Oracle® Private Cloud Appliance

Release Notes for Release 2.4.1

ORACLE®

Table of Contents

Preface

This document is part of the documentation set for Oracle Private Cloud Appliance (PCA) Release 2.4. All Oracle Private Cloud Appliance product documentation is available at:

https://docs.oracle.com/en/engineered-systems/private-cloud-appliance/index.html.

The documentation set consists of the following items:

Oracle Private Cloud Appliance Release Notes

The release notes provide a summary of the new features, changes, fixed bugs and known issues in Oracle Private Cloud Appliance.

Oracle Private Cloud Appliance Licensing Information User Manual

The licensing information user manual provides information about the various product licenses applicable to the use of Oracle Private Cloud Appliance.

Oracle Private Cloud Appliance Installation Guide

The installation guide provides detailed instructions to prepare the installation site and install Oracle Private Cloud Appliance. It also includes the procedures to install additional compute nodes, and to connect and configure external storage components.

Oracle Private Cloud Appliance Safety and Compliance Guide

The safety and compliance guide is a supplemental guide to the safety aspects of Oracle Private Cloud Appliance. It conforms to Compliance Model No. ESY27.

Oracle Private Cloud Appliance Administrator's Guide

The administrator's guide provides instructions for using the management software. It is a comprehensive guide to how to configure, monitor and administer Oracle Private Cloud Appliance.

Oracle Private Cloud Appliance Quick Start Poster

The quick start poster provides a step-by-step description of the hardware installation and initial software configuration of Oracle Private Cloud Appliance. A printed quick start poster is shipped with each Oracle Private Cloud Appliance base rack, and is intended for data center operators and administrators who are new to the product.

The quick start poster is also available in the documentation set as an HTML guide, which contains alternate text for ADA 508 compliance.

Oracle Private Cloud Appliance Expansion Node Setup Poster

The expansion node setup poster provides a step-by-step description of the installation procedure for an Oracle Private Cloud Appliance expansion node. A printed expansion node setup poster is shipped with each Oracle Private Cloud Appliance expansion node.

The expansion node setup poster is also available in the documentation set as an HTML guide, which contains alternate text for ADA 508 compliance.

Audience

The Oracle Private Cloud Appliance documentation is written for technicians, authorized service providers, data center operators and system administrators who want to install, configure and maintain a private cloud

environment in order to deploy virtual machines for users. It is assumed that readers have experience installing and troubleshooting hardware, are familiar with web and virtualization technologies and have a general understanding of operating systems such as UNIX (including Linux) and Windows.

The Oracle Private Cloud Appliance makes use of Oracle Linux and Oracle Solaris operating systems within its component configuration. It is advisable that administrators have experience of these operating systems at the very least. Oracle Private Cloud Appliance is capable of running virtual machines with a variety of operating systems including Oracle Solaris and other UNIXes, Linux and Microsoft Windows. The selection of operating systems deployed in guests on Oracle Private Cloud Appliance determines the requirements of your administrative knowledge.

Related Documentation

Additional Oracle components may be included with Oracle Private Cloud Appliance depending on configuration. The documentation for such additional components is available as follows:

- Oracle Rack Cabinet 1242

  https://docs.oracle.com/cd/E85660_01/index.html

- Oracle Server X8-2

  https://docs.oracle.com/cd/E93359_01/index.html

- Oracle ZFS Storage Appliance ZS7-2

  https://docs.oracle.com/cd/F13758_01/index.html

- Oracle Integrated Lights Out Manager (ILOM)

  https://docs.oracle.com/cd/E81115_01/index.html

- Oracle VM

  https://docs.oracle.com/en/virtualization/oracle-vm/index.html

- Oracle Enterprise Manager Plug-in

  https://docs.oracle.com/en/enterprise-manager/cloud-control/enterprise-manager-cloud-control/13.3.1/empca/index.html

Feedback

Provide feedback about this documentation at:

http://www.oracle.com/goto/docfeedback

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.

Convention	Meaning
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

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Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit
https://www.oracle.com/corporate/accessibility/learning-support.html#support-tab.

Chapter 1 About Oracle Private Cloud Appliance

Table of Contents

This chapter provides a quick overview of the product and its components.

1.1 Introduction

Oracle Private Cloud Appliance is an Oracle Engineered System designed for virtualization. It is an offering that industry analysts refer to as a *Converged Infrastructure Appliance*: an infrastructure solution in the form of a hardware appliance that comes from the factory pre-configured. Compute resources, network hardware, storage providers, operating systems and applications are engineered to work together but are managed and operated as a single unit.

Installation, configuration, high availability, expansion and upgrading are automated and orchestrated as much as possible. The minimum configuration consists of a base rack with infrastructure components, a pair of management nodes, and two compute nodes. This configuration can be extended by one compute node at a time. All rack units, whether populated or not, are pre-cabled and pre-configured at the factory in order to facilitate the installation of expansion compute nodes on-site at a later time. Within a few hours after power-on, the appliance is ready to create virtual servers. Virtual servers are commonly deployed from Oracle VM templates (individual pre-configured VMs) and assemblies (interconnected groups of pre-configured VMs).

The primary value proposition of Oracle Private Cloud Appliance is the integration of components and resources for the purpose of ease of use and rapid deployment. It should be considered a general purpose solution in the sense that it supports the widest variety of operating systems, including Windows, and any application they might host. Customers can attach their existing storage or connect storage solutions from Oracle as well as third parties.

1.2 Components

The Oracle Private Cloud Appliance consists of an Oracle Rack Cabinet 1242 base, populated with the hardware components identified in Figure 1.1.

Figure 1.1 Components of an Oracle Private Cloud Appliance Rack
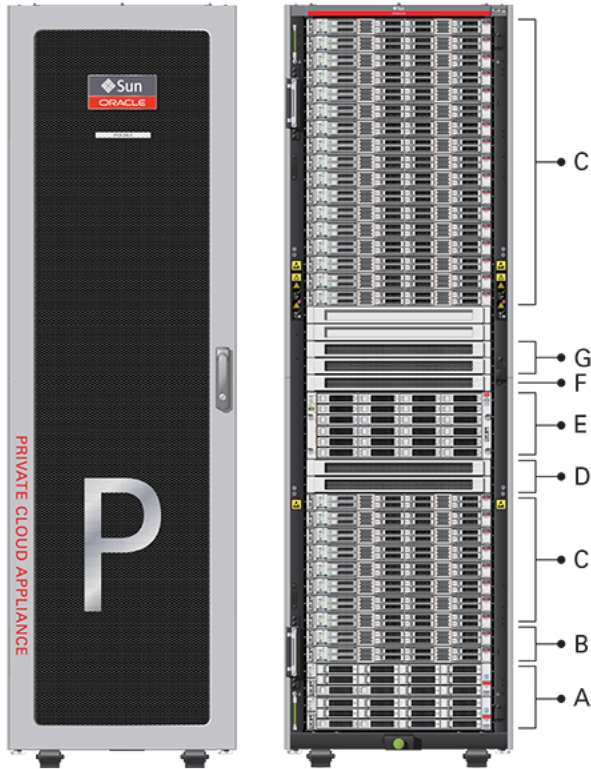
Table 1.1 Figure Legend

