

# **Oracle® Private Cloud at Customer**

## **Getting Started Guide for Release 1.0**

**ORACLE®**

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# Table of Contents

Preface .....	v
1 Introduction to Oracle Private Cloud at Customer .....	1
1.1 About Oracle Private Cloud at Customer .....	1
1.2 Feature Description .....	1
1.3 System Components .....	2
1.4 Server Specifications .....	3
1.5 Software Components .....	3
2 Learn About Deploying, Managing and Using Oracle Private Cloud at Customer .....	5
3 Concept and Architecture of Oracle Private Cloud at Customer .....	7
4 Oracle Private Cloud at Customer Responsibilities .....	11
4.1 Preparing for Delivery .....	11
4.2 Initial Configuration and Setup .....	11
4.3 Day-to-Day Systems Management .....	11
4.4 About Managing Your Oracle Private Cloud Accounts .....	12



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# Preface

This document is part of the documentation library for Oracle Private Cloud at Customer.

## Audience

The Oracle Private Cloud at Customer documentation is written for system administrators who monitor a private cloud environment deployed at the customer site, and manage virtual machines for users. It is assumed that readers are familiar with web and virtualization technologies and have a general understanding of operating systems such as UNIX (including Linux) and Windows.

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## Conventions

The following text conventions are used in this document:

Convention	Meaning
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
<code>monospace</code>	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

## Document Revision

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## Access to Oracle Support

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# Chapter 1 Introduction to Oracle Private Cloud at Customer

## Table of Contents

- 1.1 About Oracle Private Cloud at Customer ..... 1
- 1.2 Feature Description ..... 1
- 1.3 System Components ..... 2
- 1.4 Server Specifications ..... 3
- 1.5 Software Components ..... 3

This chapter provides an overview of the features and components of Oracle Private Cloud at Customer.

### 1.1 About Oracle Private Cloud at Customer

Oracle Private Cloud at Customer enables customers to run both Oracle and non-Oracle applications on a platform located inside their data centers, while the infrastructure is managed by Oracle cloud experts. Oracle Private Cloud at Customer systems are preconfigured according to best practices, which have been proved by many mission-critical Oracle Private Cloud Appliance installations around the world.

Oracle Private Cloud at Customer is designed for rapid and simple deployment of mission-critical applications and workloads, whether running on Linux, Oracle Solaris, or Microsoft Windows. High-performance, low-latency Oracle Fabric Interconnect and Oracle Software Defined Networking (SDN) technologies facilitate automated provisioning of the server and storage networks. Leveraging the software-defined network fabric, customers can dynamically configure networks without having to manually re-cable connections, saving time and reducing the risk of human error. The consolidation of network connections results in up to 70 percent fewer cables and cards.

In addition to rapid infrastructure provisioning, Oracle Private Cloud at Customer also accelerates complete application stack deployment through support for Oracle VM Virtual Assemblies. These are preconfigured applications, middleware, and databases packaged as ready-to-run virtual machines (VMs). The VMs are dynamically configured at deployment time, requiring customers to provide only basic configuration parameters. The result is an unparalleled ability to go from “bare-metal” infrastructure power on to logging in to a newly deployed, running application within days or even hours, instead of weeks or months.

### Service Overview

Oracle Private Cloud at Customer is available through a subscription offering that requires a minimum term of 4 years. Customers select a configuration starting with a Base System, which includes two management nodes, supporting network infrastructure, an internal storage appliance, a minimum of two compute nodes, and one external Oracle ZFS Storage Appliance ZS7-2.

Pricing is based on the number of compute nodes in service. As the need for compute capacity increases, customers can add more compute nodes up to a total of 25 per system, to meet their business requirements. All CPU cores, disk and flash storage, and RAM for the selected configuration are included in the subscription price. There is no charge for the network communication to the Oracle Private Cloud at Customer.

In addition, customers can integrate Oracle Private Cloud at Customer with existing Oracle Exadata Cloud at Customer machines, thus enabling higher compute, network and storage capacity and reducing latency between application and the database layer.

