ORACLE DATA SHEET

ORACLE PRIVATE CLOUD APPLIANCE

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Oracle Private Cloud Appliance Rack

Oracle Private Cloud Appliance is a converged infrastructure system designed for rapid and simple deployment of private cloud at an industry-leading price point. Whether customers are running Linux, Microsoft Windows or Oracle Solaris applications, Oracle Private Cloud Appliance supports consolidation for a wide range of mixed workloads in medium-to-large sized data centers.

High-performance, low-latency Oracle Fabric Interconnect and Oracle SDN allow automated configuration of the server and storage networks. The embedded controller software automates the installation, configuration, and management of all infrastructure components at the push of a button. Customers need to enter only basic configuration parameters and create virtual machines (VMs) manually or by using Oracle VM Templates to get a full application up and running in a few hours. With Oracle Enterprise Manager, the Oracle Private Cloud Appliance is transformed into a powerful private cloud infrastructure that integrates well with popular public cloud services, including Oracle Cloud.

A Turnkey Solution at Enterprise Data Center Scale

Oracle Private Cloud Appliance is an easy-to-deploy, “turnkey” solution that integrates compute, network, and storage resources in a software-defined fabric to enable agile and efficient data center deployments. With Oracle Private Cloud Appliance, you get a converged infrastructure that can be scaled linearly, one server at a time, from 2 to 25 compute nodes per rack. In addition, Oracle Private Cloud Appliance deploys applications rapidly by leveraging Oracle VM Templates that are available for download from Oracle.

Furthermore, Oracle Private Cloud Appliance fits easily into your existing data center by supporting the operating systems you already run and connecting to your choice of storage including Oracle ZFS Storage Appliance, Oracle All Flash FS Storage System, NFS, iSCSI or Fibre Channel storage from other vendors.

“Oracle Private Cloud Appliance has enabled us to fast track our strategy to success by generating return on investment 30% faster than we had planned.”

GUSTAU SERRA SALIDO
CEO
MEDIACLOUD

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KEY FEATURES

- The embedded controller software automates hardware and software deployment
- Integrates with Oracle Enterprise Manager for unified IT as a service cloud management
- Oracle VM included at no added cost
- Support for Oracle VM Templates enables deployment of applications in hours, not days
- Trusted Partitioning enables efficient database software licensing
- The “wire-once” design reduces operational complexity
- Single vendor support for full hardware and software stack

KEY BUSINESS BENEFITS

- Achieve faster time to market by deploying applications faster
- Save hundreds of hours of installation and configuration time
- Reduce ongoing software licensing and support costs
- Simplify management by consolidating mixed workloads on one system
- Easily manage cloud services with Oracle Enterprise Manager
- Protect investments by scaling compute easily, one node at a time

By leveraging this integrated platform, administrators are free to focus on addressing strategic needs and delivering business agility, rather than investing valuable resources on integrating and managing infrastructure.

Automatic Power Up, Installation, and Configuration

With Oracle Private Cloud Appliance, users need only to move the rack into place, connect power, network, and storage cables, and power on the system to get going. The embedded controller software automatically powers up, installs, and configures the hardware and software environment. Within minutes, the system is ready, and users can add VMs by using standard Oracle VM Templates or by creating them from scratch.

By default, all Oracle software that has been certified for use with Oracle VM is certified for the Oracle Private Cloud Appliance, which includes the Oracle Database, Oracle Fusion Middleware, Oracle Applications, and Oracle Real Application Clusters.

Oracle Private Cloud Appliance offers exceptional value in the following areas:

- Accelerate time to value. Oracle Private Cloud Appliance speeds up deployment of the full hardware-to-applications stack, so you can get applications to users within hours, not days or weeks.
- Reduce complexity with a wire-once converged infrastructure. This solution leverages a software-defined network fabric, allowing installation and configuration of servers and storage to be accomplished through software. No more physical re-cabling to reconfigure your environment.
- Reduced total cost of ownership: For one price, you can get all hardware and software needed, including virtualization software. In addition, Trusted Partitioning enables efficient database software licensing, so you only pay for the cores you use and not for the full system capacity.
- Lower risk with one easy-to-deploy and easy-to-manage system that is preconfigured to reduce configuration errors.
- Protect your investments by scaling linearly over time to meet performance demands and business growth. The solution also integrates into existing data centers with support for the operating systems and storage you use today.

Easily Build and Manage Cloud Services with Oracle Enterprise Manager

By adding Oracle Enterprise Manager to your Oracle Private Cloud Appliance deployment, you can quickly build and manage a private cloud within your data center and offer services like Infrastructure as a Service (IaaS) and Database as a Service (DBaaS). Oracle Enterprise Manager enables business users and developers to get rapid and self-service access to cloud services while allowing cloud administrators to centralize governance. Both self-service users and administrators can access usage data and create chargeback reports to assess the service consumption. Oracle Enterprise Manager makes it possible to manage all Oracle Private Cloud Appliances from a single dashboard.