Item	Quantity	Description
A	2	Oracle ZFS Storage Appliance ZS7-2 controller server
B	2	Oracle Server X8-2, used as management nodes
C	2-25	Oracle Server X8-2, used as virtualization compute nodes (Due to the power requirements of the Oracle Server X8-2, if the appliance is equipped with 22kVA PDUs, the maximum number of compute nodes is 22. With 15KVA PDUs the maximum is 13 compute nodes.)
D	2	Cisco Nexus 9336C-FX2 Switch, used as leaf/data switches
E	1	Oracle ZFS Storage Appliance ZS7-2 disk shelf
F	1	Cisco Nexus 9348GC-FXP Switch
G	2	Cisco Nexus 9336C-FX2 Switch, used as spine switches

At the software level, Oracle Private Cloud Appliance leverages the virtualization technology of Oracle VM and Oracle Software Defined Networking. Management, including updates, of the underlying hardware and software is orchestrated and largely automated by the Oracle Private Cloud Appliance controller software.

Chapter 2 Feature Overview

Table of Contents

This chapter provides an overview of the key features of Oracle Private Cloud Appliance.

2.1 Changes and Improvements in Release 2.4.1

This section describes functional changes, improvements and bug fixes compared to the previous release.

Support for Next-Generation Server Hardware

Oracle Private Cloud Appliance Release 2.4.1 software adds provisioning and orchestration support for Oracle Server X8-2 hardware.

No Upgrade

This software release is available only for factory installation on racks with Oracle Server X8-2 management nodes and compute nodes. Field upgrades of racks with previous generations of server hardware are not possible with Release 2.4.1.

Ethernet Fabric

With Release 2.4.1, a new network architecture is introduced. It is based on high-speed Ethernet switches in a leaf-spine configuration, and software defined networks that live on top of the Ethernet fabric. For a detailed description, see Network Infrastructure in the *Oracle Private Cloud Appliance Administrator's Guide.*

Oracle VM Update

Controller Software Release 2.4.1 comes with Oracle VM 3.4.6 – both Oracle VM Server and Oracle VM Manager –, meaning it contains all the latest bug fixes and enhancements. This also implies that paravirtualized (PVM) guests are no longer supported. For information about security concerns with PVM guests, refer to the support article with Doc ID 2347948.1.

Bugs Fixed in Release 2.4.1

The following table lists bugs that have been fixed in Oracle Private Cloud Appliance Release 2.4.1.

Table 2.1 List of Fixed Bugs

Bug ID	Description
29705317	"Increase the Size of the iscsi_repository1 LUN" The Oracle ZFS Storage Appliance ZS7-2 provides significantly more disk space than the previous models. Therefore, the default LUN for `iscsi_repository1` could be increased from 300GB to 3TB.
29529008	"Quota for kdump Must Be Applied During Compute Node Installation"

Bug ID	Description
	The behavior of `kdump` and the file system it writes to have been configured differently, so that a failing system can no longer fill all the available space on the internal storage appliance.
29234323	"Update RAID Configuration for ZS7-2 Storage Appliance" The internal Oracle ZFS Storage Appliance ZS7-2 uses a different RAID configuration compared to previous systems: its disks are arranged in mirrors instead of RAID-z2.
21036745	"Implement XML-RPC Call to Determine Rack Type" A new XML-RPC call was added to identify the rack type and certain properties. This is particularly useful when using Oracle Enterprise Manager, so that the correct rack details are displayed.
26174921	"Missing LUN Paths Cause Refresh Failure on External Storage" This was an underlying issue in Oracle VM, where a refresh operation on a LUN storage element would fail if paths were missing. The code has been made more fault-tolerant and the fix is included in Oracle VM 3.4.6, which is used in Oracle Private Cloud Appliance 2.4.1.
26222844	"Saving the Local Repository when Reprovisioning a Compute Node Does Not Work" Previously, the `--save-local-repo` command option was not functional. The mechanism for reprovisioning has been updated so that it is now possible to reprovision a compute node and restore its local storage repository.
25410225	"Catastrophic Failure of ZFS Storage Appliance Controller Causes Management Node Fencing" The failover process between the storage controllers has been improved, reducing the service downtime to just a few seconds. As a result, the management node cluster heartbeat function is no longer affected, and the risk of fencing is eliminated.

2.2 Earlier Releases

For an overview of features, functional changes and bug fixes in earlier releases of Oracle Private Cloud Appliance, please refer to the release notes for the version in question. You can access the documentation libraries for all releases from the Documentation Overview page.

Chapter 3 Product Accessibility

Table of Contents

Oracle is committed to making its products, services and supporting documentation accessible and usable to the disabled community. This chapter contains information about the status of Oracle Private Cloud Appliance in terms of compliance with the Americans with Disabilities Action (ADA) requirements.

3.1 Oracle Private Cloud Appliance Dashboard Accessibility Features

The Oracle Private Cloud Appliance Dashboard is compliant with the Americans with Disabilities Action (ADA) requirements. The Dashboard allows you to configure the following accessibility features:

- Support for Screen Reader.

- Support for High Contrast.

- Support for Large Fonts.

You can enable these features when logging in to the Oracle Private Cloud Appliance Dashboard or you can set or change the accessibility options once you have logged in.

To enable accessibility options when logging in:

1. On the login page of the Oracle Private Cloud Appliance Dashboard, click the arrow to expand **Accessibility Options**.

2. Select one or more check box from the following accessibility options:

    - `I use a screen reader.`

    - `I use high contrast.`

    - `I use large fonts.`

To set or change accessibility options while you are logged in:

1. In the toolbar that runs along the top of the links at the top of the Oracle Private Cloud Appliance Dashboard, a drop-down menu titled **Settings** allows you to change accessibility options once you are logged in. To make a change, click on the **Settings** link.

2. From the drop-down list, select from the following accessibility options:

    - `I use a screen reader.`

    - `I use high contrast.`

    - `I use large fonts.`

Changes are implemented immediately.

3.2 Documentation Accessibility

The Oracle Private Cloud Appliance documentation is available in the following formats:

- HTML format is provided and is accessible.

- PDF format is provided but is not accessible.

- Printed versions of specific installation instructions are shipped with the product. Accessible equivalents in HTML format are provided in the online documentation library.

Documentation HTML Access Keys

To use the documentation without using a mouse, you can use HTML access keys. Enter the HTML access key for your browser, plus the access key letter. For example, using Mozilla Firefox, press Alt+Shift +n to go to the next page. See your web browser documentation to find the key combination to use for HTML access keys. The following table lists the tasks you can perform using access keys.