### 1.2 Feature Description

Oracle Private Cloud at Customer includes the following features:

- **Easily extensible platform, managed by Oracle:** Customers select the initial configuration that suits their requirements. Oracle installs, configures and manages the private cloud infrastructure, allowing the customer to focus on deploying their business-critical applications and services. When the platform reaches its limits, capacity can be easily extended.
- **Rapid application stack deployment, not just infrastructure:** Support for ready-to-run Oracle VM Assemblies enables users to rapidly deploy not only the infrastructure, but also the applications that are hosted on the infrastructure.
- **Support for a wide variety of guest operating systems:** Support for Linux, Oracle Solaris, and Windows operating systems and applications.
- **Converged infrastructure orchestration software:** The Controller Software orchestrates automated discovery, configuration, and management of included server, network, and storage resources. It allows Oracle to provision the infrastructure in the customer data center in a short amount of time.
- **Unified, software-defined network fabric:** Incorporated Oracle Fabric Interconnect hardware provides a single, consolidated fabric allowing new networks to be dynamically added and existing networks to be modified without the need to manually modify cabling. Oracle manages these configuration tasks for you remotely.
- **Unified management:** Browser-based management software, Oracle Enterprise Manager, centralizes administrative operations and provides at-a-glance status for all monitoring targets. Role-based access control permits secure private cloud platform administration and usage across users and groups with different rights. Oracle manages all infrastructure through the Oracle Advanced Support Gateway; the customer manages VM provisioning through the Oracle Enterprise Manager IaaS self-service portal.

## 1.3 System Components

Oracle Private Cloud at Customer systems consist of virtualization compute nodes, storage appliances, as well as required InfiniBand and Ethernet networking components. [Table 1.1](#) lists the quantity and description of each component in an Oracle Private Cloud at Customer system.

**Table 1.1 Oracle Private Cloud at Customer Rack Components**

Quantity	Description
2	Oracle Server X5-2, used as management nodes
2 to 25	Oracle Server X7-2, used as virtualization compute nodes
1	Oracle Rack Cabinet 1242 base
2	NM2-36P Sun Datacenter InfiniBand Expansion Switch
2	Oracle Switch ES1-24
2	Oracle Fabric Interconnect F1-15
1	Oracle ZFS Storage Appliance ZS5-ES



### Note

The maximum number of compute nodes in a single Oracle Private Cloud at Customer base rack is determined by the capacity of the power distribution units (PDUs) installed in the rack:

- 15 kVA PDUs can provide power to a base system with 13 compute nodes
- 22 kVA PDUs can provide power to a base system with 23 compute nodes



- 24 kVA PDUs can provide power to a base system with 25 compute nodes

## External Storage

Oracle Private Cloud at Customer is deployed with an additional Oracle ZFS Storage Appliance ZS7-2, which provides 200TB of storage space for use by the guest VMs hosted in your private cloud environment.

In a typical deployment the external storage appliance is installed in a separate rack and connected to the necessary InfiniBand and Ethernet networks. Optionally, the storage appliance can be installed into the Oracle Private Cloud at Customer base rack, on condition that the virtualization platform consists of no more than 9 compute nodes.

For detailed information about the Oracle ZFS Storage Appliance ZS7-2, refer to the [product data sheet](#).

## 1.4 Server Specifications

[Table 1.2](#) lists the main components of each of the server models installed in an Oracle Private Cloud at Customer rack and which are supported by the current software release: Oracle Server X7-2 compute nodes and Oracle Server X5-2 management nodes.

**Table 1.2 Main Server Components**

Quantity	Oracle Server X7-2	Oracle Server X5-2
1	Oracle Server X7-2 base	Oracle Server X5-2 base
2	Twenty-four-core Intel Xeon P-8160 processors (2.1 GHz)	Eighteen-core Intel Xeon processors E5-2699 v3 series (2.3 GHz)
8-24	24x 32 GB DDR4 DIMMs (768 GB total)	8x 32 GB DDR4 DIMMs (256 GB total)
2	1.2 TB, 2.5-inch, 10,000-RPM drives with LSI RAID controller	1.2 TB, 2.5-inch, 10,000-RPM drives with LSI RAID controller
1	Ethernet port for remote management	Ethernet port for remote management
1	Dual-port 4x QDR (80 Gbps) InfiniBand Host Channel Adapter Network Interface Card type CX3	Dual-port 4x QDR (80 Gbps) InfiniBand Host Channel Adapter Network Interface Card type CX3
2	Redundant power supplies and fans	Redundant power supplies and fans
up to 4	Embedded Ethernet: 1x Gigabit + 2x 10/25 Gigabit ports	Embedded 10-Gigabit Ethernet port

## 1.5 Software Components

The initialization of the Oracle Private Cloud at Customer platform is managed through the Oracle Private Cloud Appliance Controller Software, which uses a high degree of provisioning automation. This stage of the platform deployment is performed entirely by Oracle, as are the updating and patching of the Controller Software and operating systems.

