

# Oracle Cloud Native Environment Updates and Upgrades for Release 1.7



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Oracle Cloud Native Environment Updates and Upgrades for Release 1.7,  
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# Preface

This document contains information about updating or upgrading Oracle Cloud Native Environment.

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## Conventions

The following text conventions are used in this document:

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

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# 1

## Introduction to Updating and Upgrading

This document shows you how to *update* Oracle Cloud Native Environment and Kubernetes to the latest errata release, or *upgrade* from Release 1.6 to Release 1.7. This chapter uses the term *upgrade* to mean both upgrade and update as the overall process is the same.

The first step to upgrading is to upgrade the Oracle Cloud Native Environment software packages. This involves stopping the Platform API Server or Platform Agent on the node, upgrading the Oracle Cloud Native Environment packages, and restarting the Platform API Server or Platform Agent.

The next step is to upgrade the Kubernetes software packages. This is performed by the Platform API Server when you issue the appropriate `olcnectl module update` command.

You can upgrade a highly available cluster without bringing down the cluster. Control plane nodes are upgraded serially, so as one control plane node is taken offline, another control plane node takes control of the cluster. In a cluster with a single control plane node, the control plane node is offline for a short time while the upgrade is performed.

Worker nodes are also upgraded serially. If applications are running on more than one worker node, they remain up, and available during an upgrade.

### ! Important:

Certain Kubernetes rules might prevent a node from being taken offline for upgrade. A PodDisruptionBudget is one of these objects. For a node to be taken offline, increase the number of running pods to exceed the MinAvailable value. For more information about PodDisruptionBudgets see the upstream [Kubernetes documentation](#).

Before an upgrade begins, a back up is taken of the control plane nodes to help in any recovery that might be needed if a failure occurs.

### ! Important:

In the event of a module update failure, you can recover control plane nodes using the back up. For information on restoring from a control plane node back up, see [Kubernetes Module](#).

The Kubernetes release (either an errata or a new release) is then upgraded on each node. Control plane nodes are upgraded first, then the worker nodes. During the node upgrade process, the following steps are performed:

1. The node is drained (using the `kubectl drain` command) from the cluster, which evicts the pods.

2. The `kubeadm` package is upgraded.
3. The node is upgraded using the `kubeadm upgrade` command.
4. The `kubectl` and `kubelet` packages are upgraded.
5. The `kubelet` service is restarted.
6. The node is returned to the cluster (using the `kubectl uncordon` command) and is made available to run pods.

To update or upgrade Kubernetes, you update the Kubernetes module in an environment using the `olcnextl module update` command. The `olcnextl module update` command options shown in the following chapters are the minimum commands required to upgrade Kubernetes. You might also want to use these extra options:

- The `--generate-scripts` option generates scripts you can run for each node in the event of any validation failures during the update of the module. A script is created for each node in the module, saved to the local directory, and named `hostname:8090.sh`.
- The `--force` option suppresses the prompt displayed to confirm you want to update the module.
- The `--container-registry` option lets you specify a new container registry that becomes the default whenever running updates or upgrades. For example:  

```
--container-registry container-registry-austin-mirror.oracle.com/  
olcne/
```



# 2

## Updating the Host OS

To update the host OS on the nodes in an Oracle Cloud Native Environment, you must disable the Oracle Cloud Native Environment software package repositories when you perform the update. This avoids updates to the Oracle Cloud Native Environment software packages during the OS update process.

For example, if you're using the Oracle Linux yum server for system updates, update the host OS using:

```
sudo dnf update --disablerepo ol8_olcne17
```

# 3

## Updating to an Errata Release

This section describes how to update Oracle Cloud Native Environment to an errata release. You can use this procedure to update Kubernetes to the latest errata release. This updates the environment within the same *major.minor* release. For example, Release 1.7 is updated to the latest available software.

Perform each step in this chapter to update an environment to an errata release.

### ! Important:

Don't change the ULN channel or Oracle Linux yum server repository. They must remain as you set them during the installation.

## Updating the Operator Node

Update the operator node with the new Oracle Cloud Native Environment software packages.

