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About This Document

This document is part of the documentation library for Oracle OpenStack Release 5.0, which is available at:

https://docs.oracle.com/cd/E96260_01/

The documentation library consists of the following items:

**Oracle OpenStack Release Notes**

This document provides a summary of the new features, changes, fixed bugs, and known issues in Oracle OpenStack. It contains last-minute information, which may not be included in the main body of documentation, and information on Oracle OpenStack support. Read this document before you install your environment.

**Oracle OpenStack Installation and Deployment Guide**

This document explains how to install Oracle OpenStack and deploy OpenStack services.

**Oracle OpenStack Configuration Guide**

This document describes the configuration options for deploying services with Oracle OpenStack.

**Oracle OpenStack Application Deployment Guide**

This document describes how to set up Oracle products and deploy them using the OpenStack Application Catalog (Murano) service.

**Oracle OpenStack Licensing Information User Manual**

This document provides licensing information for Oracle OpenStack.

This document was generated on 19 September 2018 (revision: 1455).

You can get the latest information on Oracle OpenStack at:

https://www.oracle.com/linux/openstack/index.html

**Conventions**

The following text conventions are used in this document:

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

**Command Syntax**

Command syntax appears in **monospace** font. The dollar character ($) and number sign (#) are command prompts. You do not enter them as part of the command. Commands that any user, including the root user, can run are shown with the $ prompt:
Commands that must be run as the `root` user, or by a user with superuser privileges obtained through another utility such as `sudo`, are shown with the `#` prompt:

```
# command
```

The following command syntax conventions are used in this guide:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>backslash \</td>
<td>A backslash is the Oracle Linux command continuation character. It is used in command examples that are too long to fit on a single line. Enter the command as displayed (with a backslash) or enter it on a single line without a backslash:</td>
</tr>
<tr>
<td>braces { }</td>
<td>Braces indicate required items:</td>
</tr>
<tr>
<td>brackets [ ]</td>
<td>Brackets indicate optional items:</td>
</tr>
<tr>
<td>ellipses ...</td>
<td>Ellipses indicate an arbitrary number of similar items:</td>
</tr>
<tr>
<td>italics</td>
<td>Italic type indicates a variable. Substitute a value for the variable:</td>
</tr>
<tr>
<td>vertical line</td>
<td>A vertical line indicates a choice within braces or brackets:</td>
</tr>
</tbody>
</table>

**Access to Oracle Support**

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit [http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info](http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info) or visit [http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs](http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs) if you are hearing impaired.
Chapter 1 Introduction

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Getting the Software ................................................................. 1

Oracle OpenStack uses Oracle Linux as the foundation for deploying the OpenStack cloud management software, and provides deployment and support to deliver a complete product based on OpenStack.

This release is based on the OpenStack Queens release. This document is in addition to the OpenStack upstream documentation, available at:

https://docs.openstack.org/queens/

This section lists how to get the Oracle OpenStack software. For a list of additional resources, see:

https://docs.oracle.com/cd/E96260_01

Getting the Software

Oracle Linux is the operating system on which Oracle OpenStack is installed. Oracle Linux is free to download, and includes all Oracle Linux patches and updates.

Oracle OpenStack is considered part of Oracle Linux, and is free to download and distribute, under the same licensing restrictions as Oracle Linux.

The Oracle OpenStack product is delivered in two parts, the Oracle Linux software packages and the Oracle OpenStack Docker images.

The Oracle Linux packages needed to perform an Oracle OpenStack deployment are available from the Oracle Linux yum server at http://yum.oracle.com, and from the Oracle Unbreakable Linux Network (ULN) at https://linux.oracle.com. The packages are:

- **openstack-kolla-preinstall**: This package is installed on the hosts to be included in a deployment as controller, compute, database, network, or storage nodes.

- **openstack-kollacli**: This package is installed on a controller node, or a separate Oracle Linux host, if required. This package includes the Oracle OpenStack command line interface (`kollacli`), which is used to deploy OpenStack services (as Docker containers) to the nodes. A node with `kollacli` installed is referred to as a master node.

- **openstack-kolla-utils**: This package contains a utility for running the OpenStack CLIs in a Docker container.