Task	Access Key
Go to the next page	n
Go to the previous page	p
Go to the document home page	h
Go up a level in the document	u
Activate the Contents tab	c
Activate the Search tab	s

In addition to the HTML access keys, the following keyboard shortcuts are available:

Task	Shortcut Key
Toggle hide and show the sidebar	Ctrl + Left Arrow
Toggle hide and show page header	Ctrl + Up Arrow

Documentation Accessibility Issues

The following are the known accessibility issues with Oracle Private Cloud Appliance documentation:

- HTML page heading levels might not start at h1 (**Bug:** 26717728)

- Book title can extend off the screen with 200% zoom (**Bug:** 26717874)

- docs.oracle.com Help drawer HTML heading tags have structure violation (**Bug:** 26560104)

Chapter 4 Configuration Maximums

This chapter contains the configuration maximums for Oracle Private Cloud Appliance. The limits presented in the following tables represent tested, recommended limits, and are fully supported by Oracle.

Warning

Please also respect all other limitations with regard to the functionality divided between Oracle VM and Oracle Private Cloud Appliance. For example, refer to the section entitled Functional Networking Limitations in the *Oracle Private Cloud Appliance Administrator's Guide*.

At all times, respect the warnings and cautions throughout the documentation; most notably those at the beginning of these chapters in the *Oracle Private Cloud Appliance Administrator's Guide*:

- Monitoring and Managing Oracle Private Cloud Appliance

- Managing the Oracle VM Virtual Infrastructure

Table 4.1 Virtual Machine Maximums

Item	Maximum	Notes
Virtual CPUs	48	Equals the maximum number of CPU threads for a single Oracle Server X8-2 CPU socket.
Virtual RAM (32-bit guest)	63GB	
Virtual RAM (64-bit guest)	1000GB	The maximum is for a HVM guest. If more memory is assigned, performance could be adversely affected, and live migration is no longer possible. A PVHVM guest can use the installed amount of physical RAM minus a safe margin of 32GB for use by `dom0`. Windows guests with PV drivers are limited to 256GB virtual RAM.
Virtual NICs (paravirtualized guest)	31	
Virtual NICs (hardware virtualized guest)	8	
Virtual Disks (paravirtualized guest)	PVHVM: 107	
Disks: virtual and other (hardware virtualized guest)	4	In the case of hardware virtualized guests, "disks" refers to virtual disks as well as IDE and SCSI hard drives, and cd-rom drives.

Note

These maximums do not account for CPUs allocated to any other domains, such as the control domain. The hypervisor can allocate subsets of the overall CPU, memory, and I/O resources of a server to any given logical domain.

Virtual Machine maximums assume a single virtual machine using all available resources.

Table 4.2 Oracle VM Server Maximums

Item	Maximum	Notes
CPUs	48	The Oracle Server X8-2 contains two 24-core CPUs with hyperthreading enabled.
RAM	1.5TB	This is the maximum installed amount of RAM in the Oracle Server X8-2.
Virtual Machines	128	Depending on VM sizing, the maximum number of VMs could be significantly lower. As described in Table 4.3, the total amount of disk space an RAM in use by virtual machines must not exceed the actual available storage space and physical memory. This restriction applies at the level of a single compute node as well as a server pool or tenant group.

Note

A limited amount of RAM is required by the hypervisor.

Table 4.3 Server Pool and Cluster Maximums

Item	Maximum	Notes
Oracle VM Servers in a clustered server pool	default: 25 custom: 24	In a base rack configuration, the maximum number of installed compute nodes is 25. All compute nodes may be a member of the default server pool. However, the default server pool cannot be empty, so any server pool associated with a custom tenant group can contain up to 24 compute nodes.
Clusters per Oracle Private Cloud Appliance	8	This maximum includes the default server pool.
Virtual disk space	depends on repository size	The total amount of disk space in use by virtual machines in the same server pool must be lower than the size of the storage repository presented to the server pool. If this limitation is exceeded, file systems may become disconnected from the virtual machines, and access to the virtual machines may be lost.
RAM usage	depends on compute node RAM	The total amount of RAM used by virtual machines in the same server pool must be lower than the amount of physical RAM installed in the compute nodes that belong to the server pool.

Item	Maximum	Notes
		If this limitation is exceeded, virtual machine performance drops to unacceptable levels, and the responsiveness of the entire system will be significantly reduced.

Table 4.4 Storage Maximums

Item	Maximum	Notes
iSCSI LUNs and paths per Compute Node	1000 LUNs 2000 paths	The limit is the total number of paths. In this regard, each identical LUN connected as a single multipath device must be considered as a separate path. Examples of supported configurations are: 1000 LUNs with 2 paths each, 500 LUNs with 4 paths each, or 250 LUNs with 8 paths each.
OCFS2 volume size	64TB	
Files per OCFS2 volume	30,000	
Virtual Disk size	10TB	The maximum is determined by the hardware capacity.
Virtual IDE drives per device	4	

Table 4.5 Networking Maximums

Item	Maximum	Notes
NICs per Bond	2	Network bond configurations must never be modified by the customer.
Custom networks per Compute Node	external: 8 internal: 3	Oracle Private Cloud Appliance accepts a maximum of 3 internal networks and 8 external networks per tenant group or per compute node. This maximum includes the default internal network and the default external network.
VLANs per Server Pool	256	If the number of VLANs is larger than 256 the boot times of the servers are severely impacted. The maximum applies to any given tenant group or compute node.
Packet Size (MTU)	9000 bytes	The default maximum transmission unit for Ethernet bonds/ports is 9000 bytes.

Chapter 5 Firmware Qualification

Table of Contents

This chapter provides information about Oracle Private Cloud Appliance component firmware versions that have been qualified, through Oracle internal platform testing, for use with a specific release of the Oracle Private Cloud Appliance Controller Software.

5.1 Qualified Firmware for Oracle Private Cloud Appliance Controller Software Release 2.4.1

Table 5.1 lists the firmware versions that have been qualified by Oracle for Release 2.4.1. All required firmware packages are provided on the Controller Software ISO image.

Table 5.1 Qualified Firmware Release 2.4.1

Component	Version	Patch
ZS7-2 storage server software	SW 1.3.0	
Oracle ZFS Storage Appliance ZS7-2 AK-NAS software	8.8.5.3 (2013.06.05.8.5,1-1.3)	
Oracle Server X8-2 management node	SW 1.1.0	29811547
Oracle Server X8-2 compute node	SW 1.1.0	29811547
qFalcon CX-5 HCA	16.23.1020	
Vail RAID controller	4.740.00-8402	
Fortpond Quad Port 10GBase-T Adapter	80003072	
Fortville Quad 10Gb and 40Gb Ethernet Adapter	80003073	
Cisco Nexus 9348GC-FXP Switch	7.0.3.I7.6 SMU: nxos.CSCvj65578-n9k_ALL1.0.0-7.0.3.I7.6.lib32_n9000.rpm	
Cisco Nexus 9336C-FX2 Switch	7.0.3.I7.6 SMU: nxos.CSCvj65578-n9k_ALL1.0.0-7.0.3.I7.6.lib32_n9000.rpm	
1.2TB 10K RPM Drive (Seagate - Skybolt)	ORA6 (or above)	
14TB Drive (HGST - Leo)	A07G (or above)	
14TB Drive EAEU (HGST - Leo)	C07G (or above)	
Rack PDU	2.09 (or above)	

Chapter 6 Known Limitations and Workarounds

Table of Contents

This chapter provides information about the known limitations and workarounds for Oracle Private Cloud
Appliance (PCA).

