Oracle Database Appliance X5-2

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DATABASE APPLIANCE

The Oracle Database Appliance X5-2 saves time and money by simplifying deployment, maintenance, and support of high availability database solutions. Built with the world's most popular database—Oracle Database—it offers customers a fully integrated system of software, servers, storage, and networking that delivers 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 supported by a single vendor—Oracle—and offer customers unique capacity-on-demand software licensing to quickly scale from 2 to 72 processor cores without incurring the costs and downtime usually associated with hardware upgrades.

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 X5-2 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 X5-2 hardware is a 6U rack-mountable system containing two Oracle Linux servers and one storage shelf. Each server features two 18-core Intel Xeon E5-2699 v3 processors, 256 GB of memory, and 10-Gigabit Ethernet (10GbE) external networking connectivity. The two servers are connected together via a redundant InfiniBand interconnect for cluster communication and share direct-attached high performance SAS storage. The appliance contains 128 TB of raw storage that's double-mirrored or triple-mirrored, offering 64 TB or 42.7 TB, respectively, of resilient usable database storage. In addition, there are four 400 GB solid-state drives for frequently accessed data and four 200 GB solid-state drives for database redo logs to boost performance. The appliance is also designed with mission-critical requirements in mind, with hot-swappable and redundant components.

The Oracle Database Appliance X5-2 runs Oracle Database Enterprise Edition, and customers have the choice of running Oracle Real Application Clusters (Oracle RAC) or Oracle RAC One Node for "active-active" or "active-passive" database server failover.

KEY FEATURES

- Fully integrated and complete database and application appliance
- Oracle Database Enterprise 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
- InfiniBand interconnect
- Solid-state drives for database redo logs and frequently accessed data

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Optional Storage Expansion

The Oracle Database Appliance X5-2 offers the flexibility to double the storage capacity of the system. With the optional storage expansion shelf, the raw storage capacity of the appliance increases to a total of 256 TB. With double-mirrored or triple-mirrored data redundancy, the usable database storage increases to a total of 128 TB or 85.3 TB, respectively. There are also an additional four 400 GB and four 200 GB solid-state drives in the storage expansion shelf. 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 X5-2 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 X5-2 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 X5-2 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 X5-2 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 X5-2 Specifications

System Architecture

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

Processor

- *Two 18-core Intel® Xeon® processors E5-2699 v3 per server*

Cache per Processor

- *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 45 MB shared inclusive L3 cache per processor*

Main Memory

- *256 GB (8 x 32 GB) per server*
- *Optional memory expansion to 512 GB (16 x 32 GB) or 768 GB (24 x 32 GB) per server*
- *Both servers must contain the same amount of memory*

STORAGE

- *Capacity per storage shelf:*
    - *Sixteen 3.5-inch 8 TB 7.2K rpm HDDs*
        - *128 TB raw, 64 TB (double-mirrored) or 42.7 TB (triple-mirrored) usable capacity*
    - *Four 2.5-inch (3.5-inch bracket) 400 GB ME SSDs for frequently accessed data*
    - *Four 2.5-inch (3.5-inch bracket) 200 GB HE SSDs for database redo logs*
- *Optional storage expansion with additional storage shelf doubles the storage capacity*
- *Two 2.5-inch 600 GB 10K rpm HDDs (mirrored) per server for OS*
- *External NFS storage support*

INTERFACES

Standard I/O

- *USB: Six 2.0 USB ports (two front, two rear, two internal) per server*
- *Four onboard auto-sensing 100/1000/10000 Base-T Ethernet ports per server*
- *Four PCIe 3.0 slots per server:*
    - *PCIe internal slot: dual-port internal SAS HBA*
    - *PCIe slot 3: dual-port external SAS HBA*
    - *PCIe slot 2: dual-port external SAS HBA*
    - *PCIe slot 1: dual-port InfiniBand HCA*
- *Optional 10GbE SFP+ external networking connectivity requires replacement of InfiniBand HCA*

Graphics

- *VGA 2D graphics controller embedded: 8MB*
- *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)*

SYSTEMS MANAGEMENT

Interfaces

- *Dedicated 10/100/1000 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, 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, 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 v3*
- *Syslog and SMTP alerts*
- *Automatically create a service request for key hardware faults with Oracle Auto Service Request (ASR)*

Oracle Enterprise Manager Ops Center

- *OS observability for monitoring*
- *Auto Service Request (ASR) generation*

SOFTWARE

Oracle Software

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

Oracle Database Software (Sold Separately)

- *Choice of Oracle Database software, depending on the desired level of availability:*
  - *Oracle Database 11g Enterprise Edition Release 2 and Oracle Database 12c Enterprise Edition*
  - *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 hot-swappable, redundant power supplies per server*
  - *Power Supply Output Rated Maximum: 600W at 100-127VAC/200-240VAC*
  - *AC power: Maximum AC input current at 100VAC and 600W output: 7.2A*
- *Two hot-swappable, redundant power supplies per storage shelf*
  - *Power Supply Output Rated Maximum: 580W at 100-127VAC/200-240VAC*
  - *AC Power : Maximum AC input current at 100VAC and 580W output: 8A*

ENVIRONMENT

Environmental Server (Max Memory)

- *Maximum power usage: 727W*
- *Typical power usage: 508W*
- *Cooling at Maximum usage: 2482 BTU/Hr*
- *Cooling at Typical usage: 1734 BTU/Hr*
- *Acoustic noise: 7.0 Bels A-weighted operating, 7.0 Bels A-weighted idling*

Environmental Storage Shelf (DE2-24C)

- *Maximum power usage: 699W*
- *Typical power usage: 469W*
- *Cooling at Maximum usage: 2385 BTU/Hr*
- *Cooling at Typical usage: 1600 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 [1,2]

- *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*

CERTIFICATIONS [2]

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

EUROPEAN UNION DIRECTIVES

- *2006/95/EC Low Voltage, 2004/108/EC EMC, 2011/65/EU RoHS, 2012/19/EU WEEE*

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; 483 mm (19 in.) per storage shelf*
- *Depth: 737 mm (29.0 in.) per server; 630 mm (24.8 in.) per storage shelf*
- *Weight: 16.3 kg (36 lbs) per server; 37.2 kg (82 lbs) per storage shelf*

MOUNTING OPTIONS

- *Rack-mount Slide Rail Kit (Included)*

1. All standards and certifications referenced are to the latest official version. For additional detail, contact an Oracle representative.

2. Other country regulations/certifications may apply.

3. Regulatory and certification compliance were obtained at the component system level only.

CONTACT US
For more information about Oracle Database Appliance X5-2, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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Hardware and Software, Engineered to Work Together

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