You can obtain the Oracle OpenStack Docker images from the following Docker registries:

- Docker Hub at https://hub.docker.com
- Oracle Container Registry at https://container-registry.oracle.com

If you prefer, you can use a local Docker registry to mirror the images in the Oracle Container Registry. The images are available on the Oracle Software Delivery Cloud, together with a script for uploading the images to the registry, at https://edelivery.oracle.com.
For information on installing and configuring Oracle OpenStack, see the *Installation and Deployment Guide* at:

https://docs.oracle.com/cd/E96260_01/E96262/html/index.html
Chapter 2 What's New in Oracle OpenStack Release 5.0

This chapter outlines the new features and changes included in Oracle OpenStack Release 5.0.

Oracle OpenStack Release 5.0 includes the following new features and changes:

• Update to OpenStack Queens Release
• Updating to Oracle OpenStack Release 5.0
• New OpenStack Services
• New OpenStack Additional Components
• OpenStack Service and Deployment Changes
• Hypervisor Changes

Update to OpenStack Queens Release

The Docker images have been updated to the OpenStack Queens release.

Updating to Oracle OpenStack Release 5.0

You can update Oracle OpenStack Release 4.0 to Release 5.0. Updating from any other version is not supported.

New OpenStack Services

The following OpenStack services are included in this release:

• Designate: The Designate DNS service is included. Designate is not enabled by default.
• Ironic: The Ironic bare metal service is included. Ironic is not enabled by default.
• Ceilometer: The Ceilometer telemetry service is included. Ceilometer is not enabled by default.
• Telemetry Alarming (aodh): The telemetry alarming (aodh) service is included. Telemetry alarming is used by Ceilometer, and is enabled when Ceilometer is enabled.

New OpenStack Additional Components

The following additional OpenStack components are included in this release:

• Gnocchi: The Gnocchi metric service is included. Gnocchi can be used by Ceilometer, and is the preferred time series storage database. Gnocchi is disabled by default.
• Infoblox: Infoblox vNIO5 appliance using the Infoblox OpenStack Cloud Adapter. The Infoblox OpenStack Cloud Adapter provisions IP addresses and DNS records for instances. Infoblox also decommissions network records when instances are destroyed. The Infoblox adapter is provided using the Neutron IPAM (IP Address Management) plug-in.

OpenStack Service and Deployment Changes

The following changes and enhancements to OpenStack services and their deployment have been made:
• **Transport Layer Security (TLS):** TLS is enabled by default in new deployments. Oracle OpenStack Release 4.0 did not enable TLS by default, however, if you had TLS enabled it will be enabled after the upgrade. If you did not enable TLS in Oracle OpenStack Release 4.0, you should enable it after an upgrade using the kollacli property `kolla_enable_tls_external`. The new `kollacli certificate init` command generates a self-signed TLS certificate to use in test environments.

• **Ceph Luminous:** Ceph has been updated to the Ceph Luminous Release.

• **Glance with NFS:** The Glance directory on each controller node can be configured to automatically connect to NFS storage during a deployment.

• **Cinder Backup with NFS:** NFS can be used for backing up Cinder volumes.

• **Cinder Volume Multi-attach:** Attaching a volume to multiple instances enables highly available clustered file systems.

• **Configuration Reset:** A new `kollacli config reset` command resets the `kollacli` configuration to the default settings.

• **Murano Applications:** The Oracle Database 12c and Oracle Real Application Clusters 12c Murano-based applications are supported in Oracle OpenStack Release 4.0, but are not supported in this release.

• **Murano:** The Murano service is disabled by default. Oracle OpenStack Release 4.0 enabled this service by default.

• **Barbican:** The Barbican service is disabled by default. Oracle OpenStack Release 4.0 enabled this service by default.

---

**Hypervisor Changes**

Oracle VM Server compute nodes are no longer supported.
Chapter 3 System Requirements and Support

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This chapter describes what is supported in this release of Oracle OpenStack including the supported OpenStack services, the supported deployment configurations, and the hardware and software requirements. It also gives information on how to get support for Oracle OpenStack.

OpenStack Services

The following table lists the core OpenStack services included in Oracle OpenStack Release 5.0. Additional components used in Oracle OpenStack are also included in this release but not listed in this table, such as Ceph and MySQL.