6.1 Oracle Private Cloud Appliance Hardware

This section describes hardware-related limitations and workarounds.

6.1.1 Compute Node Boot Sequence Interrupted by LSI Bios Battery Error

When a compute node is powered off for an extended period of time, a week or longer, the LSI BIOS may stop because of a battery error, waiting for the user to press a key in order to continue.

Workaround: Wait for approximately 10 minutes to confirm that the compute node is stuck in boot. Use the Reprovision button in the Oracle Private Cloud Appliance Dashboard to reboot the server and restart the provisioning process.

Bug 16985965

6.1.2 Reboot From Oracle Linux Prompt May Cause Management Node to Hang

When the reboot command is issued from the Oracle Linux command line on a management node, the operating system could hang during boot. Recovery requires manual intervention through the server ILOM.

Workaround: When the management node hangs during (re-)boot, log in to the ILOM and run these two commands in succession: `stop -f /SYS` and `start /SYS`. The management node should reboot normally.

Bug 28871758

6.1.3 Interruption of iSCSI Connectivity Leads to LUNs Remaining in Standby

If network connectivity between compute nodes and their LUNs is disrupted, it may occur that one or more compute nodes mark one or more iSCSI LUNs as being in *standby* state. The system cannot automatically recover from this state without operations requiring downtime, such as rebooting VMs or even rebooting compute nodes. The standby LUNs are caused by the specific methods that the Linux kernel and the ZFS Storage Appliance use to handle failover of LUN paths.

Workaround: As the root cause has been identified, an update of the ZFS Storage Appliance firmware is being developed and tested. Until the new firmware is released, customers who have run into issues with missing LUN paths and standby LUNs, are advised not to upgrade Oracle Private Cloud Appliance. The new firmware is likely to be released independently, not as part of the Oracle Private Cloud Appliance Controller Software ISO.

Bug 24522087

6.1.4 ILOM Service Processor Clocks Are Out-of-Sync

Most Oracle Private Cloud Appliance components are equipped with an Oracle Integrated Lights Out Manager (ILOM). Each ILOM Service Processor (SP) contains its own clock, which is synchronized with the operating system (OS) clock before it leaves the factory. However, when new expansion nodes are installed or when parts in a component have been repaired or replaced, SP clocks could be out-of-sync. The problem may also be the result of a configuration error or normal clock drift.

If necessary, the SP clock can be synchronized manually. There is no need to continually update the hardware clock, because it only serves as a reference point for the host OS. Once the systems are up and running the OS obtains the correct time through NTP.

Workaround: After configuring the NTP server in the Oracle Private Cloud Appliance Dashboard, synchronize the ILOM SPs with the OS clock. The easiest way is to log into the host and run this command: `hwclock --systohc`.

Bug 17664050

6.1.5 ILOM Firmware Does Not Allow Loopback SSH Access

In Oracle Integrated Lights Out Manager (ILOM) firmware releases newer than 3.2.4, the service processor configuration contains a field, called `allowed_services`, to control which services are permitted on an interface. By default, SSH is not permitted on the loopback interface. However, Oracle Enterprise Manager uses this mechanism to register Oracle Private Cloud Appliance management nodes. Therefore, SSH must be enabled manually if the ILOM version is newer than 3.2.4.

Workaround: On management nodes running an ILOM version more recent than 3.2.4, make sure that SSH is included in the `allowed_services` field of the network configuration. Log into the ILOM CLI through the `NETMGT` Ethernet port and enter the following commands:

```
-> cd /SP/network/interconnect
-> set hostmanaged=false
-> set allowed_services=fault-transport,ipmi,snmp,ssh
-> set hostmanaged=true
```

Bug 26953763

6.2 Oracle Private Cloud Appliance Software

This section describes software-related limitations and workarounds.

6.2.1 Do Not Install Additional Software on Appliance Components

Oracle Private Cloud Appliance is delivered as an appliance: a complete and controlled system composed of selected hardware and software components. If you install additional software packages on the pre-configured appliance components, be it a compute node, management node or storage component, you introduce new variables that potentially disrupt the operation of the appliance as a whole. Unless otherwise instructed, Oracle advises against the installation of additional packages, either from a third party or from Oracle's own software channels like the Oracle Linux YUM repositories.

Workaround: Do not install additional software on any internal Oracle Private Cloud Appliance system components. If your internal processes require certain additional tools, contact your Oracle representative to discuss these requirements.

6.2.2 Do Not Reconfigure Network During Compute Node Provisioning or Upgrade

In the Oracle Private Cloud Appliance Dashboard, the Network Setup tab becomes available when the first compute node has been provisioned successfully. However, when installing and provisioning a new system, you must wait until all nodes have completed the provisioning process before changing the network configuration. Also, when provisioning new nodes at a later time, or when upgrading the environment, do not apply a new network configuration before all operations have completed. Failure to follow these guidelines is likely to leave your environment in an indeterminate state.

Workaround: Before reconfiguring the system network settings, make sure that no provisioning or upgrade processes are running.

Bug 17475738

6.2.3 Nodes Attempt to Synchronize Time with the Wrong NTP Server

External time synchronization, based on `ntpd`, is left in default configuration at the factory. As a result, NTP does not work when you first power on the Oracle Private Cloud Appliance, and you may find messages in system logs similar to these:

```
Oct  1 11:20:33 ovcamn06r1 kernel: o2dlm: Joining domain ovca ( 0 1 ) 2 nodes
Oct  1 11:20:53 ovcamn06r1 ntpd_initres[3478]: host name not found:0.rhel.pool.ntp.org
Oct  1 11:20:58 ovcamn06r1 ntpd_initres[3478]: host name not found:1.rhel.pool.ntp.org
Oct  1 11:21:03 ovcamn06r1 ntpd_initres[3478]: host name not found:2.rhel.pool.ntp.org
```

Workaround: Apply the appropriate network configuration for your data center environment, as described in the section Network Setup in the Oracle Private Cloud Appliance Administrator's Guide. When the data center network configuration is applied successfully, the default values for NTP configuration are overwritten and components will synchronize their clocks with the source you entered.

Bug 17548941

6.2.4 Node Manager Does Not Show Node Offline Status

The role of the Node Manager database is to track the various states a compute node goes through during provisioning. After successful provisioning the database continues to list a node as *running*, even if it is shut down. For nodes that are fully operational, the server status is tracked by Oracle VM Manager. However, the Oracle Private Cloud Appliance Dashboard displays status information from the Node Manager. This may lead to inconsistent information between the Dashboard and Oracle VM Manager, but it is not considered a bug.

Workaround: To verify the status of operational compute nodes, use the Oracle VM Manager user interface.

