Oracle Cloud Native Environment

Release Notes for Release 2

F96191-10
August 2025

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F96191-10

Contents

Preface

This document contains information about Oracle Cloud Native Environment (Oracle CNE). It includes information on component versions, new features, documentation changes, and known issues for Oracle CNE.

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CVE and Bug Fix Updates

Describes how to find information about CVE and bug fix updates in Oracle Cloud Native Environment (Oracle CNE).

Product enhancements, Common Vulnerabilities, and Exposures (CVEs) and bug fix updates are available for Oracle CNE as described in Oracle Linux: Product Life Cycle Information.

Notices for Common Vulnerabilities and Exposures (CVEs) and bug fix updates for Oracle CNE are available on the Unbreakable Linux Network at:

https://linux.oracle.com/errata

You can subscribe to the `el-errata@oss.oracle.com` email list to receive these notices via email at:

https://oss.oracle.com/mailman/listinfo/el-errata

All Oracle CNE CVE and bug fix update notices are listed on ULN and on the email list mentioned, and aren't included in this document.

You might also find it helpful to check the list of new and updated packages posted on the Oracle Linux yum server available at:

https://yum.oracle.com/whatsnew.html

Changes and bug fixes for the Oracle CNE Command Line Interface (CLI) are also listed on the GitHub project at:

https://github.com/oracle-cne/ocne/releases

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Component Versions

Describes the version information for components included with Oracle CNE.

Oracle Container Host for Kubernetes Image

Kubernetes Release 1.32 is included with Oracle CNE Release 2.2.

The Oracle Container Host for Kubernetes (OCK) image includes both the host Oracle Linux OS, and the Kubernetes software distribution. The OCK image is distributed on the Oracle Container Registry.

A bootable container image, in the Qcow2 format, is available at:

container-registry.oracle.com/olcne/ock

An OSTree commit based container image, is available at:

container-registry.oracle.com/olcne/ock-ostree

Both images use the container label for the Kubernetes version they match, for example, 1.32.

Kubernetes minor and patch updates are provided with updated container images. For information on updating Kubernetes, see Oracle Cloud Native Environment: Kubernetes Clusters.

Application Catalog

A list of the cloud native applications available in the Oracle CNE application catalog for each release is available on the Oracle CNE GitHub project at:

https://github.com/oracle-cne/catalog/

CLI

A list of the available versions of the Oracle CNE Command Line Interface (CLI) is available on the Oracle CNE GitHub project at:

https://github.com/oracle-cne/ocne/releases

If you have the CLI installed, you can see the version number using the `ocne info` command:

```
ocne info
```

To update to the latest CLI, use:

```
sudo dnf update ocne
```

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New Features and Notable Changes

Lists the new features and notable changes Oracle CNE releases.

This chapter lists the new features and notable changes in each Oracle CNE release. For more details on bug fixes and other changes, see the release information on the Oracle CNE GitHub page.

Release 2.2.0

This section lists the notable changes in Release 2.2.0 of Oracle CNE.

Kubernetes
Kubernetes is updated to Release 1.32.

CLI
The CLI is updated to Release 2.2.

Oracle Linux Virtualization Manager Provider
A new provider is added to deploy Kubernetes clusters on Oracle Linux Virtualization Manager (the `olvm` provider). The `olvm` provider is an implementation of the Kubernetes Cluster API. The `olvm` provider uses the oVirt REST API to communicate with Oracle Linux Virtualization Manager.
For more information on the Oracle Linux Virtualization Manager provider, see Oracle Cloud Native Environment: Kubernetes Clusters.

oVirt CSI Driver
An oVirt Container Storage Interface (CSI) driver is included with the Oracle Linux Virtualization Manager provider. The driver is installed into an Oracle Linux Virtualization Manager cluster by default, and automatically creates the required Kubernetes Secret, ConfigMap, and CsiDriver objects. The oVirt CSI driver lets you create persistent storage for Kubernetes applications using PersistentVolumes, which are backed by Oracle Linux Virtualization Manager storage disks.
To create an application that uses persistent storage, create a StorageClass, and a PersistentVolumeClaim, then set the application to use the PersistentVolumeClaim. When you start the application, a PersistentVolume is created on an Oracle Linux Virtualization Manager storage disk. Ensure you set the following in a StorageClass:

- `provisioner: csi.ovirt.org`
- `storageDomainName`: Set this to the name of the Oracle Linux Virtualization Manager storage domain. This is where PersistentVolumes are created.
- `thinProvisioning`: Set this to either `true` or `false`.
- `fsType`: Set the file system type, for example `ext4`. The driver formats the volume if no file system exists on the disk.

An example that uses this driver is in the Oracle CNE upstream documentation. For more information on creating Kubernetes storage objects, see the Kubernetes upstream documentation.

The default driver configuration is suitable for most deployments, however configuration options are available that can be set in a cluster configuration file. For information on the driver options, see the configuration file options for the Oracle Linux Virtualization Manager provider in Oracle Cloud Native Environment: Kubernetes Clusters.
For more information on the oVirtCSI driver, see the Oracle CNE upstream documentation.

