

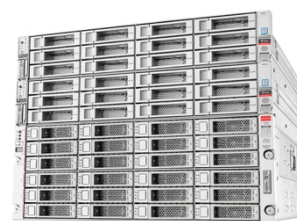
# Oracle Database Appliance X8-2-HA

Oracle Database Appliance X8-2-HA is an Oracle Engineered System that saves time and money by simplifying deployment, management, 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, Oracle Database Appliance X8-2-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 and planned downtime can be challenging 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. Oracle Database Appliance X8-2-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 X8-2-HA hardware is an 8U rack-mountable system containing two Oracle Linux servers and one storage shelf. Each server features two 16-core Intel® Xeon® Gold 5218 processors, 384 GB of memory, and choice of either a dual-port 25-Gigabit Ethernet (GbE) SFP28 or a quad-port 10GBase-T PCIe network adapter for external networking connectivity with the option to add up to two additional dual-port 25GbE SFP28 or quad-port 10GBase-T PCIe network adapters. The two servers are connected via a 25GbE interconnect for cluster communication and share direct-attached high-performance SAS storage. The base system's storage shelf is partially populated with six 7.68 TB solid-state drives (SSDs) for data storage, totaling 46 TB of raw storage capacity.



Oracle Database Appliance  
X8-2-HA

## 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 ASM and ACFS
- Oracle Appliance Manager
- Browser User Interface (BUI)
- Integrated Backup and Data Guard
- Software Development Kit (SDK) and REST API
- Oracle Cloud Integration
- Oracle Linux and Oracle Linux KVM
- Two servers with up to two storage shelves
- Solid-state drives (SSDs) and hard disk drives (HDDs)

Oracle Database Appliance X8-2-HA runs Oracle Database Enterprise Edition or Oracle Database Standard Edition. It offers customers the option of running single-instance databases or clustered databases utilizing Oracle Real Application Clusters (Oracle RAC) or Oracle RAC One Node for "active-active" or "active-passive" database server failover. Oracle Data Guard is integrated with the appliance to simplify standby databases' configuration for disaster recovery.

## Optional Storage Expansion

Oracle Database Appliance X8-2-HA offers the flexibility to expand the storage shelf that comes with the base system by adding up to eighteen additional SSDs or hard disk drives (HDDs) for data storage. A fully populated storage shelf contains either twenty-four SSDs or six SSDs and eighteen HDDs for data storage, for a total of 184 TB SSD or 46 TB SSD and 252 TB HDD raw storage capacity, respectively. Customers can also optionally add a second storage shelf to double the storage capacity of the system. Also, external NFS storage is supported for online backups, data staging, or other database files.

## Ease of Deployment, Management, and Support

To help customers quickly deploy and manage their databases, Oracle Database Appliance comes with Appliance Manager software to simplify the system's administration and diagnosis. The Appliance Manager feature dramatically simplifies the deployment process and ensures that the system and database configuration adheres to Oracle's best practices. The browser user interface quickly gathers all the configuration parameters to streamline both system and database provisioning with a few easy steps. The Appliance Manager also drastically simplifies maintenance by patching the entire appliance, including all firmware and software, using an Oracle-tested patch bundle explicitly engineered for the appliance. Simply select the appropriate patch bundle in the browser user interface to validate it and update the entire system. Database backup and recovery are integrated into the Appliance Manager to backup locally, external storage, or the Oracle Cloud directly through the browser user interface. The Appliance Manager also tracks system and database information and displays the information in the browser user interface. Built-in diagnostics continually monitor the appliance and detect component failures, configuration issues, and deviations from best practices. In addition, Oracle Database Appliance Auto Service Request (ASR) feature can automatically log service requests with Oracle Support to help speed resolution of issues.

## Flexible Oracle Database Software Licensing

Oracle Database Appliance X8-2-HA supports both Oracle Database Enterprise Edition and Standard Edition. Enterprise deployments that require the enhanced feature set of Oracle Database Enterprise Edition can take advantage of a unique capacity-on-demand database software licensing model to quickly scale utilized processor cores without any hardware upgrades. Customers can deploy the system and license as few as 2 processor cores to run their database servers, and incrementally scale up to the maximum of 64 processor cores. This enables customers to deliver the performance and reliability that enterprise business

## Key Benefits

- World's #1 database
- Simple, optimized, and affordable
- High availability database solutions for a wide range of applications
- Ease of deployment, patching, management, and diagnostics
- Simplified backup and disaster recovery
- Reduced planned and unplanned downtime
- Cost-effective consolidation platform
- Capacity-on-demand licensing
- Rapid provisioning of test and development environments with database snapshots
- Single-vendor support

users demand, and align software spend with business growth. Small enterprises, line-of-business departments, and branch office deployments that don't require enterprise class features can license Oracle Database Standard Edition, allowing them to realize the benefits of Oracle Database Appliance to reduce costs and improve productivity.