The virtualization layer is built around the Oracle VM hypervisor. Administrative operations on virtual machines and their networking and storage resources are handled by Oracle VM Manager, which runs as an Oracle WebLogic Server domain on both management nodes. All configuration details and operational data related to the virtualized environment under Oracle VM Manager control, are stored inside the management repository. This is an Oracle MySQL Enterprise Edition database that resides on the shared

storage provided by the internal storage appliance. The two management nodes are configured as an active/standby cluster for high availability (HA): when the active management node goes offline, the other management node assumes the master role, takes control of the database, and continues to provide the Oracle VM Manager service.

None of the management applications and interfaces above are available for customer use in an Oracle Private Cloud at Customer deployment. As a customer, and administrator of the virtual machines running on your private cloud platform, you perform all monitoring and management tasks through Oracle Enterprise Manager 13c. For detailed information and instructions, refer to *Managing the Virtualized Environment* in [Chapter 2, Learn About Deploying, Managing and Using Oracle Private Cloud at Customer](#).

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# Chapter 2 Learn About Deploying, Managing and Using Oracle Private Cloud at Customer

This chapter centralizes the essential information topics you need in order to explore the installation and configuration aspects and the functionality of Oracle Private Cloud at Customer. This is a convenient starting point to learn the basics and get started with your private cloud deployment plans.

## Subscription Models

This information is currently not available in the documentation.

## Platform Architecture and Deployment

Oracle deploys the private cloud infrastructure inside your data center. It is your responsibility to prepare your data center for deployment and ensure that all requirements are met.

- [Prepare for installation](#)

Learn about required preparation tasks in anticipation of Oracle Private Cloud at Customer deployment at your site.

- [Site Requirements](#)

Learn about the site requirements that must be met before Oracle Private Cloud at Customer can be deployed at your site. [Checklists](#) are provided to help you track any tasks that need to be completed to ensure that all requirements are met.

- [Network Requirements](#)

Learn about the network requirements for Oracle Private Cloud at Customer. Your data center network must accommodate for the integration of Oracle Private Cloud at Customer. A worksheet is provided to help you collect important configuration parameters.

- [Concept and architecture](#)

Learn about the concept and basic architecture of Oracle Private Cloud at Customer.

## Managing Cloud Accounts, Access Rights and User Roles

This information is currently not available in the documentation.

## Managing the Virtualized Environment

The virtualized environment hosted on Oracle Private Cloud at Customer is managed through Oracle Enterprise Manager. For step by step instructions, refer to these pages:

- [Deploying guest virtual machines](#)

Learn in detail about the various ways to deploy guest VMs from different provisioning resources.

- [Managing guest virtual machines](#)

Learn how to use the standard VM management operations available in Oracle Enterprise Manager, such as start/stop commands, HA properties, cloning, and so on.

- [Downloading and implementing Oracle VM Virtual Appliances](#)

Oracle offers several preconfigured Oracle VM Virtual Appliances for download on [Oracle Technology Network](#). These allow customers to rapidly set up a typical Oracle product stack within their virtualized environment on Oracle Private Cloud at Customer, without having to perform the full installation and configuration process.

The page provides a list of virtual appliances, download links, installation instructions, and references to white papers and detailed product documentation.

## Monitoring Health and Performance

All monitoring functionality is centralized within Oracle Enterprise Manager. For detailed information and instructions, refer to these pages:

- [Oracle Enterprise Manager plug-in for Oracle Private Cloud Appliance](#)
- [Monitoring and managing targets](#)

## Training Resources

[Oracle Private Cloud at Customer training videos](#)

## Related Documentation

For detailed information about components of Oracle Private Cloud at Customer, as well as other related documentation, refer to these resources:

- [Oracle Private Cloud Appliance](#) documentation library
- [Oracle ZFS Storage Appliance ZS7-2](#) documentation library
- [Oracle Advanced Support Gateway](#) documentation library
- [Oracle Enterprise Manager Cloud Control 13c](#) documentation library