Release 2.1.1

This section lists the notable changes in Release 2.1.1 of Oracle CNE.

CLI
The CLI is updated to Release 2.1.1.

OCI Configuration Option
The OCI provider has a new configuration option to set the connection profile to use in the OCI CLI configuration file. This improvement means you can have more than one connection profile in the OCI CLI configuration file and set it in a cluster configuration file. For information on the CLI configuration file options for the OCI provider, see Oracle Cloud Native Environment: Kubernetes Clusters.

IPv6
Kubernetes clusters can be provisioned using IPv6 and IPv6/IPv4 dual stack configurations.

Release 2.1.0

This section lists the notable changes in Release 2.1.0 of Oracle CNE.

Kubernetes
Kubernetes is updated to Release 1.31.

CLI
The CLI is updated to Release 2.1.

OCI Cluster Upgrades
Kubernetes can be upgraded in OCI clusters using the Kubernetes Cluster API. This method provisions new nodes, running an updated OCK image, that includes an updated version of Kubernetes. Old nodes are then scaled out. In place upgrades are also available for situations where the compute instance must remain the same. For information on upgrading clusters, see Oracle Cloud Native Environment: Kubernetes Clusters.

Release 2.0.5

This section lists the notable changes in Release 2.0.5 of Oracle CNE.

CLI information
A new `ocne info` command is added to show information about the CLI, including the release number and environment variable values that are used by the CLI. For more information on the `ocne info` command, see Oracle Cloud Native Environment: CLI.

Default configuration file
A new `OCNE_DEFAULTS` environment variable is available to set the location of the default configuration file. This might be useful when testing using different default configuration settings. For more information on the environment variables used by the CLI, see Oracle Cloud Native Environment: CLI.

Cluster dump options
The `ocne cluster dump` command is updated to include new options. The `--json` option dumps cluster resources in JSON format, instead of the default YAML. The `--managed` option dumps cluster resources as managed fields so that Kubernetes can track changes to those resources. For more information on the `ocne cluster dump` command, see Oracle Cloud Native Environment: CLI.

Release 2.0.4

This section lists the notable changes in Release 2.0.4 of Oracle CNE.

OCI provider
Including the Virtual Cloud Network and load balancer subnets in a cluster configuration file is no longer required. The CLI detects these values automatically, if possible. For more information the OCI provider, see Oracle Cloud Native Environment: Kubernetes Clusters.

Release 2.0.2

This section lists the notable changes in Release 2.0.2 of Oracle CNE.

Application updates
The `ocne application update` command is updated to include new options. The `--reset-values` option resets the values to the ones built into the chart. The `--catalog` option sets the name of the catalog that contains the application. For more information the `ocne application update` command, see Oracle Cloud Native Environment: CLI.

Release 2.0.1

This section lists the notable changes in Release 2.0.1 of Oracle CNE.

Cluster console
The `ocne cluster console` command is updated to include new options. The `--direct` option starts the console `chroot`ed to the root of the target node's file system. The `--` option runs a command on the console and returns the results. For more information the `ocne cluster console` command, see Oracle Cloud Native Environment: CLI.

Release 2.0.0

Release 2.0.0 of Oracle CNE provides a new way of creating and managing Kubernetes clusters, compared to previous releases. This section lists new features introduced in this release.

Kubernetes

Kubernetes is updated to Release 1.30.

CLI

The Oracle CNE Command Line Interface (CLI) is the command line tool to create and manage Kubernetes clusters in Oracle CNE. The CLI (`ocne` command) includes a help system to show all command options, and a set of configuration files at various levels to configure the environment and Kubernetes clusters.

> **Note**
>
> This is a new CLI and isn't backwardly compatible with the CLI (`olcnectl`) in previous releases.

For more information on using the CLI, see Oracle Cloud Native Environment: CLI.

Oracle Container Host for Kubernetes (OCK) Images

Oracle CNE includes a CLI that can manage the life cycle of Kubernetes clusters, using OSTree based container images. The container image includes both the host Oracle Linux OS, and the Kubernetes software distribution. The image is deployed to hosts or Virtual Machines (VMs) to create nodes in a Kubernetes cluster. This image is referred to in this documentation as the Oracle Container Host for Kubernetes (OCK) image.

The OCK image is distributed on the Oracle Container Registry in the following formats:

Bootable image
This is a container image in the Qcow2 format, available at:
container-registry.oracle.com/olcne/ock
The bootable image contains a single VM image in the Qcow2 format, and is used to create boot media for virtualized platforms. This image is used as the boot media for clusters created with the libvirt and Kubernetes Cluster API providers (the OCI and Oracle Linux Virtualization Manager providers).
By default, the image is configured to work with the libvirt provider. A conversion of the boot image to the appropriate format for OCI and Oracle Linux Virtualization Manager is done when you upload the image.

OSTree image
This is an OSTree commit based container image, available at:
container-registry.oracle.com/olcne/ock-ostree
This image is used as the basis for an OSTree archive for customized installations using the Bring Your Own provider.
This image is also used for updating cluster nodes to stage patch updates, and to update to the next Kubernetes minor release.
For information on OSTree containers, see the upstream OSTree documentation.