## **Integrated Virtualization Support**

Virtualization provides IT cost savings and better resource utilization through consolidation of multiple physical servers as Virtual Machines in an Oracle Database Appliance. It helps reduce space, power, and cooling for data centers and provides isolation for workloads to improve service quality for applications and databases. Oracle Database Appliance supports two types of Kernel-based Virtual Machines (KVM) that can be quickly deployed using built-in user interfaces: Application KVM and Database KVM (a.k.a. database system). In an application KVM, customers manage the installation and maintenance of the application, while in the Database KVM, the Oracle Database Appliance manages the installation and maintenance of the Oracle Database.

KVM database systems enable hard partitioning for Oracle Database licensing, where each KVM database system has its own CPU pool that is automatically assigned during KVM database system creation. Oracle Database Appliance simplifies the management of KVM database systems with built-in user interfaces. Oracle Database Appliance X8-2-HA also offers built-in high availability features, auto-restart, and failover for application KVMs.

## **Solution-In-A-Box Through Virtualization**

Oracle Database Appliance X8-2-HA enables customers and ISVs to quickly deploy database and application workloads on a single Oracle Database Appliance. Support for virtualization adds additional flexibility to the already complete and fully integrated database solution by providing isolation between database and application instances.

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 KVM hard partitioning.

## **Conclusion**

For customers seeking a simple, optimized, and affordable database solution, the Oracle Database Appliance X8 model family offers optimized purpose-built hardware and software choices for every organization. The Oracle Database Appliance is engineered across every technology stack level, resulting in easier deployment and upgrades and more efficient management. With the Oracle Database Appliance X8 model family, customers can quickly bring new services to the market while improving their service levels – adding business value to their company.

To learn more about the Oracle Database Appliance X8 model family, visit: [www.oracle.com/oda](http://www.oracle.com/oda)

## Oracle Database Appliance X8-2-HA Specifications

ARCHITECTURE	
<b>System</b>	<ul style="list-style-type: none"> <li>Two 2U X8-2L servers and one 4U DE3-24C storage shelf per system</li> <li>Optional second storage shelf may be added for storage expansion</li> </ul>
<b>Processor</b>	<ul style="list-style-type: none"> <li>Two Intel® Xeon® processors per server</li> <li>Intel® Xeon® Gold 5218 2.3 GHz, 16 cores, 125 watts, XCC, 22 MB L3 cache</li> </ul>
<b>Cache</b>	<ul style="list-style-type: none"> <li>Level 1: 32 KB instruction and 32 KB data L1 cache per core</li> <li>Level 2: 1 MB shared data and instruction L2 cache per core</li> <li>Level 3: Up to 1.375 MB shared inclusive L3 cache per core</li> </ul>
<b>Main Memory</b>	<ul style="list-style-type: none"> <li>384 GB (12 x 32 GB) per server</li> <li>Optional memory expansion to 768 GB (24 x 32 GB) per server</li> <li>Both servers must contain the same amount of memory</li> </ul>
<b>Server Storage</b>	<ul style="list-style-type: none"> <li>Two internal 480 GB M.2 SSDs (mirrored) per server for Operating System and Oracle Database software</li> </ul>

### STORAGE (STORAGE SHELF DE3-24C)

#### HIGH PERFORMANCE

Data Storage	Quantity	Raw Capacity	Usable Capacity	Usable Capacity
Base System	6 x 7.68 TB SSD	46 TB	17.8 TB	11.9 TB
Plus 6 SSDs	12 x 7.68 TB SSD	92 TB	35.6 TB	23.7 TB
Plus 6 SSDs	18 x 7.68 TB SSD	138 TB	53.4 TB	35.6 TB
Full Shelf	24 x 7.68 TB SSD	184 TB	71.2 TB	47.5 TB
Double Shelf	48 x 7.68 TB SSD	369 TB	142.5 TB	95.0 TB
HIGH CAPACITY				
Full Shelf (SSDs Plus HDDs)	6 x 7.68 TB SSD	46 TB	17.8 TB	11.9 TB
	18 x 14 TB HDD	252 TB	97 TB	65 TB
Double Shelf (SSDs Plus HDDs)	12 x 7.68 TB SSD	92 TB	35.6 TB	23.7 TB
	36 x 14 TB HDD	504 TB	195 TB	130 TB