Table 3.1 OpenStack Services

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbican</td>
<td>Key manager service. Provides secure storage, provisioning and management of secrets such as passwords, encryption keys and X.509 certificates.</td>
</tr>
<tr>
<td>Ceilometer</td>
<td>Telemetry service that collects, normalizes and transforms data produced by OpenStack services.</td>
</tr>
<tr>
<td>Cinder</td>
<td>Block storage service. Enables users to connect storage devices to the virtual machines.</td>
</tr>
<tr>
<td>Designate</td>
<td>DNS-as-a-Service (DNSaas) service. Provides a DNS server, or connects to external DNS servers.</td>
</tr>
<tr>
<td>Glance</td>
<td>Image service. Controls the images, their permissions and attributes.</td>
</tr>
<tr>
<td>Heat</td>
<td>Orchestration service. Provides a method to deploy an OpenStack infrastructure using templates. Can also auto-scale some infrastructure elements.</td>
</tr>
<tr>
<td>Horizon</td>
<td>Dashboard. Provides a browser-based user interface to perform common OpenStack tasks.</td>
</tr>
<tr>
<td>Ironic</td>
<td>Bare-metal machine provider service. Provides bare-metal machines as nodes in a deployment.</td>
</tr>
<tr>
<td>Keystone</td>
<td>Identity service. Provides authentication and authorization services for users and OpenStack services.</td>
</tr>
<tr>
<td>Murano</td>
<td>Application catalog service. Provides a method to deploy cloud applications from a catalog. Deployment is performed using Heat.</td>
</tr>
<tr>
<td>Neutron</td>
<td>Network service. Controls the network creation, and integration of network services. The Neutron plug-in services Firewall-as-a-Service and Load-Balancer-as-a-Service are also supported.</td>
</tr>
<tr>
<td>Service</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Nova</td>
<td>Compute service. Controls the creation, placement, and life cycle of virtual machines.</td>
</tr>
<tr>
<td>Swift</td>
<td>Object storage service. Provides a highly available, distributed, consistent object store.</td>
</tr>
<tr>
<td>Telemetry Alarming (also known as aodh)</td>
<td>Telemetry alarming service that triggers actions based on rules on event data collected by Ceilometer.</td>
</tr>
</tbody>
</table>

### Deployment Configurations

Oracle OpenStack uses groups to define the role a node has in an OpenStack deployment and the OpenStack services it runs. The default groups are compute, control, database, network, and storage. A node can belong to more than one group and can run multiple OpenStack services.

The minimum deployment of OpenStack contains at least three nodes:

- Two controller nodes, each node belongs to the control, database, network and storage groups.
- One or more nodes belonging to the compute group.

**Note**

Single-node deployments (sometimes referred to as all-in-one deployments) are not supported.

As your scaling and performance requirements change, you can increase the number of nodes and move groups on to separate nodes to spread the workload. However, you should note the following “rules” for deployment:

- The nodes in the compute group must not be assigned to the control group.
- The control group must contain at least two nodes.
- The number of nodes in the database group must always be a multiple of two.
- The number of nodes in each group must be two or more to enable high availability.

### System Requirements

Oracle OpenStack is supported on Oracle Linux. Information on the supported hardware is available in the Hardware Certification List for Oracle Linux and Oracle VM at:

https://linux.oracle.com/hardware-certifications

The storage hardware you use should be included in the hardware list. Oracle is working with its partners to make sure customers have a choice of storage. For specific storage plug-ins, contact Oracle or the plug-in vendor.

You can download Oracle Linux from the Oracle Software Delivery Cloud at:

https://edelivery.oracle.com

The following table lists the minimum system requirements for each OpenStack node type. In addition to the OpenStack nodes, Oracle OpenStack requires a node (known as a master node) from which you
deploy OpenStack services using the `kollacli` command. Typically you use a controller node as the master node, but you can use a separate node if you prefer.