# Chapter 3 Concept and Architecture of Oracle Private Cloud at Customer

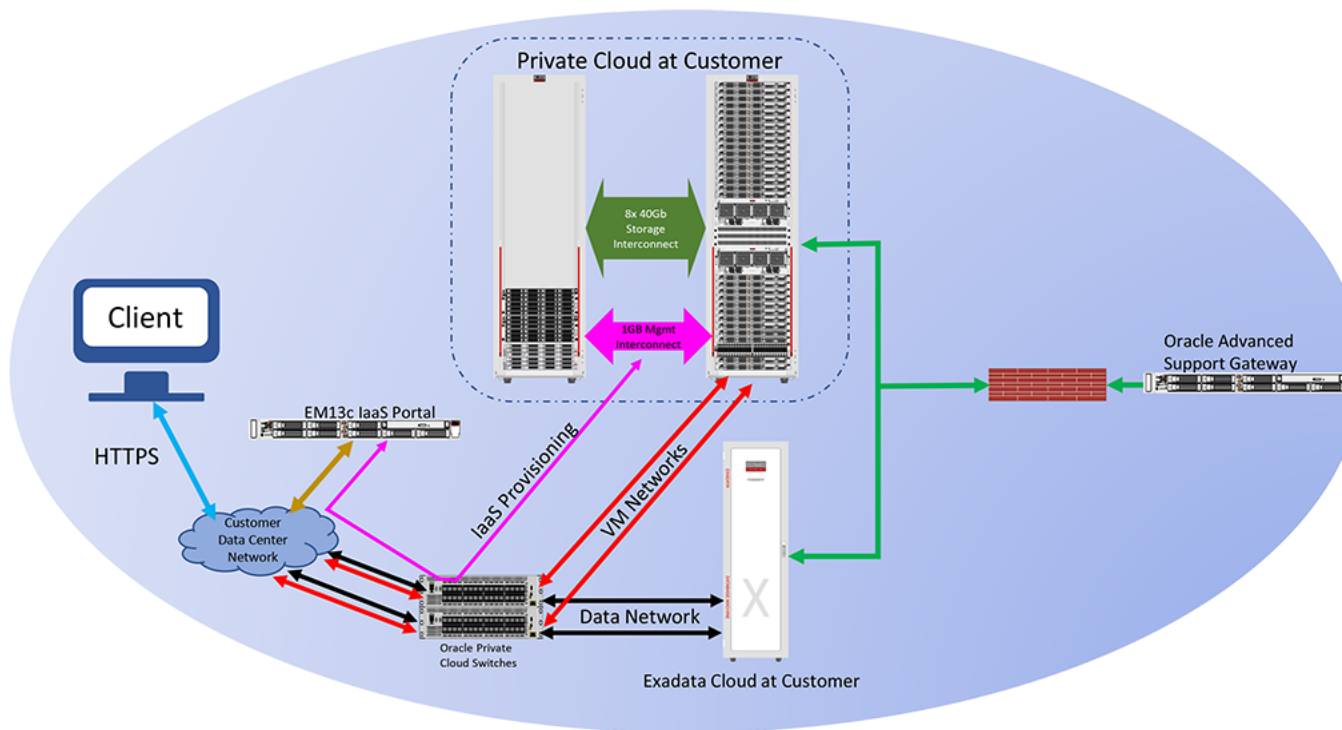
This chapter describes conceptual principles of the Oracle Private Cloud at Customer offering, and the architecture around which the system is built.

For years, Oracle Private Cloud Appliance has been combining cloud simplicity, agility and elasticity with deployment inside customer data centers, in order to run Oracle and non-Oracle workloads. Oracle Private Cloud at Customer provides essentially the same capabilities, with only a few minor differences due to the infrastructure being managed by Oracle but deployed inside your own data center.

A web-based self-service management interface, Oracle Enterprise Manager 13c, gives the customer interactive access to service administration functions. Because the Oracle Private Cloud at Customer environment is hosted inside your data center, no firewall is implemented to govern client access. However, you are free to implement additional firewalls within your network if desired.

