices. In addition to accelerating the time to value when deploying high availability database solutions, the Oracle Database Appliance X7-2-HA offers flexible Oracle Database licensing options and reduces operational expenses associated with maintenance and support.

Fully Redundant Integrated System

Providing access to information 24/7 and protecting databases from unforeseen as well as planned downtime can be a challenge for many organizations. Indeed, manually building redundancy into database systems can be risky and error-prone if the right skills and resources are not available in-house. The Oracle Database Appliance X7-2-HA is designed for simplicity and reduces that element of risk and uncertainty to help customers deliver higher availability for their databases.

The Oracle Database Appliance X7-2-HA hardware is a 6U rack-mountable system containing two Oracle Linux servers and one storage shelf. Each server features two 18-core Intel® Xeon® Gold 6140 processors, 384 GB of memory, and offer two 10-Gigabit Ethernet (GbE) ports or two 25-Gigabit Ethernet (GbE) SFP ports for external networking connectivity. The two servers are connected together via a 25GbE interconnect for cluster communication and share direct-attached high performance SAS storage. The storage shelf in the base system is partially populated with five solid-state drives (SSDs) for data storage, totaling 16 TB of raw storage capacity. The storage shelf in the base system also includes four 800 GB SSDs for database redo logs to improve performance and reliability.

The Oracle Database Appliance X7-2-HA runs Oracle Database Enterprise Edition or Oracle Database Standard Edition providing customers the choice of running single-instance databases as well as clustered databases utilizing Oracle Real Application Clusters (Oracle RAC) or Oracle RAC One Node for "active-active" or "active-passive"

KEY FEATURES

- Fully integrated and complete database and application appliance
- Oracle Database Enterprise Edition and Standard Edition
- Oracle Real Application Clusters or Oracle Real Application Clusters One Node
- Oracle Automatic Storage Management
- Oracle ASM Cluster File System
- Oracle Linux and Oracle VM
- Two servers
- Up to two storage shelves
- Solid-state drives (SSDs) and hard disk drives (HDDs)

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database server failover.

Optional Storage Expansion

The Oracle Database Appliance X7-2-HA offers the flexibility to expand the storage shelf that comes with the base system by adding up to fifteen additional SSDs or hard disk drives (HDDs) for data storage. A fully populated storage shelf contains either twenty SSDs or five SSDs and fifteen HDDs for data storage, totally 64 TB or 150 TB of raw storage capacity, respectfully. Customers can also optionally add a second storage shelf to double the storage capacity of the system. And, to expand storage outside of the appliance, external NFS storage is supported for online backups, data staging, or additional database files.

Ease of Deployment, Management, and Support

To help customers easily deploy and manage their databases, the Oracle Database Appliance X7-2-HA features the Appliance Manager software to simplify the provisioning, patching, and diagnosing of database servers. The Appliance Manager feature greatly simplifies the deployment process and ensures that the database configuration adheres to Oracle's best practices. It also drastically simplifies maintenance by patching the entire appliance, including all firmware and software, in one operation, using an Oracle-tested patch bundle engineered specifically for the appliance. Its built-in diagnostics also monitor the system and detect component failures, configuration issues, and deviations from best practices. Should it be necessary to contact Oracle Support, the Appliance Manager collects all relevant log files and environmental data into a single compressed file. In addition, the Oracle Database Appliance X7-2-HA Auto Service Request (ASR) feature can automatically log service requests with Oracle Support to help speed resolution of issues.

Capacity-On-Demand Licensing

The Oracle Database Appliance X7-2-HA offers customers a unique capacity-on-demand database software licensing model to quickly scale from 2 to 72 processor cores without any hardware upgrades. Customers can deploy the system and license as few as 2 processors cores to run their database servers, and incrementally scale up to the maximum of 72 processor cores. This enables customers to deliver the performance and high availability that business users demand, and align software spending with business growth.

Solution-In-A-Box Through Virtualization

The Oracle Database Appliance X7-2-HA enables customers and ISVs to quickly deploy both database and application workloads in a single appliance on a virtualized platform, based on Oracle VM. Support for virtualization adds additional flexibility to the already complete and fully integrated database solution. Customers and ISVs benefit from a complete solution that efficiently utilizes resources and takes advantage of capacity-on-demand licensing for multiple workloads by leveraging Oracle VM hard partitioning.

Oracle Database Appliance X7-2-HA Specifications

ARCHITECTURE

System

- *Two servers and one storage shelf per system*
- *Optional second storage shelf may be added for storage expansion*

Processor

- *Two Intel® Xeon® processors per server*
- *Intel® Xeon® Gold 6140 2.3 GHz, 18 cores, 140 watts, XCC, 24.75 MB L3 cache*

Cache per Processor

- *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

- *384 GB (12 x 32 GB) per server*
- *Optional memory expansion to 768 GB (24 x 32 GB) per server*
- *Both servers must contain the same amount of memory*

STORAGE

Storage Shelf (DE3-24C)