To update the operator node:

1. On the operator node, stop the `olcne-api-server` service:

```
sudo systemctl stop olcne-api-server.service
```

2. Update the Platform CLI, Platform API Server, and utilities packages.

```
sudo dnf upgrade olcnectl olcne-api-server olcne-utils
```

3. Start the `olcne-api-server` service:

```
sudo systemctl start olcne-api-server.service
```

## Updating the Kubernetes Nodes

Update the Kubernetes nodes with the new Oracle Cloud Native Environment packages.

On the operator node, use the `olcnectl environment update` command to update the Platform Agent on each Kubernetes node in the environment. This example updates the Platform Agent on all nodes in the `myenvironment` environment.

```
olcnectl environment update olcne \  
--environment-name myenvironment
```

The Platform Agent is updated and the service is restarted on each node.

## Updating the Kubernetes Cluster

Update the cluster to the latest Kubernetes errata release.

On the operator node, use the `olcnectl module update` command to update to the latest Kubernetes errata release. This example updates a Kubernetes module named `mycluster` in the `myenvironment` environment to the latest Kubernetes errata release.

```
olcnectl module update \  
--environment-name myenvironment \  
--name mycluster
```

If you're using the NGINX load balancer deployed by the Platform CLI, also update NGINX on the control plane nodes. You specify the location from which to pull the NGINX container image used to update NGINX using the `--nginx-image` option. For example, include this extra line in the `olcnectl module update` command to update NGINX from the Oracle Container Registry:

```
--nginx-image container-registry.oracle.com/olcne/nginx:1.17.7
```

### Important:

Ensure you update to the latest NGINX release for the Oracle Cloud Native Environment release. To get the version number of the latest NGINX container image, see [Release Notes](#).

The nodes in the cluster are updated to the latest errata release and the cluster's health is validated.

## Updating Istio

If you have the Istio module installed, you must also update it.

### Note:

Ensure you update to the latest release of Istio. To get the version number of the latest Istio release for Oracle Cloud Native Environment Release 1.7 see [Release Notes](#).

To update Istio:

On the operator node, use the `olcnectl module update` command to update to the latest Istio release available for Oracle Cloud Native Environment Release 1.7. This

example updates an Istio module named `myistio` in the `myenvironment` environment to Istio Release 1.17.8.

```
olcnectl module update \  
--environment-name myenvironment \  
--name myistio \  
--istio-version 1.17.8
```

The `--istio-version` option specifies the release to which you want to update. This example uses release number 1.17.8.

When you update Istio, the update iterates through each Istio release up to Release 1.17.8. When each node in the cluster is updated to the next Istio release, the cluster's health is validated. If the cluster is healthy, the cycle of back up, update to the next release, and cluster validation starts again, until all nodes are updated to the latest Istio release.

## Updating KubeVirt

If you have the KubeVirt module installed, you must also update it.



### Note:

Ensure you update to the latest release of KubeVirt. To get the version number of the latest KubeVirt release for Oracle Cloud Native Environment Release 1.7 see [Release Notes](#).

To update KubeVirt:

On the operator node, use the `olcnectl module update` command to update to the latest KubeVirt release available for Oracle Cloud Native Environment Release 1.7. This example updates a KubeVirt module named `mykubevirt` in the `myenvironment` environment to KubeVirt Release 0.58.0.

```
olcnectl module update \  
--environment-name myenvironment \  
--name mykubevirt \  
--kubevirt-version 0.58.0
```

The `--kubevirt-version` option specifies the release to which you want to update. This example uses release number 0.58.0.

## Updating Operator Lifecycle Manager

If you have the Operator Lifecycle Manager module installed, you must also update it.

 **Note:**

Ensure you update to the latest release of Operator Lifecycle Manager. To get the version number of the latest Operator Lifecycle Manager release for Oracle Cloud Native Environment Release 1.7 see [Release Notes](#).