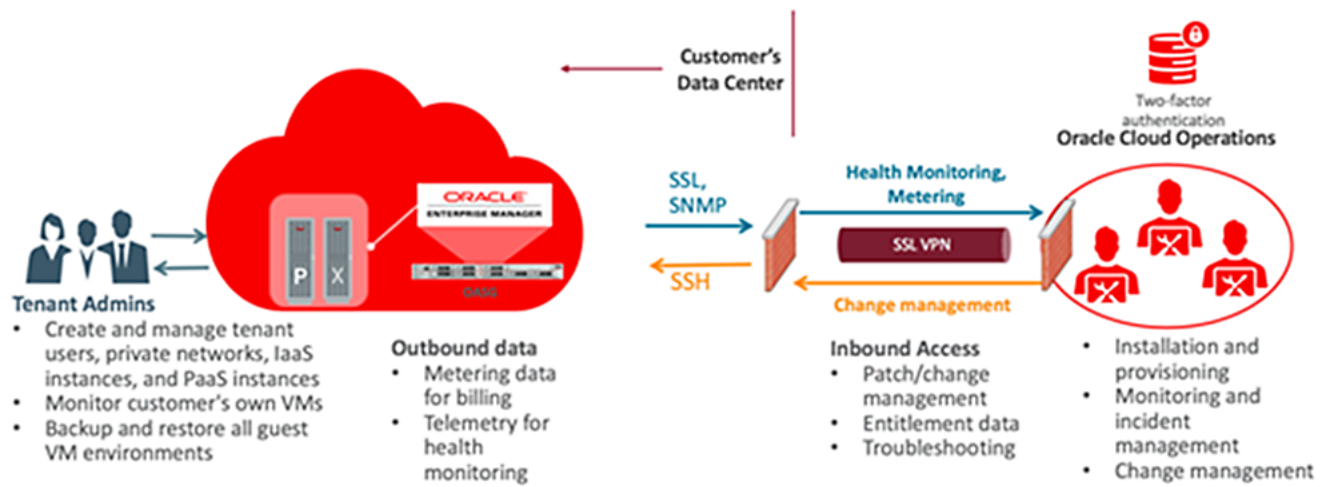
Figure 3.1 shows a high-level view of the Oracle Private Cloud at Customer architecture in a single diagram.

**Figure 3.1 Oracle Private Cloud at Customer Architecture at a Glance**



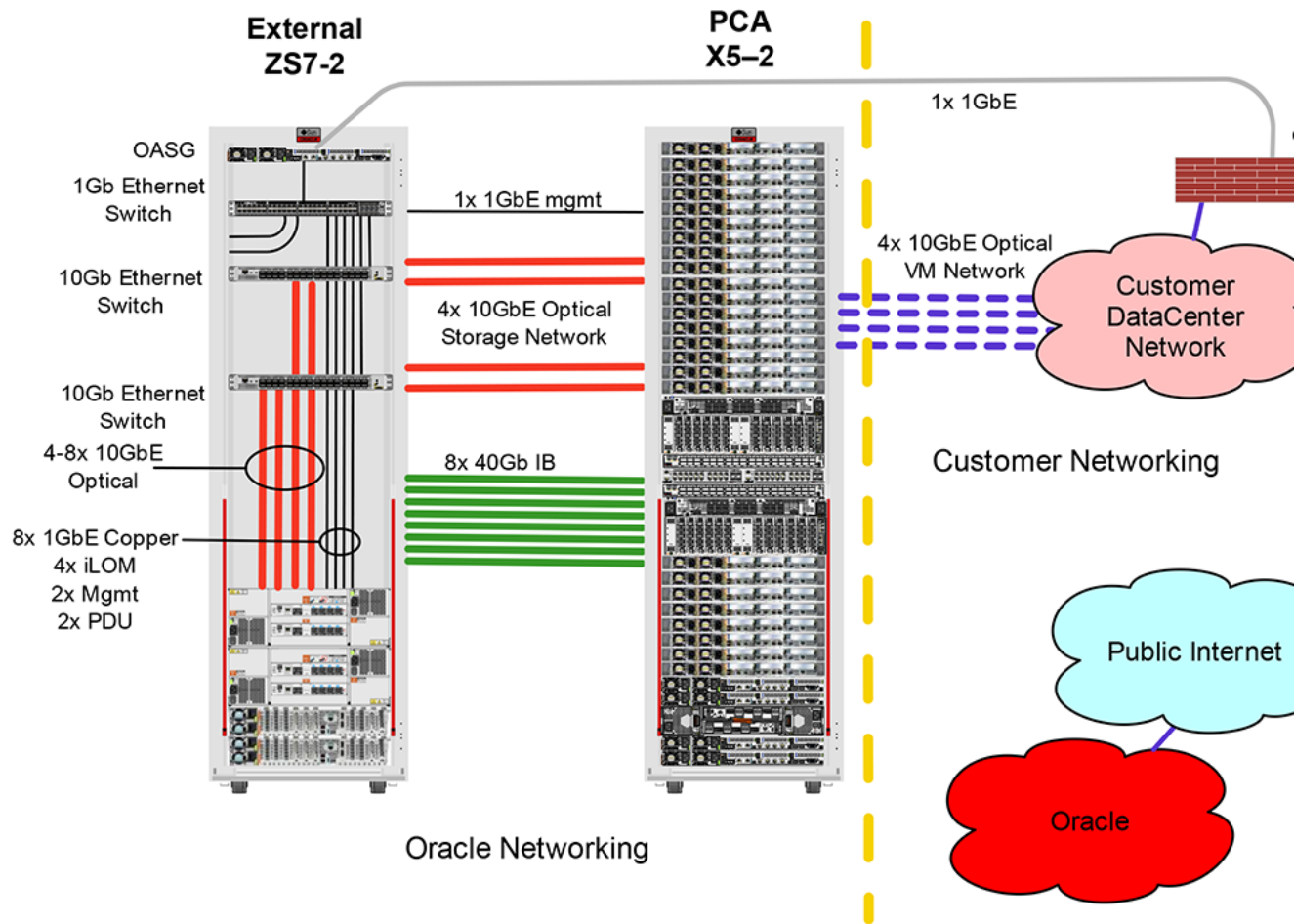
Oracle monitors and manages the Oracle Private Cloud at Customer infrastructure components, including the physical compute node hardware, network switches, power distribution units (PDUs), Oracle Integrated Lights Out Manager interfaces (ILOMs), and the storage. These operations are performed remotely by Oracle using the Oracle Advanced Support Gateway, which may be located inside your network DMZ.