Bug 17456373

6.2.5 Compute Node State Changes Despite Active Provisioning Lock

The purpose of a lock of the type `provisioning` or `all_provisioning` is to prevent all compute nodes from starting or continuing a provisioning process. However, when you attempt to reprovision a running compute node from the Oracle PCA CLI while an active lock is in place, the compute node state changes to "reprovision_only" and it is marked as "DEAD". Provisioning of the compute node continues as normal when the provisioning lock is deactivated.

Bug 22151616

6.2.6 Compute Nodes Are Available in Oracle VM Server Pool Before Provisioning Completes

Compute node provisioning can take up to several hours to complete. However, those nodes are added to the Oracle VM server pool early on in the process, but they are not placed in maintenance mode. In theory the discovered servers are available for use in Oracle VM Manager, but you must not attempt to alter their configuration in any way before the Oracle Private Cloud Appliance Dashboard indicates that provisioning has completed.

Workaround: Wait for compute node provisioning to finish. Do not modify the compute nodes or server pool in any way in Oracle VM Manager.

Bug 22159111

6.2.7 Reprovisioning or Upgrading a Compute Node Hosting Virtual Machines Leads to Errors

Reprovisioning or upgrading a compute node that hosts virtual machines (VMs) is considered bad practice. Good practice is to migrate all VMs away from the compute node before starting a reprovisioning operation or software update. At the start of the reprovisioning, the removal of the compute node from its server pool could fail partially, due to the presence of configured VMs that are either running or powered off. When the compute node returns to normal operation after reprovisioning, it could report failures related to server pool configuration and storage layer operations. As a result, both the compute node and its remaining VMs could end up in an error state. There is no straightforward recovery procedure.

Workaround: Avoid upgrade and reprovisioning issues due to existing VM configurations by migrating all VMs away from their host first.

Bug 23563071

6.2.8 Virtual Machines Remain in Running Status when Host Compute Node Is Reprovisioned

Using the Oracle Private Cloud Appliance CLI it is possible to force the reprovisioning of a compute node even if it is hosting running virtual machines. The compute node is not placed in maintenance mode. Consequently, the active virtual machines are not shut down or migrated to another compute node. Instead these VMs remain in *running* status and Oracle VM Manager reports their host compute node as "N/A".

> ⚠️ **Caution**
>
> Reprovisioning a compute node that hosts virtual machines is considered bad practice. Good practice is to migrate all virtual machines away from the compute node before starting a reprovisioning operation or software update.

Workaround: In this particular condition the VMs can no longer be migrated. They must be killed and restarted. After a successful restart they return to normal operation on a different host compute node in accordance with start policy defined for the server pool.

Bug 22018046

6.2.9 Provisioning Is Slow in Systems with Many VMs and VLANs

As the Oracle VM environment grows and contains more and more virtual machines and many different VLANs connecting them, the number of management operations and registered events increases rapidly. In a system with this much activity the provisioning of a compute node takes significantly longer, because the provisioning tasks run through the same management node where Oracle VM Manager is active. There is no impact on functionality, but the provisioning tasks can take several hours to complete.

There is no workaround to speed up the provisioning of a compute node when the entire system is under heavy load. It is recommended to perform compute node provisioning at a time when system activity is at its lowest.

Bug 22159038 and 22085580

6.2.10 Management Nodes Have Non-Functional `bond0` Network Interface

When the driver for network interface bonding is loaded, the system automatically generates a default `bond0` interface. However, this interface is not activated or used in the management nodes of an Oracle Private Cloud Appliance with the all-Ethernet network architecture.

Workaround: The `bond0` interface is not configured in any usable way and can be ignored.

Bug 29559810

6.2.11 Network Performance Is Impacted by VxLAN Encapsulation

The design of the all-Ethernet network fabric in Oracle Private Cloud Appliance relies heavily on VxLAN encapsulation and decapsulation. This extra protocol layer requires additional CPU cycles and consequently reduces network performance compared to regular tagged or untagged traffic. In particular the connectivity to and from VMs can be affected. To compensate for the CPU load of VxLAN processing, the MTU (Maximum Transmission Unit) on VM networks can be increased to 9000 bytes, which is the setting across the standard appliance networks. However, the network paths should be analyzed carefully to make sure that the larger MTU setting is supported between the end points: if an intermediate network device only supports an MTU of 1500 bytes, then the fragmentation of the 9000 byte packets will result in a bigger performance penalty.

Workaround: If the required network performance cannot be obtained with a default MTU of 1500 bytes for regular VM traffic, you should consider increasing the MTU to 9000 bytes; on the VM network and inside the VM itself. For guidance on this subject, refer to the Oracle white paper on 10GbE network performance tuning in Oracle VM 3.

Bug 29664090

6.2.12 Altering Custom Network VLAN Tag Is Not Supported

When you create a custom network, it is technically possible – though not supported – to alter the VLAN tag in Oracle VM Manager. However, when you attempt to add a compute node, the system creates the network interface on the server but fails to enable the modified VLAN configuration. At this point the custom network is stuck in a failed state: neither the network nor the interfaces can be deleted, and the VLAN configuration can no longer be changed back to the original tag.

Workaround: Do not modify appliance-level networking in Oracle VM Manager. There are no documented workarounds and any recovery operation is likely to require significant downtime of the Oracle Private Cloud Appliance environment.

Bug 23250544

6.2.13 Host Network Parameter Validation Is Too Permissive

When you define a host network, it is possible to enter invalid or contradictory values for the Prefix, Netmask and Route_Destination parameters. For example, when you enter a prefix with "0" as the first octet, the system attempts to configure IP addresses on compute node Ethernet interfaces starting with 0. Also, when the netmask part of the route destination you enter is invalid, the network is still created, even though an exception occurs. When such a poorly configured network is in an invalid state, it cannot be reconfigured or deleted with standard commands.

Workaround: Double-check your CLI command parameters before pressing Enter. If an invalid network configuration is applied, use the `--force` option to delete the network.

Bug 25729227

6.2.14 Virtual Appliances Cannot Be Imported Over a Host Network

A host network provides connectivity between compute nodes and hosts external to the appliance. It is implemented to connect external storage to the environment. If you attempt to import a virtual appliance,

also known as assemblies in previous releases of Oracle VM and Oracle Private Cloud Appliance, from a location on the host network, it is likely to fail, because Oracle VM Manager instructs the compute nodes to use the active management node as a proxy for the import operation.

Workaround: Make sure that the virtual appliance resides in a location accessible from the active management node.

Bug 25801215

6.2.15 Customizations for ZFS Storage Appliance in `multipath.conf` Are Not Supported

The ZFS stanza in `multipath.conf` is controlled by the Oracle Private Cloud Appliance software. The internal ZFS Storage Appliance is a critical component of the appliance and the multipath configuration is tailored to the internal requirements. You should never modify the ZFS parameters in `multipath.conf`, because it could adversely affect the appliance performance and functionality.

Even if customizations were applied for (external) ZFS storage, they are overwritten when the Oracle Private Cloud Appliance Controller Software is updated. A backup of the file is saved prior to the update. Customizations in other stanzas of `multipath.conf`, for storage devices from other vendors, are preserved during upgrades.