Efficient and Flexible Infrastructure Supports Agility

Virtual machines on Oracle Private Cloud Appliance are considered Trusted Partitions; hence software may be licensed at the virtual machine level instead of the physical processor level. Therefore, customers have the flexibility to license Oracle software

based on what they use, and not on the system's total capacity, enabling efficient software licensing.

In addition to Trusted Partitioning support, Oracle Private Cloud Appliance provides flexible scalability. Customers can scale compute one node at a time to a maximum of 25 compute nodes in a rackThis flexibility allows customer to spin up compute resources quickly to accommodate growth.

Key Software Components

The following software, included with the Oracle Private Cloud Appliance, enable scalability, software-defined virtual networking, and GUI-based management:

Oracle VM Server: Oracle VM server virtualization is designed to be highly scalable and built to enable rapid application deployment. Oracle VM supports up to 128 vCPUs and a variety of guests such as Linux, Oracle Solaris, and Microsoft Windows. Entire Oracle application stacks such as Oracle Database and Oracle enterprise applications can be deployed in minutes to hours using Oracle VM Templates. The ability to quickly and easily deploy applications to a highly scalable virtualized environment enables IT to meet SLAs and reduce time to market for the business.

Oracle SDN software: Oracle SDN dynamically connects servers to networks and storage. It eliminates the physical storage and networking cards found in every server and replaces them with virtual network interface cards (vNICs) and virtual host bus adapters (vHBAs) that can be deployed on the fly. Oracle Virtual Networking simplifies complex data center deployments with a wire-once solution and simple software-defined network configurations.

Oracle Private Cloud Appliance controller software: The controller software allows users to manage and monitor the systems hardware, perform software upgrades, create and manage virtual resources (virtual servers, virtual networks, and storage), and monitor utilization of all system resources in real-time. The controller software runs on two dedicated management nodes that are configured for high availability with automatic failover in the event of a failure. It is accessible via a GUI dashboard.

Key Hardware Components

Compute Nodes: Compute nodes include Oracle Server X7-2 systems powered by two Intel® Xeon® Processor with 24 cores per socket. The X7-2 compute nodes can be ordered in three different memory configurations – 384GB, 768GB and 1.5 TB. 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.

Each compute node runs Oracle VM Server for x86 to provide server virtualization. Compute nodes may be added or removed from the Oracle Private Cloud Appliance configurations without any downtime. A PCA rack can support a maximum of 25 compute nodes. The Oracle PCA supports mixing of all generations of PCA compute nodes - Oracle Server X7-2, X6-2, X5-2, X4-2 and X3-2

Virtual Networking: Oracle Private Cloud Appliance uses ultra-high performance Oracle Fabric Interconnect, a component of the Oracle Virtual Networking family. Each

Oracle Private Cloud Appliance hardware configuration contains multiple redundant QDR InfiniBand switches and Oracle Fabric Interconnect systems that serve as gateways to the data center's Ethernet network. This high-speed fabric supports not only access to shared storage, but also serves as the physical platform for creation of virtual Ethernet networks that allow applications in the cloud to connect to any other application accessible over the data center's standard Ethernet network. The fabric offers extremely low latency (typically 10X faster speeds than Ethernet), 40 Gb/sec throughput, full redundancy, integrated endpoint security, and scalability without any downtime. Furthermore, the fabric provides little-to-no degradation in performance as additional VMs and servers are added to the appliance.

Integrated Storage: Oracle Private Cloud Appliance features a fully integrated, enterprise-grade Oracle ZFS Storage Appliance for centrally storing the management environment as well as providing data storage for VMs. This storage subsystem is designed to be fully redundant for maximum fault tolerance and serviceability in production. The Oracle Private Cloud Appliance storage subsystem is loaded with high-performance DIMM and flash memory for optimal read/write performance under the most demanding file storage workloads.

The storage capacity of Oracle Private Cloud Appliance can be expanded beyond the internal, included storage, to external data center racks containing Oracle ZFS Storage Appliance, Oracle All Flash FS Storage System or supported storage available from other storage vendors. By default, any external Oracle or non-Oracle storage appliance that has been certified for use with Oracle VM will integrate with Oracle Private Cloud Appliance. For a list of supported 3rd party storage systems, refer to Hardware Certification List.

"Oracle Private Cloud Appliance includes everything we need to host our customers' applications in a virtual environment. And it is versatile enough to meet our diverse clients' needs."

DAVID BUSCH
CEO
TIER1 INC.

