

ORACLE PRIVATE CLOUD APPLIANCE

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Oracle Private Cloud Appliance, formerly named Virtual Compute Appliance, is an integrated, “wire once,” software-defined converged infrastructure system designed for rapid deployment of private cloud at industry-leading price point. Whether customers are running Microsoft Windows, Linux or Oracle Solaris applications, Private Cloud Appliance supports a large range of mixed workloads hosted in a converged server, network, and storage environment to enable general purpose, business-, and mission-critical application deployments in medium-to-large data centers. High-performance, low-latency Oracle Fabric Interconnect with Oracle SDN—two products in the Oracle Virtual Networking family—allow automated configuration of the server and storage networks. The embedded Private Cloud Appliance controller software automates the installation, configuration, and management of all the infrastructure components at the push of a button. Customers need to enter only basic configuration parameters and create virtual machines (VMs) manually or by leveraging Oracle VM Templates to get a full application up and running in few hours. With Oracle Enterprise Manager 12c, the Private Cloud Appliance is transformed into a powerful Cloud Services delivery platform and provides a simple path from on-premise to Oracle Cloud.



Private Cloud Appliance: Turnkey Solution, Data Center Scale

Oracle Private Cloud Appliance is an easy-to-acquire, 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 the 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. The Private Cloud Appliance also deploys applications rapidly, not just fast infrastructure deployment, by leveraging Oracle VM Templates that are user-created or available for download from Oracle.

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

By leveraging an integrated system, administrators are free to focus on delivering flexible services, addressing strategic needs, and transforming IT to respond to their customers’ evolving needs rather than investing considerable time to plan and hand-

KEY FEATURES

- “Turnkey” converged infrastructure solution automates hardware and software deployment with Oracle Private Cloud Appliance controller software
- Easy Cloud deployment ranging from IaaS to DBaaS by adding Oracle Enterprise Manager 12c
- Support for Oracle VM Templates enables deployment of ready-to-run VMs containing applications in minutes or hours, not days
- Oracle SDN software reduces operational complexity by enabling software-defined infrastructure in a “wire-once” system
- Innovative converged infrastructure solution from a single vendor allows for superior ease-of-purchase, product integration, simplified management and single point of contact for support

KEY BUSINESS BENEFITS

- Faster Time-to-Market at industry-leading price point
- Reducing risks by running Microsoft Windows, Linux and Oracle Solaris workloads on one system
- Efficient Oracle software licensing based on what you use, not on the system’s total capacity
- Lowered acquisition, deployment and operational costs
- Saving hundreds of hours of installation and configuration time

configure hardware infrastructure from scratch.

Automatic Power Up, Installation, and Configuration

With the Private Cloud Appliance, users only need to move the rack into place, connect power, network, and storage cables, and power on the system. The Private Cloud Appliance controller orchestration 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 Private Cloud Appliance, which includes the Oracle Database, Oracle Fusion Middleware, Oracle Applications, and Oracle Real Application Clusters.

Private Cloud Appliance offers exceptional value in the following areas:

- Accelerated time from power-on to application production: Getting applications to end-users requires a lot more than just hardware provisioning. End-users need their applications provisioned as well. The Private Cloud Appliance accelerates deployment of the full, hardware-to-applications stack, so you can get applications to users within hours of power-on, not days or weeks.
- Wire-once converged infrastructure for which Oracle does the wiring for you: The Private Cloud Appliance server and storage components sit on 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 the environment.
- One price for all the hardware and necessary software to reduce your costs.
- Lowered business and IT risks with easy, linear scaling to meet your performance and cost needs over time.
- Reduced maintenance and patching complexity by deploying a preconfigured hardware and software solution.
- Integration into existing data centers with support for the operating systems and storage you use today.

Easy to Build and Manage Cloud Services with Oracle Enterprise Manager 12c

By adding Oracle Enterprise Manager 12c to your 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 12c enables business users, developers and testers rapid and self-service access to cloud services while allowing administrators to govern the cloud services. Both self-service users and administrators can access usage data and create chargeback reports to assess the service consumption.

System Scalability and Growth with Elastic Configuration

Virtual machines on 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, not on the system’s total capacity. Without Trusted Partitions, database options and other Oracle software must be licensed at a server or cluster level even

though all databases running on that server or cluster may not require a particular option.

In addition to Trusted Partitioning support, Private Cloud Appliance provides flexibility for compute nodes in the system rack. Customers can scale the compute resources up to maximum of 25 compute nodes in a rack, in increments of a single compute node at a time. This flexibility allows customer to spin up compute resources very quickly depending on their requirements to match their growth.

Private Cloud Appliance Software

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

Oracle VM: Oracle VM application-driven 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 guest OSes such as Linux, Oracle Solaris, and Microsoft Windows. Oracle VM is also optimized to accelerate applications deployments. 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 reduces time to market for the business. In addition, IT can rapidly deploy test, development, and staging environments.

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. Applications and operating systems see these virtual resources exactly as they would see their physical counterparts. 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 of Private Cloud Appliance X5-2

Compute Nodes: Compute nodes include Oracle Server X5-2 systems with Intel Xeon CPUs, high-speed dual inline memory modules (DIMM), redundant 40 Gb/sec InfiniBand host channel adapters (HCAs), and redundant disks. Each compute node runs Oracle VM Server for x86 to provide server virtualization. Compute nodes may be added or removed from the Private Cloud Appliance configurations without any downtime. The base rack can support a maximum of 25 compute nodes. The base rack supports mixing of Oracle Server X5-2, X4-2 and X3-2 compute nodes.

Virtual Networking: Oracle Private Cloud Appliance uses ultra-high performance Oracle Fabric Interconnect, a component of the Oracle Virtual Networking family. Each 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 ZS3-ES for centrally storing the management environment as well as providing data storage for VMs. Using Oracle's enterprise-class storage products and technology, this storage subsystem is designed to be fully redundant for maximum fault tolerance and serviceability in production. The 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 Private Cloud Appliance can be expanded beyond the internal, included storage, to external data center racks containing Oracle ZFS Storage Appliance or supported storage available from other storage vendors.

Oracle Private Cloud Appliance Hardware Specifications

ORACLE PRIVATE CLOUD APPLIANCE BASE RACK

Oracle Private Cloud Appliance X5-2 Base Rack

Compute Nodes: 0 to 25

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 ZFS Storage ZS3-ES

- (4) QDR InfiniBand ports (one active and one passive per storage head)
- 800 GB solid state disk write cache
- 18 TB serial-attached SCSI (SAS) disks
- (2) GbE management ports

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

- Base 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
- Oracle VM Manager
- Storage Operating System Software
- Oracle SDN

Downloadable Software

- Oracle Enterprise Manager 12c
- Oracle Linux
- Oracle Solaris

Regulations*

Safety

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

Emission

- RF/EMI: FCC CFR 47 Part 15, ICES-003, EN 55022, EN61000-3-2, EN61000-3-3, and EN300-386

Immunity

- EN 55024; EN 300 386

Certifications*

- North America (NRTL), European Union (EU), International CB Scheme, BSMI (Taiwan), C-Tick (Australia), CCC (PRC), MSIP (Korea), CU EAC (Customs Union), VCCI (Japan)

European Union Directives

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

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





Support Services

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- Hardware Warranty: 1 year with a 4 hr 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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