Bug 25821423

6.2.16 Customer Created LUNs Are Mapped to the Wrong Initiator Group

When adding LUNs on the Oracle Private Cloud Appliance internal ZFS Storage Appliance you must add them under the "OVM" target group. Only this default target group is supported; there can be no additional target groups. However, on the initiator side you should not use the default configuration, otherwise all LUNs are mapped to the **"All Initiators"** group, and accessible for all nodes in the system. Such a configuration may cause several problems within the appliance.

Additional, custom LUNs on the internal storage **must** instead be mapped to one or more custom initiator groups. This ensures that the LUNs are mapped to the intended initiators, and are not remapped by the appliance software to the default **"All Initiators"** group.

Workaround: When creating additional, custom LUNs on the internal ZFS Storage Appliance, always use the default target group, but make sure the LUNs are mapped to one or more custom initiator groups.

Bugs 22309236 and 18155778

6.2.17 Storage Head Failover Disrupts Running Virtual Machines

When a failover occurs between the storage heads of a ZFS Storage Appliance, virtual machine operation could be disrupted by temporary loss of disk access. Depending on the guest operating system, and on the configuration of the guest and Oracle VM, a VM could hang, power off or reboot. This behavior is caused by an iSCSI configuration parameter that does not allow sufficient recovery time for the storage failover to complete.

Workaround: Increase the value of *node.session.timeo.replacement_timeout* in the file `/etc/iscsi/iscsid.conf`. For details, refer to the support note with Doc ID 2189806.1.

Bug 24439070

6.2.18 Oracle VM Manager Fails to Restart after Restoring a Backup Due to Password Mismatch

If you have changed the password for Oracle VM Manager or its related components Oracle WebLogic Server and Oracle MySQL database, and you need to restore the Oracle VM Manager from a backup that was made prior to the password change, the passwords will be out of sync. As a result of this password mismatch, Oracle VM Manager cannot connect to its database and cannot be started.

Workaround: Follow the instructions in the section Restoring a Backup After a Password Change in the Oracle Private Cloud Appliance Administrator's Guide.

Bug 19333583

6.2.19 Changing Multiple Component Passwords Causes Authentication Failure in Oracle VM Manager

When several different passwords are set for different appliance components using the Oracle Private Cloud Appliance Dashboard, you could be locked out of Oracle VM Manager, or communication between Oracle VM Manager and other components could fail, as a result of authentication failures. The problem is caused by a partially failed password update, whereby a component has accepted the new password while another component continues to use the old password to connect.

The risk of authentication issues is considerably higher when Oracle VM Manager and its directly related components Oracle WebLogic Server and Oracle MySQL database are involved. A password change for these components requires the `ovmm` service to restart. If another password change occurs within a matter of a few minutes, the operation to update Oracle VM Manager accordingly could fail because the `ovmm` service was not active. An authentication failure will prevent the `ovmm` service from restarting.

Workaround: If you set different passwords for appliance components using the Oracle Private Cloud Appliance Dashboard, change them one by one with a 10 minute interval. If the `ovmm` service is stopped as a result of a password change, wait for it to restart before making further changes. If the `ovmm` service fails to restart due to authentication issues, it may be necessary to replace the file `/nfs/shared_storage/wls1/servers/AdminServer/security/boot.properties` with the previous version of the file (`boot.properties.old`).

Bug 26007398

6.2.20 ILOM Password of Expansion Compute Nodes Is Not Synchronized During Provisioning

After the rack components have been configured with a custom password, any compute node ILOM of a newly installed expansion compute node does not automatically take over the password set by the user in the Wallet. The compute node provisions correctly, and the Wallet maintains access to its ILOM even though it uses the factory-default password. However, it is good practice to make sure that custom passwords are correctly synchronized across all components.

Workaround: Set or update the compute node ILOM password using the Oracle Private Cloud Appliance Dashboard or CLI. This sets the new password both in the Wallet and the compute node ILOM.

Bug 26143197

6.2.21 SSH Host Key Mismatch After Management Node Failover

When logging in to the active management node using SSH, you typically use the virtual IP address shared between both management nodes. However, since they are separate physical hosts, they have a different

host key. If the host key is stored in the SSH client, and a failover to the secondary management node occurs, the next attempt to create an SSH connection through the virtual IP address results in a host key verification failure.

Workaround: Do not store the host key in the SSH client. If the key has been stored, remove it from the client's file system; typically inside the user directory in `.ssh/known_hosts`.

Bug 22915408

6.2.22 External Storage Cannot Be Discovered Over Data Center Network

The default compute node configuration does not allow connectivity to additional storage resources in the data center network. Compute nodes are connected to the data center subnet to enable public connectivity for the virtual machines they host, but the compute nodes' network interfaces have no IP address in that subnet. Consequently, SAN or file server discovery will fail.

Bug 17508885

6.2.23 High Network Load with High MTU May Cause Time-Out and Kernel Panic in Compute Nodes

When network throughput is very high, certain conditions, like a large number of MTU 9000 streams, have been known to cause a kernel panic in a compute node. In that case, `/var/log/messages` on the affected compute node contains entries like *"Task Python:xxxxx blocked for more than 120 seconds"*. As a result, HA virtual machines may not have been migrated in time to another compute node. Usually compute nodes return to their normal operation automatically.

Workaround: If HA virtual machines have not been live-migrated off the affected compute node, log into Oracle VM Manager and restart the virtual machines manually. If an affected compute node does not return to normal operation, restart it from Oracle VM Manager.

Bugs 20981004 and 21841578

6.2.24 User Interface Does Not Support Internet Explorer 10 and 11

Oracle PCA Release 2.4.1 uses the Oracle Application Development Framework (ADF) version 11.1.1.2.0 for both the Dashboard and the Oracle VM Manager user interface. This version of ADF does not support Microsoft Internet Explorer 10 or 11.

Workaround: Use Internet Explorer 9 or a different web browser; for example Mozilla Firefox.

Bug 18791952

6.2.25 Mozilla Firefox Cannot Establish Secure Connection with User Interface

Both the Oracle Private Cloud Appliance Dashboard and the Oracle VM Manager user interface run on an architecture based on Oracle WebLogic Server, Oracle Application Development Framework (ADF) and Oracle JDK 6. The cryptographic protocols supported on this architecture are SSLv3 and TLSv1.0. Mozilla Firefox version 38.2.0 or later no longer supports SSLv3 connections with a self-signed certificate. As a result, an error message might appear when you try to open the user interface login page.

Workaround: Override the default Mozilla Firefox security protocol as follows:

1. In the Mozilla Firefox address bar, type `about:config` to access the browser configuration.

2. Acknowledge the warning about changing advanced settings by clicking *I'll be careful, I promise!.*

3. In the list of advanced settings, use the Search bar to filter the entries and look for the settings to be modified.

4. Double-click the following entries and then enter the new value to change the configuration preferences:

    - `security.tls.version.fallback-limit: 1`

    - `security.ssl3.dhe_rsa_aes_128_sha: false`

    - `security.ssl3.dhe_rsa_aes_256_sha: false`

5. If necessary, also modify the configuration preference `security.tls.insecure_fallback_hosts` and enter the affected hosts as a comma-separated list, either as domain names or as IP addresses.