To update Operator Lifecycle Manager:

On the operator node, use the `olcnectl module update` command to update to the latest Operator Lifecycle Manager release available for Oracle Cloud Native Environment Release 1.7. This example updates a Operator Lifecycle Manager module named `myolm` in the `myenvironment` environment to Operator Lifecycle Manager Release 0.23.1.

```
olcnectl module update \  
--environment-name myenvironment \  
--name myolm \  
--olm-version 0.23.1
```

The `--olm-version` option specifies the release to which you want to update. This example uses release number 0.23.1.

# 4

## Upgrading to Release 1.7

This section describes how to upgrade Oracle Cloud Native Environment from Release 1.6 to Release 1.7.

When the Oracle Cloud Native Environment packages and the Kubernetes cluster are upgraded to Release 1.7, you can use the new features in this release.

Perform each step in this chapter to upgrade an environment from Release 1.6 to Release 1.7.

### ! Important:

Before you upgrade to Release 1.7, update to the latest errata release of Oracle Cloud Native Environment Release 1.6. For information on updating the environment, see [Updates and Upgrades for Release 1.6](#).

### ! Important:

If you have the Gluster module installed, upgrade using the steps shown in [Upgrading With the Gluster Module Installed](#).

## Changing the Software Packages Source

This section contains information on setting the location for the software packages for the OS on which you want to upgrade the Oracle Cloud Native Environment software.

### Oracle Linux 8

If the OS on the nodes is Oracle Linux 8, update the package source using the information in this section.

If you're using the Oracle Linux yum server for system updates, on each node update the `oracle-olcne-release-el8` release package. Enable the `ol8_olcne17` repository and disable the repositories for the previous releases. Disable the following repositories:

- `ol8_olcne16`
- `ol8_olcne15`
- `ol8_olcne14`
- `ol8_olcne13`
- `ol8_olcne12`

On each node, run:

```
sudo dnf update oracle-olcne-release-el8
sudo dnf config-manager --enable ol8_olcne17
sudo dnf config-manager --disable ol8_olcne16 ol8_olcne15 ol8_olcne14
ol8_olcne13 ol8_olcne12
```

If the systems are registered to use ULN, use the ULN web interface to subscribe each system to the `ol8_x86_64_olcne17` channel. Ensure you unsubscribe each system from the following channels:

- `ol8_x86_64_olcne16`
- `ol8_x86_64_olcne15`
- `ol8_x86_64_olcne14`
- `ol8_x86_64_olcne13`
- `ol8_x86_64_olcne12`

## Upgrading the Operator Node

Upgrade the operator node with the new Oracle Cloud Native Environment software packages.

To upgrade the operator node on Oracle Linux:

1. On the operator node, stop the `olcne-api-server` service:

```
sudo systemctl stop olcne-api-server.service
```

2. Update the Platform CLI, Platform API Server, and utilities packages:

```
sudo dnf update olcnectl olcne-api-server olcne-utils
```

3. Start the `olcne-api-server` service:

```
sudo systemctl start olcne-api-server.service
```

## Upgrading the Kubernetes Nodes

Upgrade the Kubernetes nodes with the new Oracle Cloud Native Environment software packages.

On the operator node, use the `olcnectl environment update` command to upgrade the Platform Agent on each node in the environment. This example upgrades the Platform Agent on all nodes in the `myenvironment` environment.

```
olcnectl environment update olcne \  
--environment-name myenvironment
```

The Platform Agent is upgraded and the service is restarted on each node.

## Upgrading the Kubernetes Cluster

Upgrade the cluster to Kubernetes Release 1.26.10.

On the operator node, use the `olcnectl module update` command to upgrade to the latest Kubernetes release available for Oracle Cloud Native Environment Release 1.7. This example upgrades a Kubernetes module named `mycluster` in the `myenvironment` environment to Kubernetes Release 1.26.10.

```
olcnectl module update \  
--environment-name myenvironment \  
--name mycluster \  
--kube-version 1.26.10
```

The `--kube-version` option specifies the release to which you want to upgrade. This example uses release number 1.26.10.

### ! Important:

Ensure you upgrade to the latest Kubernetes release. To get the version number of the latest Kubernetes release for Oracle Cloud Native Environment Release 1.7, see [Release Notes](#).