**Figure 3.2 Oracle Cloud Monitoring and Management Through the Oracle Advanced Support Gateway**



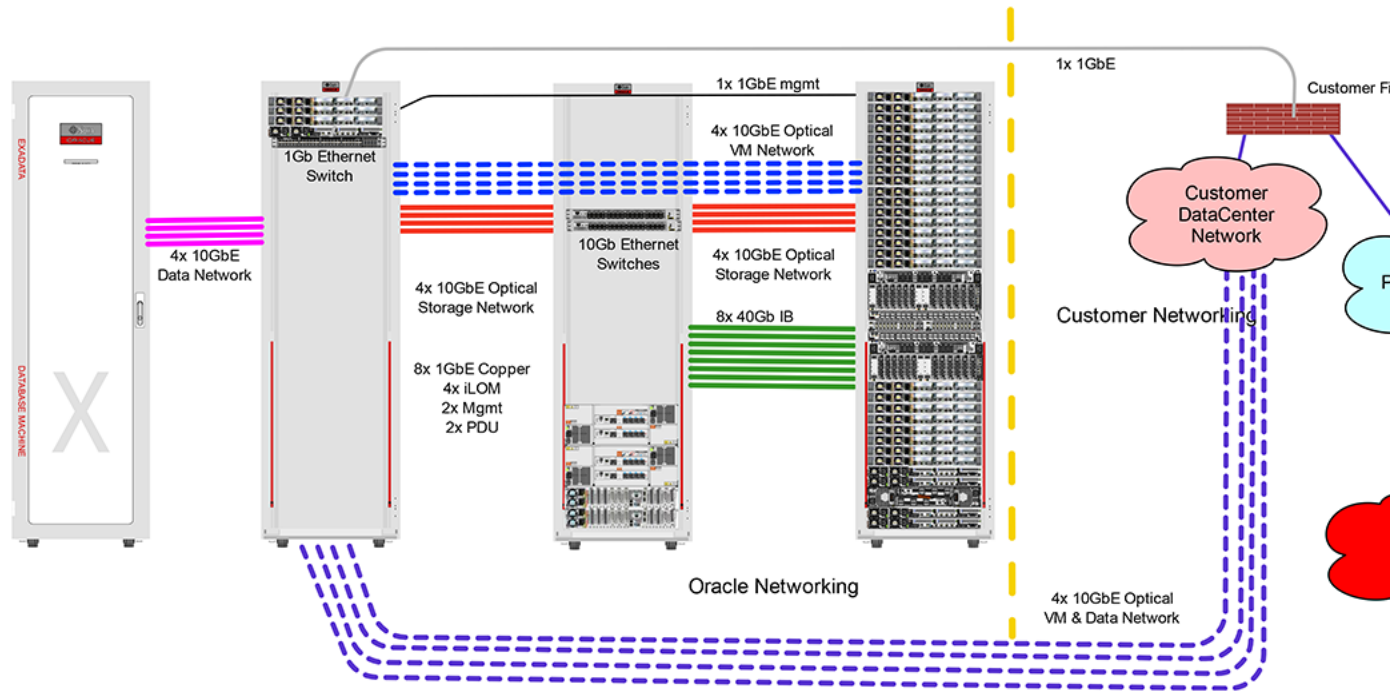
The technical architecture for Oracle Private Cloud at Customer is essentially the same as for an on-premise implementation of Oracle Private Cloud Appliance combined with an external Oracle ZFS Storage Appliance ZS7-2.