6. Close the Mozilla Firefox advanced configuration tab. The pages affected by the secure connection failure should now load normally.

Bug 21622475 and 21803485

6.2.26 Authentication Error Prevents Oracle VM Manager Login

In environments with a large number of virtual machines and frequent connections through the VM console of Oracle VM Manager, the browser UI login to Oracle VM Manager may fail with an *"unexpected error during login"*. A restart of the `ovmm` service is required.

Workaround: From the Oracle Linux shell of the master management node, restart the `ovmm` service by entering the command `service ovmm restart`. You should now be able to log into Oracle VM Manager again.

Bug 19562053

6.2.27 Virtual Machine with High Availability Takes Five Minutes to Restart when Failover Occurs

The compute nodes in an Oracle Private Cloud Appliance are all placed in a single clustered server pool during provisioning. A clustered server pool is created as part of the provisioning process. One of the configuration parameters is the cluster time-out: the time a server is allowed to be unavailable before failover events are triggered. To avoid false positives, and thus unwanted failovers, the Oracle Private Cloud Appliance server pool time-out is set to 300 seconds. As a consequence, a virtual machine configured with high availability (HA VM) can be unavailable for 5 minutes when its host fails. After the cluster time-out has passed, the HA VM is automatically restarted on another compute node in the server pool.

This behavior is as designed; it is not a bug. The server pool cluster configuration causes the delay in restarting VMs after a failover has occurred.

6.2.28 Compute Node CPU Load at 100 Percent Due to Hardware Management Daemon

The Hardware Management daemon, which runs as the process named `hwmgmtd`, can sometimes consume a large amount of CPU capacity. This tends to become worse over time and eventually reach 100 percent. As a direct result, the system becomes less responsive over time.

Workaround: If you find that CPU load on a compute node is high, log in to its Oracle Linux shell and use the `top` command to check if `hwmgmtd` is consuming a lot of CPU capacity. If so, restart the daemon by entering the command `/sbin/service hwmgmtd restart`.

Bug 23174421

6.2.29 CLI Command `configure` Results in Failure

The Oracle Private Cloud Appliance CLI command `configure` has no targets in Release 2.4.1. If you attempt to execute the command, it returns a failure with no error message. This is expected behavior for an inactive command.

Workaround: The `configure` command must remain for backward compatibility. Since the command is inactive, it should not be executed. The failure status can be ignored.

Bug 29624091

6.2.30 CLI Command `update appliance` Deprecated

The Oracle Private Cloud Appliance command line interface contains the `update appliance` command, which is used in releases prior to 2.3.4 to unpack a Controller Software image and update the appliance with a new software stack. This functionality is now part of the Upgrader tool, so the CLI command is deprecated and will be removed in the next release.

Workaround: Future updates and upgrades will be executed through the Oracle Private Cloud Appliance Upgrader.

Bug 29913246

6.2.31 Adding the Virtual Machine Role to the Storage Network Causes Cluster to Lose Heartbeat Networking

Attempting to add the Virtual Machine role to the storage network in Oracle VM Manger on an Oracle Private Cloud Appliance can cause your cluster to lose heartbeat networking, which will impact running Virtual Machines and their workloads. This operation is not supported on Oracle Private Cloud Appliance.

Workaround: Do not add the VM role to the `storage-int` network.

Bug 30936974

6.2.32 Adding Virtual Machine Role to the Management Network Causes Oracle VM Manager to Lose Contact with the Compute Nodes

Attempting to add the Virtual Machine role to the management network in Oracle VM Manger on an Oracle Private Cloud Appliance causes you to lose connectivity with your compute nodes. The compute nodes are still up, however your manager can not communicate with the compute nodes, which leaves your rack in a degraded state. This operation is not supported on Oracle Private Cloud Appliance.

Workaround: Do not add the VM role to the `mgmt-int` network.

Bug 30937049

Chapter 7 Feedback and Support

Table of Contents

This chapter contains information about how to provide feedback and contact support for the Oracle Private Cloud Appliance (PCA) product.

> **Note**
>
> Customers who use Oracle Auto Service Request (ASR) do not need to submit a service request through My Oracle Support for the specific hardware failure scenarios covered by ASR. For details, refer to the section Oracle Auto Service Request (ASR) in the Oracle Private Cloud Appliance Administrator's Guide

> **Caution**
>
> Oracle Auto Service Request (ASR) must be installed by an **authorized Oracle Field Engineer**. Request installation of ASR at the time of system install. Installation at a later date will be a Time and Materials charge.

7.1 Providing Feedback and Reporting Problems

If you need to report an issue and have an Oracle Premier Support Agreement, you should open a case with Oracle Support at https://support.oracle.com.

If you are reporting an issue, please provide the following information where applicable:

• Description of the problem, including the situation where the problem occurs, and its impact on your operation.

• Machine type, operating system release, browser type and version, locale and product release, including any patches you have applied, and other software that might be affecting the problem.

• Detailed steps on the method you have used, to reproduce the problem.

• Any error logs or core dumps.

7.2 Contacting Oracle Specialist Support

If you have an Oracle Customer Support Identifier (CSI), first try to resolve your issue by using My Oracle Support at https://support.oracle.com. Your Oracle Premier Support CSI does not cover customization support, third-party software support, or third-party hardware support.

If you cannot resolve your issue, open a case with the Oracle specialist support team for technical assistance on break/fix production issues. The responding support engineer will need the following information to get started:

• Your Oracle Customer Support Identifier.

• The product you are calling about.

• A brief description of the problem you would like assistance with.

- Any logs or support data you have, see Section 7.3, "Data Collection for Service and Support" for details.

If your CSI is unknown, find the correct Service Center for your country (https://www.oracle.com/support/contact.html), then contact Oracle Services to open a non-technical service request (SR) to get your CSI sorted. Once you have your CSI, you can proceed to open your case through My Oracle Support.

7.3 Data Collection for Service and Support

When submitting a Service Request (SR), please include an archive file with the relevant log files and debugging information as listed in this section. This information can be used by Oracle Support to analyze and diagnose system issues. The support data files can be uploaded for further analysis by Oracle Support.

> **Tip**
>
> Collecting support files involves logging in to the command line on components in your Oracle PCA rack and copying files to a storage location external to the appliance environment, in the data center network. This can only be achieved from a system with access to both the internal appliance management network and the data center network. You can set up a physical or virtual system with those connections, or use the master management node.
>
> The most convenient way to collect the necessary files, is to mount the target storage location on the system using `nfs`, and copy the files using `scp` with the appropriate login credentials and file path. The command syntax should be similar to this example:

```
# mkdir /mnt/mynfsshare
# mount -t nfs storage-host-ip:/path-to-share /mnt/mynfsshare
# scp root@component-ip:/path-to-file /mnt/mynfsshare/pca-support-data/
```

Collecting Oracle Private Cloud Appliance Support Data

> **Warning**
>
> For more accurate diagnosis of physical server issues, Oracle Support Services require a system memory dump. For this purpose, `kdump` must be installed and configured on the component under investigation. The entire procedure is described in the support note with Doc ID 2142488.1. By default, `kdump` is installed on all Oracle Private Cloud Appliance compute nodes and configured to write the system memory dump to the ZFS storage appliance at this location: `192.168.4.100:/export/nfs_repository1/`.