Table 3.2 OpenStack Node Minimum System Requirements

<table>
<thead>
<tr>
<th>Node Type</th>
<th>Minimum System Requirements</th>
</tr>
</thead>
</table>
| Controller | • 1 CPU  
              • 16 GB RAM  
              • 2 NICs  
              • Oracle Linux Release 7 Update 5 and later  
              • Unbreakable Enterprise Kernel Release 5 or later  
              • 64 GB file system mounted on `/var/lib/docker` ,  
                either a Btrfs file system with the Docker `btrfs` storage driver,  
                or an ext4 file system with the Docker `overlay2` storage driver. |
| Compute   | • 1 CPU  
              • 16 GB RAM  
              • 2 NICs (4 NICs recommended for best performance)  
              • Oracle Linux Release 7 Update 5 and later  
              • Unbreakable Enterprise Kernel Release 5 or later  
              • 64 GB file system mounted on `/var/lib/docker` ,  
                either a Btrfs file system with the Docker `btrfs` storage driver,  
                or an ext4 file system with the Docker `overlay2` storage driver. |
| Database  | • 1 CPU  
              • 8 GB RAM  
              • 2 NICs  
              • Oracle Linux Release 7 Update 5 and later  
              • Unbreakable Enterprise Kernel Release 5 or later  
              • 64 GB file system mounted on `/var/lib/docker` ,  
                either a Btrfs file system with the Docker `btrfs` storage driver,  
                or an ext4 file system with the Docker `overlay2` storage driver. |
| Network   | • 1 CPU  
              • 8 GB RAM  
              • 3 NICs (4 NICs recommended for best performance)  
              • Oracle Linux Release 7 Update 5 and later  
              • Unbreakable Enterprise Kernel Release 5 or later  
              • 64 GB file system mounted on `/var/lib/docker` ,  
                either a Btrfs file system with the Docker `btrfs` storage driver,  
                or an ext4 file system with the Docker `overlay2` storage driver. |
| Storage   | • 1 CPU  
              • 8 GB RAM  
              • 2 NICs (3 NICs recommended for best performance)  
              • Oracle Linux Release 7 Update 5 and later  
              • Unbreakable Enterprise Kernel Release 5 or later  
              • 64 GB file system mounted on `/var/lib/docker` ,  
                either a Btrfs file system with the Docker `btrfs` storage driver,  
                or an ext4 file system with the Docker `overlay2` storage driver. |
| Master (if configured separately from a controller node) | • 1 CPU  
              • 2 GB RAM  
              • 1 NIC  
              • Oracle Linux Release 7 Update 5 and later |
Hypervisors

The Kernel-based Virtual Machine (KVM) provided with Oracle Linux is the hypervisor for Oracle OpenStack. For details of the system requirements for the KVM hypervisor, see System Requirements.

Support for Microsoft Hyper-V is available on request. Contact Oracle Support at https://support.oracle.com.

Guest Operating Systems

Oracle Linux 7 is the only guest operating system you can use for Oracle Linux KVM compute nodes.

You may be able to create instances with other guest operating systems available for KVM, although no Oracle Support is offered for those operating systems. For a list of the operating systems supported by KVM, see:

https://www.linux-kvm.org/page/Guest_Support_Status

OpenStack Features

The following OpenStack features are available in this release:

• Nova cold migration
• Nova live migration
• Nova NUMA placement
• Nova CPU pinning
• Neutron DVR

For more detailed information about these features, see the Nova Feature Classification documentation at https://docs.openstack.org/nova/latest/user/feature-classification.html.

Live migration only works when an instance uses shared storage. For instances using ephemeral storage, you can enable shared storage by using:

• Ceph backend storage for Nova.
• Configuring the /var/lib/kolla/var/lib/nova/instances directory on compute nodes to use a shared file system such as NFS.

For instances using persistent storage for Cinder volumes, you can enable shared storage by using:

• Ceph backend storage for Cinder.
• The iSCSI protocol to connect to storage, for example by using the LVM volume driver, or by using a dedicated storage appliance that provides an iSCSI volume driver for Cinder such as the Oracle ZFS Storage Appliance (ZFSSA).

Storage Options

This section discusses the storage options available in Oracle OpenStack Release 5.0.

The following table shows the various storage types and where they can be used with Oracle OpenStack services that require backend storage.
### Nova (Ephemeral Storage)

By default, the `/var/lib/kolla/var/lib/nova/instances` directory on compute nodes is used for ephemeral storage for instances (virtual machines). You must ensure that your compute nodes have sufficient disk space to store instances.

To enable live migration of virtual machine instances, you can enable the Ceph service which can be used for ephemeral storage. You can also configure the `/var/lib/kolla/var/lib/nova/instances` directory on compute nodes to use a shared file system such as NFS.

### Glance Images

By default, the Glance image service stores images in the `/var/lib/glance` directory on controller nodes. This directory can be configured to use a shared file system, such as NFS. To enable the high availability of images, Ceph and Swift can also be used as storage backends for Glance.