Oracle Private Cloud Appliance Hardware Specifications

ORACLE PRIVATE CLOUD APPLIANCE

Oracle Private Cloud Appliance X5-2

Oracle Server X5-2 Controller Nodes: 2

- (2) Eighteen-core Intel 2.3 GHz Xeon processors (Total 36 cores)
- 256 GB 2,133 MHz RAM
- (2) 1.2 TB HDDs (RAID1)
- (1) Dual-port QDR InfiniBand HCA (PCIe)
- (1) GbE management port (BASE-T)
- Redundant power supplies

Oracle Server X7-2 Compute Nodes: 2 to 25

- (2) Intel® Xeon® 8160 2.1 GHz, 24 cores, 150 watts, XCC, 33 MB L3 cache (Total 48 cores)
- 3 memory configurations with 384GB, 768GB and 1.5 TB RAM
- (2) 1.2 TB HDDs (RAID1)
- (2) 10GbE ports
- (1) Dual-port QDR InfiniBand HCA (PCIe)
- (1) GbE management port (BASE-T)
- Hot-swappable and redundant disks, cooling fans, and power supply units

Oracle ZFS Storage ZS5-ES

- (4) QDR InfiniBand ports (one active and one passive per storage head)
- (4) 3.2 TB Readzilla SSDs (Read Cache)
- 24 TB serial-attached SCSI (SAS) disks
- 800 GB write cache

Oracle Virtual Networking

- (2) Oracle Fabric Interconnect F1-15 model with 15 I/O module slots, each with:
  - (20) Non-blocking QDR InfiniBand server ports
  - (4) Quad-port 10 Gb Ethernet modules
  - (2) Dual-port 8 Gb Fibre Channel modules (Optional)

InfiniBand Switch

- (36) QDR InfiniBand ports
- (1) GbE management ports (BASE-T)

Management Switch

- (2) 24 ports 10 GbE (BASE-T)

Power in Watts

- Maximum (Base/Full): 6,477 / 22,117
- Typical (Base/Full): 4,534 / 15,482

Cooling in BTU/Hr.

- Maximum (Base/Full): 22,112 / 75,507
- Typical (Base/Full): 15,479 / 52,855

Airflow in CFM

- Maximum (Base/Full): 1,024 / 3,496
- Typical (Base/Full): 717 / 2,447

Weight

- Rack Weight with Shipping Pallet: 996 kg (2,197 lbs)
- Installed Full Rack Weight: 894 kg (1,972 lbs)

Operating Temperature

- 5 degrees Celsius to 32 degrees Celsius (59 degrees Fahrenheit to 89.6 degrees Fahrenheit), 10% to 90% relative humidity, non-condensing
- Altitude operating temperature: Up to 10,000 feet (3,048 m), maximum ambient temperature is derated by 1 degree Celsius for every 300 m above 900 m, except in China where regulations may limit installations to a maximum altitude of 6,560 feet (2000 m)

Physical Dimensions

- Height: 42U, 78.66 in 1998 mm
- Width: 23.62 in – 600 mm
- Depth: 47.24 in – 1,200 mm

Preinstalled Software

- Oracle Private Cloud Appliance controller
- Oracle VM Server
- Oracle VM Manager
- Storage Operating System Software
- Oracle SDN

Downloadable Software

- Oracle Enterprise Manager 13c
- Oracle Linux
- Oracle Solaris

Regulations[1,2,3]

Safety

- UL/CSA 60950-1, EN 60950-1, IEC 60950-1 CB Scheme with all country differences

EMC

- Emissions: FCC CFR 47 Part 15, ICES-003, EN 55032, KN32, EN61000-3-11, EN61000-3-12
- Immunity: EN 55024, KN35

Emissions and Immunity

- EN 300 386

Certifications[2]

- North America (NRTL), European Union (EU), International CB Scheme, BIS HSE Exemption(India), EAC (EAEU), BSMI (Taiwan), RCM (Australia), 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

[1]All standards and certifications referenced are to the latest official version at the time the data sheet was written.
[2]Other country regulations/certifications may apply.
[3]In some cases, as applicable, regulatory and certification compliance were obtained at the component level.

Support Services

- Hardware Warranty: 1 year with a 4 hour web/phone response during normal business hours (Mon-Fri 8AM-5PM), with 2 business day on-site response/Parts Exchange
- Oracle Premier Support for Systems includes Oracle Linux support and 24x7 with 2 hour on-site hardware service response (subject to proximity to service center)
- Oracle Premier Support for Operating Systems
- Oracle Customer Data and Device Retention
- System Installation Services
- Oracle Auto Service Request (ASR)

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CONTACT US

For more information about Oracle Private Cloud Appliance, visit oracle.com/pca or call +1.800.ORACLE1 to speak to an Oracle representative.

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Integrated Cloud Applications & Platform Services

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