Data Storage	Quantity	Raw Capacity	Usable Capacity (Double Mirroring)	Usable Capacity (Triple Mirroring)
Base System	5 x 3.2 TB SSD	16 TB	8 TB	5.3 TB
Half Shelf	10 x 3.2 TB SSD	32 TB	16 TB	10.7 TB
Three-Quarter Shelf	15 x 3.2 TB SSD	48 TB	24 TB	16 TB
Full Shelf	20 x 3.2 TB SSD	64 TB	32 TB	21.3 TB
	15 x 10 TB HDD	150 TB	75 TB	50 TB
Double Shelf	40 x 3.2 TB SSD	128 TB	64 TB	42.7 TB
	30 x 10 TB HDD	300 TB	150 TB	100 TB

Redo Log Storage	SSD Quantity	Raw Capacity	Usable Capacity (Triple Mirroring)
Single Shelf	4 x 800 GB	3.2 TB	1.1 TB
Double Shelf	8 x 800 GB	6.4 TB	2.1 TB

- *Base system storage shelf contains four solid-state drives (SSDs) for REDO and five SSDs for DATA*
- *Additional SSDs must be added in groups of five*
- *Hard-disk drives (HDDs) must be added in groups of fifteen to fully populate the entire storage shelf*
- *Optional second storage shelf for storage expansion must be fully populated*
- *Storage capacity is based on storage industry conventions where 1 TB equals 1,000[4] bytes*

Server Storage

- *Two internal 480 GB M.2 SATA SSDs (mirrored) per server for Operating System and Oracle Database software*

INTERFACES

Standard I/O

- *USB: two 3.0 USB ports (one rear, one internal) per server*
- *Two 10 GbE ports (RJ45) or 10/25 GbE ports (SFP28) per server for external networking*
- *Three PCIe 3.0 slots per server:*
  - *PCIe slot 3: dual-port external SAS HBA*
  - *PCIe slot 2: dual-port external SAS HBA*
  - *PCIe slot 1: dual-port 25 GbE PCIe card (Interconnect)*

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 v1, v2c, and v4*
- *Syslog and SMTP alerts*
- *Automatic creation of a service request for key hardware faults with Oracle auto service request (ASR)*

SOFTWARE

Oracle Software

- *Oracle Linux (Pre-Installed)*
- *Appliance Manager (Pre-Installed)*
- *Oracle VM (Optional)*

Oracle Database Software (Licensed Separately)

- *Choice of Oracle Database software, depending on the desired level of availability:*
  - *Oracle Database 12c Enterprise Edition Release 1, Release 2*
  - *Oracle Database 11g Enterprise Edition Release 2*
  - *Oracle Database 12c Standard Edition 2*
  - *Oracle Database 11g Standard Edition and Standard Edition One*
  - *Oracle Real Application Clusters One Node*
  - *Oracle Real Application Clusters*
- *Support for:*
  - *Oracle Database Enterprise Edition database options*
  - *Oracle Enterprise Manager Management Packs for Oracle Database Enterprise Edition*

Capacity-On-Demand Software Licensing

- *Bare Metal and Virtualized Platform: Enable and license 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, or 36 cores per server*
- *Note: Both servers must have the same number of cores enabled, however, it is possible to license software for only one of the servers or both servers, depending on the high availability requirements*

POWER

- *Two 1200 Watt hot-swappable and redundant power supplies per server, rated 91% efficiency*
  - *Rated line voltage: 100 to 240 VAC*
  - *Rated input current 100 to 127 VAC 7.2A and 200 to 240 VAC 3.4A*
- *Two 580 Watt hot-swappable, redundant power supplies per storage shelf, rated 88% efficiency*
  - *Rated line voltage: 100 to 240 VAC*
  - *Rated input current: 100 VAC 8A and 240 VAC 3A*

ENVIRONMENT

Environmental Server (Max Memory)

- *Maximum power usage: 479W, 1634 BTU/Hr*
- *Active Idle power usage: 172W, 587 BTU/Hr*

Environmental Storage Shelf (DE3-24C)

- *Maximum power usage: 453W, 1546 BTU/Hr*
- *Typical power usage: 322W, 1099 BTU/Hr*

Environmental Temperature, Humidity, Altitude

- *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)*

REGULATIONS [1]

- *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, EN55032, KN32, EN61000-3-2, and EN61000-3-3*
- *Immunity: EM55024, KN35*

CERTIFICATIONS [1]

- *North America (NRTL), European Union (EU), International CB Scheme, BIS (India), BSMI (Taiwan), RCM (Australia), CCC (PRC), MSIP (Korea), VCCI (Japan), Morocco, Republic of Srpska, EAC (Russia), 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

- *Height: 42.6 mm (1.7 in.) per server; 175 mm (6.9 in.) per storage shelf*
- *Width: 436.5 mm (17.2 in.) per server; 446 mm (17.6 in.) per storage shelf*
- *Depth: 737 mm (29.0 in.) per server; 558 mm (22.0 in.) per storage shelf*
- *Weight: 16.1 kg (34.5 lbs) per server; 38 kg (84 lbs) per storage shelf*

INCLUDED INSTALLATION KITS
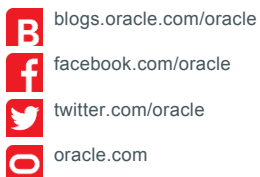
- *Rack-mount Slide Rail Kit*
- *Cable Management Arm*

[1] All standards and certifications referenced are to the latest official version. For additional detail, please contact your sales representative. Other country regulations/certifications may apply.

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Integrated Cloud Applications & Platform Services

Oracle is committed to developing practices and products that help protect the environment