### Cinder Block Storage

The Cinder block storage service can be used to provide persistent block storage for instances. The Cinder service is enabled by default, but you need to enable and configure a storage backend.

If you enable Ceph, Ceph is automatically set as the storage backend for Cinder.

You can also use the LVM volume driver or an iSCSI volume driver for Cinder backend storage.

The LVM volume driver uses the iSCSI protocol to connect to volumes in a volume group managed by the Linux Logical Volume Manager (LVM) on a storage node.

If you have dedicated storage appliances for iSCSI volumes for Cinder, you can use these instead of, or in addition to, the Cinder LVM volume driver. iSCSI storage device drivers are enabled by default, but require additional configuration. Oracle recommends the Oracle ZFS Storage Appliance (using the Oracle ZFS Storage Appliance iSCSI driver). If you use the iSCSI storage driver, it is possible to attach a Cinder volume to multiple instances (multi-attach).

You cannot use NFS storage for Cinder volumes.

Cinder also provides a service for backing up Cinder volumes either manually or automatically on a schedule. You can use Ceph, an NFS share, or the Swift object service as the backing storage for Cinder backups.

### Swift Object Storage

The Swift object storage service can be used to provide storage for instances. Swift is disabled by default.

Swift can also be used as the backing storage for the Cinder backup service and the Glance image service.

---

<table>
<thead>
<tr>
<th>Storage Type</th>
<th>Nova</th>
<th>Glance</th>
<th>Cinder</th>
<th>Cinder Backup</th>
<th>Gnocchi</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFS</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Swift</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Ceph</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LVM</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>iSCSI</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
**Gnocchi (Ceilometer's Time Series Database)**

The Gnocchi time series database service is used by Ceilometer. Gnocchi uses either a file system or Ceph (recommended) for the storage backend.

By default, the `/var/lib/gnocchi` directory on a controller node is used. If you use the file system for the storage driver, an NFS share can be used to provide shared storage. Using an NFS share for the storage driver allows for better scaling, but does not provide high availability. To provide high availability for the storage driver, you should use Ceph. If Ceph is enabled, Gnocchi is automatically set to use Ceph as the storage driver backend.

**Networking**

This release of Oracle OpenStack supports the Open vSwitch plug-in with VLANs as L2 isolation mechanism, and VXLAN tunneling.

Oracle is working with its partners to make sure customers have a choice of networking. For specific network plug-ins please contact Oracle or the plug-in vendor.

**Support Subscription Requirements**

Support for Oracle OpenStack is provided as part of the Oracle Premier Support for Oracle Linux. For each deployment node you need a subscription of Oracle Linux Premier Support. For example, for 20 deployment nodes, you must have 20 subscriptions of Oracle Linux Premier Support. For more information about Oracle Linux support, see the Oracle Knowledge Management article that describes the support policy.


A community-based discussion forum is available on the Oracle Technology Network at:

https://community.oracle.com/community/server_%26_storage_systems/linux/openstack
Chapter 4 Known Issues

The following are the known issues, with any workarounds, for Oracle OpenStack Release 5.0:

- Multiple Container Configuration Files Not Supported
- Deployment Fails With a "Command Failed" Error
- Keystone Uses UUIDs after Upgrade
- Keystone UUID Tokens fill the Token Table
- Attaching an Encrypted Device to an Instance Fails
- Unable to Add or Remove Controller Nodes After Initial Deployment
- Deployment Fails to Create Ceph Cluster
- Upgrading Custom Deployment Groups
- The docker-ostk and OpenStack CLI Commands Fail if the Output Contains Unicode Characters
- Creating a Swift Object Fails if the File Name Contains Unicode Characters
- Horizon with British English Locale Does Not Render Correctly
- Horizon Does Not Show Cinder Volume Backups with NFS
- Horizon Unable to Retrieve the Default Volume Type
- Glance Image Property Injection Plug-in Not Supported

You should also check the release notes for:
- Oracle Linux 7, available at https://docs.oracle.com/cd/E52668_01/index.html

Multiple Container Configuration Files Not Supported

Multiple container configuration files are not supported. Any changes to a container's configuration must be made in the main configuration file (for example, /etc/kolla/config/cinder.conf). You cannot separate the configuration into separate files.