**Figure 3.3 On-Premise Implementation of Oracle Private Cloud Appliance with Oracle ZFS Storage Appliance ZS7-2**



Each deployment of Oracle Private Cloud at Customer can be scaled from the minimum of 2 compute nodes to a maximum of 25. The deployment includes a Oracle ZFS Storage Appliance ZS7-2, which provides 200TB of block and file storage for use by guest VMs hosted on the compute nodes. All components of the platform are connected together with high-speed, low-latency InfiniBand fabric (40Gbit QDR), and 10 Gigabit Ethernet (10GbE). Oracle Private Cloud at Customer also integrates seamlessly with Oracle Exadata Cloud at Customer, as shown below.

Figure 3.4 Oracle Private Cloud at Customer Integration with Oracle Exadata Cloud at Customer





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# Chapter 4 Oracle Private Cloud at Customer Responsibilities

## Table of Contents

4.1 Preparing for Delivery .....	11
4.2 Initial Configuration and Setup .....	11
4.3 Day-to-Day Systems Management .....	11
4.4 About Managing Your Oracle Private Cloud Accounts .....	12

When you subscribe to Oracle Private Cloud at Customer, you should understand the responsibilities of the Oracle Operations and Support personnel, as well as your responsibilities as a customer.

### 4.1 Preparing for Delivery

One of your key responsibilities as an Oracle Private Cloud at Customer is to work with your assigned Oracle Engineer to ensure your data center meets all the requirements. This process includes your participation in an audit of your data center, making sure there are no issues that will delay or prevent the Oracle Private Cloud at Customer from being installed and configured quickly, efficiently, and securely in your data center.

The [Oracle Private Cloud at Customer Deployment Guide](#) guides you through the preparation process.

### 4.2 Initial Configuration and Setup

When your Oracle Private Cloud at Customer hardware arrives, a team of Oracle customer support engineers will set up the hardware, and install and configure the Oracle Advanced Support Gateway. More specifically:

- An Oracle Field Service engineer will set up and configure the hardware.
- An Oracle Advanced Customer Support (ACS) engineer will install and configure the software.
- A member of the Oracle Gateway Team will set up and configure the Oracle Advanced Support Gateway.

When the system is up and running, the ACS engineer validates the installation and completes your Oracle Private Cloud at Customer order. The designated Oracle Cloud Account administrator on your team receives a welcome email message. The email contains the links and credentials required to log in to your new Oracle Cloud Account for the first time.

### 4.3 Day-to-Day Systems Management

Day-to-day management of your Oracle Private Cloud at Customer system infrastructure, including the Oracle hardware and software, is handled by Oracle Operations, via the Advanced Support Gateway.

The Oracle Advanced Support Gateway is also managed by Oracle Operations. It provides efficient, secure connections between your Oracle Private Cloud at Customer hardware and software and the Oracle Operations team. Using the gateway, the Oracle Cloud Operations team monitors your system and responds to your service requests securely and promptly.

The goal is to free up your IT engineers so they can support the real work that your company needs to perform, including developing and deploying applications, managing the Oracle Cloud services, and running your business.

## 4.4 About Managing Your Oracle Private Cloud Accounts

Oracle Private Cloud account management is the responsibility of you, the customer, and you can assign administrators to manage your deployed services and applications.

Typically, two or more administrators on your team manage the Oracle Private Cloud accounts. They monitor your Oracle Private Cloud usage and create and manage Cloud Service instances. They also can create additional Private Cloud users, who can be assigned specific tasks or roles.