- Base system storage shelf contains six solid-state drives (SSDs)
- Additional SSDs must be added in groups of six
- Hard-disk drives (HDDs) must be added in groups of eighteen to fully populate the entire storage shelf
- Optional second storage shelf for storage expansion must be fully populated.
- The raw storage capacity is based on storage industry conventions where 1 TB equals 1,000<sup>4</sup> bytes.
- The usable storage capacity is based on operating system conventions where 1 TB equals 1,024<sup>4</sup> bytes and accounts for 15% reserved space required to rebuild full redundancy in case of disk failure.

### INTERFACES

<b>Standard I/O</b>	<ul style="list-style-type: none"> <li>One GbE port and one serial RJ45 port per server</li> <li>Two USB 3.0 ports (one rear, one internal) per server</li> <li>PCIe slot 1: dual-port 25 GbE (SFP28) card (Interconnect)</li> <li>PCIe slot 2: Choice of quad-port 10GBase-T card or dual-port 10/25 GbE (SFP28) card (Optional)</li> <li>PCIe slot 3: dual-port external SAS HBA</li> <li>PCIe slot 7: Choice of quad-port 10GBase-T card or dual-port 10/25 GbE (SFP28) card</li> <li>PCIe slot 8: dual-port external SAS HBA</li> <li>PCIe slot 10: Choice of quad-port 10GBase-T card or dual-port 10/25 GbE (SFP28) card (Optional)</li> <li>Note: No additional PCIe cards can be added in the non-mentioned slots</li> </ul>
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SYSTEMS MANAGEMENT	
<b>Interfaces</b>	<ul style="list-style-type: none"> <li>▪ Dedicated 10/100/1000 M Base-T network management port</li> <li>▪ In-band, out-of-band, and side-band network management access</li> <li>▪ RJ45 serial management port</li> </ul>
<b>Service Processor</b>	<p>Oracle Integrated Lights Out Manager (Oracle ILOM) provides:</p> <ul style="list-style-type: none"> <li>▪ Remote keyboard, video, and mouse redirection</li> <li>▪ Full remote management through command-line, IPMI, and browser interfaces</li> <li>▪ Remote media capability (USB, DVD, CD, and ISO image)</li> <li>▪ Advanced power management and monitoring</li> <li>▪ Active Directory, LDAP, and RADIUS support</li> <li>▪ Dual Oracle ILOM flash</li> <li>▪ Direct virtual media redirection</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>▪ Comprehensive fault detection and notification</li> <li>▪ In-band, out-of-band, and side-band SNMP monitoring v3</li> <li>▪ Syslog and SMTP alerts</li> <li>▪ Automatic creation of a service request for key hardware faults with Oracle auto service request (ASR)</li> </ul>

SOFTWARE	
<b>Oracle Software</b>	<ul style="list-style-type: none"> <li>▪ Oracle Linux (Pre-Installed)</li> <li>▪ Oracle Linux KVM (Pre-Installed and optional to use)</li> <li>▪ Appliance Manager (Pre-Installed)</li> </ul>
<b>Oracle Database Software (Licensed Separately)</b>	<ul style="list-style-type: none"> <li>▪ Choice of Oracle Database software, depending on the desired level of availability: <ul style="list-style-type: none"> <li>– Oracle Database 19c Enterprise Edition, Standard Edition 2</li> <li>– Oracle Database 18c Enterprise Edition, Standard Edition 2</li> <li>– Oracle Database 12c Enterprise Edition Release 1, Release 2, Standard Edition 2</li> <li>– Oracle Database 11g Enterprise Edition Release 2, Standard Edition and Standard Edition One</li> <li>– Oracle Real Application Clusters One Node</li> <li>– Oracle Real Application Clusters</li> </ul> </li> <li>▪ Support for: <ul style="list-style-type: none"> <li>– Oracle Database options</li> <li>– Oracle Enterprise Manager Management Packs for Oracle Database Enterprise Edition</li> </ul> </li> </ul>
<b>Capacity-On-Demand Software Licensing for Oracle Database Enterprise Edition</b>	<ul style="list-style-type: none"> <li>▪ Enable and license 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, or 32 cores per server</li> <li>▪ 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</li> </ul>