**Bug:** 21935577

Deployment Fails With a "Command Failed" Error

If the Docker Engine is not running on a node when you deploy OpenStack, the deployment fails with a Command failed error when starting the Ansible container, for example:

```
TASK [common : Starting Ansible container]  
*****************************  
fatal: [ol7-c4]: FAILED! => {"changed": false, "failed": true, "msg": "ConnectionError(ProtocolError('Connection aborted.', error(2, 'No such file or directory')),)")"}
```
PLAY RECAP
********************************************************************************
ol7-c4                     : ok=3    changed=0    unreachable=0    failed=1
Traceback (most recent call last):
  File "/usr/lib/python2.7/site-packages/kollacli/commands/deploy.py", line66, in take_action
    verbose_level)
  File "/usr/lib/python2.7/site-packages/kollacli/common/ansible/actions.py",line 89, in deploy
    playbook.run()
  File"/usr/lib/python2.7/site-packages/kollacli/common/ansible/playbook.py", line139, in run
    raise e

The Docker Engine must be running on all nodes before you deploy OpenStack. To resolve this issue:

1. Remove the OpenStack services that are currently deployed on the nodes.

   $ kollacli host destroy all

2. Ensure that the Docker Engine is running on all nodes.

   To check that the Docker Engine is running:

   $ systemctl status docker.service

   If the output of this command shows the status of the Docker service to be **inactive (dead)**, start the Docker Engine:

   # systemctl start docker.service

3. From the master node, deploy OpenStack services to the nodes:

   If you are using the Oracle Container Registry, you might need to sign in at
   https://container-registry.oracle.com and accept the Oracle Standard Terms and Restrictions for the
   Oracle software images (see Choosing a Docker Registry) before you deploy.

   $ kollacli deploy

**Bug:** 22979229

**Keystone Uses UUIDs after Upgrade**

The fernet token format is the default token provider for Keystone in Oracle OpenStack Release 5.0 in a new deployment. In Oracle OpenStack Release 4.0, UUIDs were the default Keystone tokens. Upgrading from Oracle OpenStack 4.0 does not upgrade Keystone to use fernet tokens, instead, UUIDs are used.

The **kollacli property set keystone_token_provider** command sets whether to use UUIDs or fernet tokens.

**Workaround:** Reconfigure the deployment to use fernet tokens for Keystone. After the upgrade has been performed, on the master node, run:

$ kollacli property set keystone_token_provider fernet
$ kollacli deploy

**Bug:** 25252687
Keystone UUID Tokens fill the Token Table

The MySQL token table may become full if you use UUIDs as the Keystone authentication token. The Keystone log file on the control node (/var/log/kolla/keystone/keystone.log) may contain errors similar to:

```
(...)
oslo_db.sqlalchemy.exc_DBAPIError exception wrapped from
(pymysql.err.InternalError) (1114, u"The table 'token' is full") [SQL:
"INSERT INTO token (id, expires, extra, valid, user_id, trust_id) VALUES
... InternalError: (1114, u"The table 'token' is full")
```

**Workaround:** Regularly flush expired UUID tokens from the database. On a control node, enter:

```
$ docker exec keystone keystone-manage token_flush
```

Oracle recommends setting up a **cron** job to prevent the expired tokens from filling the database table.

**Bug:** 27566296

Attaching an Encrypted Device to an Instance Fails

If you use the Barbican key manager service to create an encrypted volume (LUKS), you cannot attach the volume to an instance. Nova reports that it cannot format the device because it is still in use.

This is a known issue upstream, see https://bugs.launchpad.net/nova/+bug/1721522.

**Bug:** 26926545

Unable to Add or Remove Controller Nodes After Initial Deployment

Once you have performed an initial deployment, it is currently not possible to add or remove controller nodes.

**Workaround:** To add or remove controller nodes, you must destroy the deployment, add or remove nodes from your deployment configuration, and then deploy.