> **Caution**
>
> For diagnostic data collection, Oracle Support Services recommend that the OSWatcher tool be run for an extended period of time. For general information about the use of OSWatcher, please consult the support note with Doc ID 580513.1. OSWatcher is installed by default on all Oracle Private Cloud Appliance compute nodes.

For diagnostic purposes, Oracle Support Services use a tool called `pca-diag` that automatically collects vital troubleshooting information from your Oracle Private Cloud Appliance environment. This tool is part of the Oracle Private Cloud Appliance controller software installed on both management nodes and on all compute nodes. Its capabilities are described in the section "Oracle Private Cloud Appliance Diagnostics Tool" in the Oracle Private Cloud Appliance Administrator's Guide.

To collect support data from your system, proceed as follows:

1. Log in to **the master management node** as root.

2. Run `pca-diag` with the appropriate command line arguments.

> **Note**
>
> Oracle Support teams may request that the tool be run in a specific manner as part of an effort to diagnose and resolve reported hardware or software issues.
>
> For the most complete set of diagnostic data, run the command with both arguments: `pca-diag ilom vmpinfo`.

- `pca-diag ilom`

  Use this command to detect and diagnose potential component hardware and software problems.

  ```
  [root@ovcamn05r1 ~]# pca-diag ilom

  Oracle Private Cloud Appliance diagnostics tool

  Gathering Linux information...
  Gathering system messages...
  Gathering PCA related files...
  Gathering OS version information...
  Gathering host specific information...
  Gathering PCI information...
  Gathering SCSI and partition data...
  Gathering OS process data...
  Gathering network setup information...
  Gathering installed packages data...
  Gathering disk information...
  Gathering ILOM Service Processor data... this may take a while
  Generating diagnostics tarball and removing temp directory

  ===============================================================================
  Diagnostics completed. The collected data is available in:
  /tmp/pcadiag_ovcamn05r1_<ID>_<date>_<time>.tar.bz2
  ===============================================================================
  ```

- `pca-diag vmpinfo`

  Use this command to detect and diagnose potential problems in the Oracle VM environment.

  > **Note**
  >
  > To collect diagnostic information for a subset of the Oracle VM Servers in the environment, run the command with an additional `servers` parameter, as shown in the example below.

  ```
  [root@ovcamn05r1 ~]# pca-diag vmpinfo servers='ovcacn07r1,ovcacn08r1'

  Oracle Private Cloud Appliance diagnostics tool
  Gathering Linux information...
  Gathering system messages...
  Gathering PCA related files...
  Gathering OS version information...
  Gathering host specific information...
  Gathering PCI information...
  Gathering SCSI and partition data...
  Gathering OS process data...
  Gathering network setup information...
  ```

```
Gathering installed packages data...
Gathering disk information...
Gathering FRU data and console history. Use ilom option for complete ILOM data.
```

When the `vmpinfo3` script is called as a sub-process from `pca-diag`, the console output continues as follows:

```
Running vmpinfo tool...
Starting data collection
Gathering files from servers: ovcacn07r1,ovcacn08r1  This process may take some time.
Gathering OVM Model Dump files
Gathering sosreports from servers
The following server(s) will get info collected: [ovcacn07r1,ovcacn08r1]
Gathering sosreport from ovcacn07r1
Gathering sosreport from ovcacn08r1
Data collection complete
Gathering OVM Manager Logs
Clean up metrics
Copying model files
Copying DB backup log files
Invoking manager sosreport
```

When all files have been collected, the data is compressed into two tarballs. One is from the `pca-diag` tool, while `vmpinfo3` writes a separate tarball with its own specific data.

```
Compressing VMPinfo3 <date>-<time>.
=================================================================================
Please send /tmp/vmpinfo3-<version>-<date>-<time>.tar.gz to Oracle OVM support
=================================================================================

Generating diagnostics tarball and removing temp directory
=========================================================================
Diagnostics completed. The collected data is available in:
/tmp/pcadiag_ovcamn05r1_<ID>_<date>_<time>.tar.bz2
=========================================================================
```

3. If necessary, run `pca-diag`, with or without the `ilom` argument, on some or all compute nodes as well.

4. To allow better analysis of physical server issues, for example hanging, crashing or rebooting, also include the system memory dump file (`vmcore`). Refer to the *Tip* at the start of this section for a convenient way to collect the files.

   The location of the file is: *`<kdump-partition-mount-point>`*`/kdump/`*`<compute-node-ip>`*`-`*`<date>`*`-`*`<time>`*`/vmcore`. The partition and mount point are defined during `kdump` configuration. By default, `kdump` writes to `192.168.4.100:/export/nfs_repository1/`.

   For details, please consult the support note with Doc ID 2142488.1.

5. When required, collect the OSWatcher logs from the compute nodes. The default location is `/var/log/oswatcher/archive/`.

6. Copy all diagnostic files to a location external to the appliance environment.

Uploading Support Data Files

For support data up to 2 GB, upload the file as part of the Service Request (SR) process in My Oracle Support (MOS).

- If you are still in the process of logging the SR, upload the support data in the **Upload Files/ Attachments** step of the SR.

- If you have already logged the SR and need to upload files afterwards, proceed as follows:

  1. Log into MOS and open the **Dashboard** or **Service Request** tab.

  2. In the **Service Request** region, click the SR you want to update.

  3. In the **Update** section, select **Add Attachment**.

  4. In the pop-up window, select the file for upload, include any notes, and click **Attach File**.

If uploading the support data with the SR is not an option, or for support data files over 2 GB in size, use the FTPS file upload service from Oracle support at `transport.oracle.com`. Oracle Support might request that you upload using a different mechanism.

1. Using an FTPS client, for example FileZilla or WinSCP, access the My Oracle Support File Upload Service `transport.oracle.com` in *passive* mode.

2. Log in with your Oracle Single Sign-On user name and password.

3. Select the support data file to upload.

4. Select a destination for the file.

   Use the directory path provided by Oracle Support.

   Typically, the directory path is constructed as follows: "`/upload/issue/<sr_number>/`".

   The use of a SR number ensures that the file is correctly associated with the service request. Write down the full path to the file and the SR number for future reference in communications with Oracle Support.

5. Upload the file.

   When the upload is complete, a confirmation message is displayed.

> **Note**
>
> If you prefer to use a command-line client, for example cURL, you typically enter a single command to connect, authenticate and complete the upload. A cURL command will look similar to this example: `curl -T <path_to_file> -u "<user>" ftps://transport.oracle.com/upload/issue/<sr_number>/`. For security reasons, it is recommended that you leave the password out of the command and be prompted to enter the password.

For detailed information about uploading files to Oracle Support, refer to the support note with Doc ID 1547088.2.