For more information on the OCK image, see Oracle Cloud Native Environment: Kubernetes Clusters.

Cluster Providers

Oracle CNE includes the following providers, which use the OCK image to create Kubernetes clusters:

libvirt Provider
The libvirt provider can be used to provision clusters in a Kernel-based Virtual Machine/QEMU (KVM) environment. This is the default provider.

OCI Provider
The OCI provider can be used to create clusters on OCI. This provider uses the Kubernetes Cluster API to provision the clusters.

Bring Your Own Provider
The Bring Your Own provider can be used to create clusters on bare metal or other virtual instances, not provided explicitly by Oracle CNE.

For information on using these providers to create clusters, see Oracle Cloud Native Environment: Kubernetes Clusters.

Application Catalogs

Oracle CNE provides application catalogs for deploying Cloud Native applications into a Kubernetes cluster.

An application catalog is a searchable collection of software that can be installed into a Kubernetes cluster. Installed catalogs can be searched using both the Oracle CNE Command Line Interface (CLI) and the User Interface (UI).

An application catalog is set up in two flavors: a Helm repository, and a service that's compatible with Artifact Hub (an external catalog). The Oracle catalog is a Helm repository, while an external catalog typically points to artifacthub.io and is compatible with Artifact Hub.

For information on using application catalogs and installing applications into a cluster, see Oracle Cloud Native Environment: Applications.

Web-Based UI

The Oracle CNE UI provides a web-based interface to manage the maintenance and installation of Kubernetes cluster resources, and applications.

The UI is based on the open source Kubernetes UI Headlamp application. For more information on the Headlamp project, see the upstream Headlamp documentation.

For information on installing the UI, see Oracle Cloud Native Environment: Kubernetes Clusters and for information on using the UI to install applications, see Oracle Cloud Native Environment: Applications.

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Known Issues

Read the known issues and limitations when using Oracle CNE Release 2.

Kata Containers on aarch64 Hosts

Kata Containers can only be run using bare metal aarch64 hosts. Nested virtualization is required on virtual hosts to create Kata Containers. Nested virtualization isn't available on aarch64 virtual hosts.

Kata Containers with Custom OCK Images

Kata Containers requires Oracle Linux with the Unbreakable Enterprise Kernel (UEK) as the OS in the OCK image. Any custom OCK images built using another kernel, such as the Red Hat Compatible Kernel (RHCK), don't include UEK, so Kata Containers can't start up. If you build a custom image using OCK Image Builder, ensure you use Oracle Linux with UEK as the OS.

Oracle Linux Virtualization Manager Provider with DHCP

Dynamic Host Configuration Protocol (DHCP) can't be used to assign IP addresses to the VMs used for Kubernetes nodes with the Oracle Linux Virtualization Manager provider. Instead, provide a range of IP addresses for VMs to use as Kubernetes nodes, and set an IP address for the built-in Keepalived and NGINX load balancer for control plane nodes (the virtual IP).

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Documentation Changes

Lists the notable changes to the Oracle CNE documentation.

This chapter lists notable changes to the Oracle CNE documentation.

Release 2

A new set of documents are provided in this release. The document list for this release is:

Oracle Cloud Native Environment: Release Notes
This document provides an overview of the new features introduced in Oracle CNE.

Oracle Cloud Native Environment: Concepts
This document provides an overview of the different components of Oracle CNE and explains key concepts that are essential to working with Oracle CNE.

Oracle Cloud Native Environment: Quick Start
This document guides you through creating a Kubernetes cluster using the Oracle CNE CLI (CLI) with the default `libvirt` provider. It also covers installing applications from the default Oracle application catalog, and accessing the web-based Oracle CNE UI.

Oracle Cloud Native Environment: Kubernetes Clusters
This document covers using the Oracle Container Host for Kubernetes (OCK) image to create and manage Kubernetes clusters with the cluster providers. The book also shows how you can use cluster templates and configuration files to create customized clusters. Administration operations, such as updating Kubernetes clusters with the latest OCK images, are also included.

Oracle Cloud Native Environment: CLI
This document provides information on how to install and use the CLI. The document provides a CLI command reference with syntax and usage examples, and also shows how to set options in YAML configuration files to customize the CLI and clusters.

Oracle Cloud Native Environment: Applications
This document covers the different aspects of application management, for example searching for, installing, and updating applications, hosted in the Oracle Catalog, into a Kubernetes cluster. The document covers using both the CLI and the UI to perform these tasks.

Oracle Cloud Native Environment: Kubernetes
This document provides introductory information on the architecture of Kubernetes. It also includes an entry level tutorial on using Kubernetes and Kata Containers.

Oracle Cloud Native Environment: Oracle Container Host for Kubernetes Image Builder
This document includes information on the Oracle Container Host for Kubernetes Image Builder (OCK Image Builder). This is a tool that builds bootable media for Oracle Container Host for Kubernetes (OCK), based on a treefile configuration.

Oracle Cloud Native Environment: Upgrade to Release 2
This document provides information on how to use the Bring Your Own (BYO) provider to upgrade from Oracle CNE Release 1.9 to Release 2.