**Bug:** 27253571

Deployment Fails to Create Ceph Cluster

When deploying the Ceph service, the creation of the Ceph cluster may fail. This may occur if the controller nodes (which run the Ceph Monitor service) are not added in a particular order. The order in which they should be added is using the lowest numerical IP address first, then the remaining controller nodes, in any order. The IP addresses in this case, are those assigned to the network interface on each controller node. The network interface is assigned using the `storage_interface` option. If you do not set the `storage_interface` option, it defaults to the value of `network_interface`. For example, the controller nodes with the IP address on the network interface in this list should be added to the deployment with `control01` (with the lowest numerical IP address of 203.0.113.1) as the first node added:

- **control01**: network interface is 203.0.113.1
- **control02**: network interface is 203.0.113.2
- **control03**: network interface is 203.0.113.3
- **control04**: network interface is 203.0.113.4
Upgrading Custom Deployment Groups

**Workaround:** To work around this issue:

1. If you have already added the controller nodes to the deployment, you must destroy the deployment.
   ```
   $ kollacli host destroy all --includedata
   ```

2. Remove the controller nodes from the deployment. For each controller node, run:
   ```
   $ kollacli host remove node_name
   ```

3. Add the controller node with the lowest numerical IP address, for example:
   ```
   $ kollacli host add control01
   $ kollacli group addhost control control01
   ```

4. Add the remaining controller nodes in any order. For each controller node, run:
   ```
   $ kollacli host add node_name
   $ kollacli group addhost control node_name
   ```

5. Deploy the environment.
   ```
   $ kollacli deploy
   ```

**Bug:** 28438778

### Upgrading Custom Deployment Groups

If you have custom deployment groups, they may be overridden and changed to the default deployment groups during an upgrade. Any custom groups are removed.

**Workaround:** Create custom deployment groups again after the upgrade. Reconfigure and redeploy your environment using:

```
$ kollacli reconfigure
$ kollacli deploy
```

**Bug:** 28433236

### The docker-ostk and OpenStack CLI Commands Fail if the Output Contains Unicode Characters

When you use the `docker-ostk` and the OpenStack CLI to run commands where the output contains Unicode, the commands may fail or display errors. You might see error messages about encoding, such as:

```
f'ascii' codec can't encode characters in position 458-460: ordinal not in range(128)
```

**Bugs:** 27273126, 27476511

### Creating a Swift Object Fails if the File Name Contains Unicode Characters

You cannot create a Swift object if the file name contains Unicode characters.

**Bug:** 27395148
Horizon with British English Locale Does Not Render Correctly

The British English (en-gb) locale does not render correctly in Horizon.

Workaround: Select en using the Horizon settings panel to use American English.

Bug: 28194052

Horizon Does Not Show Cinder Volume Backups with NFS

If you configure Cinder backup to use an NFS share, Horizon does not display the Cinder backup to NFS fields, but instead displays the backup to Swift fields.

Workaround: When backing up a volume, enter the backup name and optional description, and ignore the object storage/container name field. The Cinder volume back up to NFS succeeds, even though the Horizon UI has incorrect fields.

Bug: 28191284

Horizon Unable to Retrieve the Default Volume Type

Horizon may display an error when creating a volume from an image. The error is:

Error: Unable to retrieve the default volume type

This may occur if you are using the Oracle ZFS Storage Appliance (ZFSSA) as the Cinder backend storage.

You can safely ignore this error. A volume is created from the image.

Bug: 28292010

Glance Image Property Injection Plug-in Not Supported

The Glance Image Property Injection Plug-in, which enables the Glance interoperable image import feature, is not supported in this release.

Bug: 28076416
Chapter 5 Accessibility Features

This chapter describes the accessibility features and known issues for the Oracle OpenStack Release 5.0 documentation.

Documentation is provided in HTML and PDF formats. The HTML format is accessible, but the PDF format is not accessible.

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.

<table>
<thead>
<tr>
<th>Task</th>
<th>Access Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Go to the next page</td>
<td>n</td>
</tr>
<tr>
<td>Go to the previous page</td>
<td>p</td>
</tr>
<tr>
<td>Go to the document home page</td>
<td>h</td>
</tr>
<tr>
<td>Go up a level in the document</td>
<td>u</td>
</tr>
<tr>
<td>Activate the Contents tab</td>
<td>c</td>
</tr>
<tr>
<td>Activate the Search tab</td>
<td>s</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Task</th>
<th>Shortcut Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toggle hide and show the sidebar</td>
<td>Ctrl+Left Arrow</td>
</tr>
<tr>
<td>Toggle hide and show page header</td>
<td>Ctrl+Up Arrow</td>
</tr>
</tbody>
</table>

Documentation Accessibility Issues

The following are the known accessibility issues with Oracle OpenStack Release 5.0 documentation:

- Product does not have Accessibility Features documentation (Bug: 26175494)
- 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)