ENVIRONMENTAL	
<b>Environmental Server (Max Memory)</b>	<ul style="list-style-type: none"> <li>▪ Maximum power usage: 522W, 1781 BTU/Hr</li> <li>▪ Active Idle power usage: 217W, 740 BTU/Hr</li> </ul>
<b>Environmental Storage Shelf (DE3-24C: 24 x 7.68 TB SSDs)</b>	<ul style="list-style-type: none"> <li>▪ Maximum power usage: 452W, 1,542 BTU/Hr</li> <li>▪ Typical power usage: 257W, 877 BTU/Hr</li> </ul>
<b>Environmental Storage Shelf (DE3-24C: 6 x 7.68 TB SSDs, 18 x 14 TB HDDs)</b>	<ul style="list-style-type: none"> <li>▪ Maximum power usage: 421W, 1,437 BTU/Hr</li> <li>▪ Typical power usage: 261W, 891 BTU/Hr</li> </ul>
<b>Environmental Temperature, Humidity, Altitude</b>	<ul style="list-style-type: none"> <li>▪ Operating temperature: 5°C to 35°C (41°F to 95°F)</li> <li>▪ Nonoperating temperature: -40°C to 70°C (-40°F to 158°F)</li> <li>▪ Operating relative humidity: 10% to 90%, noncondensing</li> <li>▪ Nonoperating relative humidity: Up to 93%, noncondensing</li> <li>▪ 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)</li> <li>▪ Nonoperating altitude: up to 39,370 feet (12,000 m)</li> <li>▪ Acoustic noise: 8.1 Bels A-weighted operating, 5.8 Bels A-weighted idling</li> </ul>

<b>Power</b>	<ul style="list-style-type: none"> <li>▪ <b>Two 1,200 watt hot-swappable and redundant power supplies, rated 96% efficiency</b> <ul style="list-style-type: none"> <li>– Rated line voltage: 100 to 240 VAC</li> <li>– Rated input current 100 to 127 VAC 10 A and 200 to 240 VAC 7 A</li> </ul> </li> <li>▪ <b>Two 580 Watt hot-swappable, redundant power supplies per storage shelf, rated 88% efficiency</b> <ul style="list-style-type: none"> <li>– Rated line voltage: 100 to 240 VAC</li> <li>– Rated input current: 100 VAC 8A and 240 VAC 3A</li> </ul> </li> </ul>
<b>Dimensions and Weight</b>	<ul style="list-style-type: none"> <li>▪ Height: 86.9 mm (3.4 in.) per server; 175 mm (6.9 in.) per storage shelf</li> <li>▪ Width: 445.0 mm (17.5 in.) per server; 483 mm (19.0 in.) per storage shelf</li> <li>▪ Depth: 759.4 mm (29.9 in.) per server; 630 mm (24.8 in.) per storage shelf</li> <li>▪ Weight: 28.6 kg (63 lb.) per server; 38 kg (84 lbs) per storage shelf</li> </ul>
<b>Included Installation Kits</b>	<ul style="list-style-type: none"> <li>▪ Rack-mount Slide Rail Kit</li> <li>▪ Cable Management Arm</li> </ul>

REGULATIONS AND CERTIFICATIONS	
<b>REGULATIONS</b>	<ul style="list-style-type: none"> <li>▪ Product safety: UL/CSA-60950-1, EN60950-1-2006, IEC60950-1 CB scheme with all country differences</li> <li>▪ EMC <ul style="list-style-type: none"> <li>– Emissions: FCC CFR 47 Part 15, ICES-003, EN55022, EN55032, KN32, EN61000-3-2, and EN61000-3-3</li> </ul> </li> <li>▪ Immunity: EN55024, KN35</li> </ul>
<b>CERTIFICATIONS<sup>1</sup></b>	<ul style="list-style-type: none"> <li>▪ North America Safety (NRTL)</li> <li>▪ European Union (EU)</li> <li>▪ International CB Scheme</li> <li>▪ BIS (India)</li> <li>▪ BSMI (Taiwan)</li> <li>▪ RCM (Australia)</li> <li>▪ CCC (PRC)</li> <li>▪ MSIP (Korea)</li> <li>▪ VCCI (Japan)</li> </ul>
<b>EUROPEAN UNION DIRECTIVES</b>	<ul style="list-style-type: none"> <li>▪ 2014/35/EU Low Voltage Directive</li> <li>▪ 2014/30/EU EMC Directive</li> <li>▪ 2011/65/EU RoHS Directive</li> <li>▪ 2012/19/EU WEEE Directive</li> </ul>

<sup>1</sup> 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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