When each node in the cluster is upgraded to the latest Kubernetes release, the cluster's health is validated and the upgrade completes.

## Upgrading the Calico Module

If you have the Calico module installed, you must upgrade it.

### ! Important:

Ensure you upgrade to the latest releases for each component in this section. To get the version numbers of the latest releases for Oracle Cloud Native Environment Release 1.7, see [Release Notes](#).

To upgrade Calico, on the operator node, use the `olcnectl module update` command to upgrade to the latest Calico release available for Oracle Cloud Native Environment Release 1.7. This example upgrades an Calico module named `mycalico` in the `myenvironment` environment to Calico Release 3.25.1.

```
olcnectl module update \  
--environment-name myenvironment \  
--name mycalico \  
--calico-version 3.25.1
```



The `--calico-version` option specifies the release to which you want to upgrade. This example uses release number 3.25.1.

## Upgrading the Multus Module

If you have the Multus module installed, you must upgrade it.

### ! Important:

Ensure you upgrade to the latest releases for each component in this section. To get the version numbers of the latest releases for Oracle Cloud Native Environment Release 1.7, see [Release Notes](#).

To upgrade Multus, on the operator node, use the `olcnectl module update` command to upgrade to the latest Multus release available for Oracle Cloud Native Environment Release 1.7. This example upgrades an Multus module named `mymultus` in the `myenvironment` environment to Multus Release 4.0.1.

```
olcnectl module update \  
--environment-name myenvironment \  
--name mymultus \  
--multus-version 4.0.1
```

The `--multus-version` option specifies the release to which you want to upgrade. This example uses release number 4.0.1.

## Upgrading the MetalLB Module

If you have the MetalLB module installed, you must also upgrade it.

To upgrade the MetalLB module, on the operator node, use the `olcnectl module update` command. This example upgrades the module named `mymetallb` in the `myenvironment` environment to the MetalLB module Release 0.13.9

```
olcnectl module update \  
--environment-name myenvironment \  
--name mymetallb \  
--metallb-version 0.13.9
```

The `--metallb-version` option specifies the release to which you want to upgrade. This example uses release number 0.13.9.

### ! Important:

Ensure you upgrade to the latest release of the MetalLB module. To get the version numbers of the latest releases for Oracle Cloud Native Environment Release 1.7, see [Release Notes](#).

## Upgrading the Istio Module

If you have the Istio module installed, you must also upgrade it.

### ! Important:

Ensure you upgrade to the latest releases for each component in this section. To get the version numbers of the latest releases for Oracle Cloud Native Environment Release 1.7, see [Release Notes](#).

To upgrade Istio, on the operator node, use the `olcnectl module update` command to upgrade to the latest Istio release available for Oracle Cloud Native Environment Release 1.7. This example upgrades an Istio module named `myistio` in the `myenvironment` environment to Istio Release 1.17.8.

```
olcnectl module update \  
--environment-name myenvironment \  
--name myistio \  
--istio-version 1.17.8
```

The `--istio-version` option specifies the release to which you want to upgrade. This example uses release number 1.17.8.

When you upgrade to Istio Release 1.17.8, the update iterates through each Istio release up to Release 1.17.8. When each node in the cluster is upgraded to the next Istio release, the cluster's health is validated. If the cluster is healthy, the cycle of back up, upgrade to the next release, and cluster validation starts again, until all nodes are upgraded to the latest Istio release.

## Upgrading With the Gluster Module Installed

If you have the Gluster module installed, you need to perform the upgrade to Oracle Cloud Native Environment Release 1.7 using a different method. This is required as the Gluster module isn't included with Release 1.7, so you can't upgrade it. This section shows you how to upgrade an environment when the Gluster module is installed.

During the upgrade, you need to install the Rook module and set up a Ceph cluster and storage to replace the Gluster storage. When the Ceph storage is set up, you can migrate Kubernetes applications to use Ceph instead of Gluster. After the applications are migrated, you upgrade the Kubernetes module, and any other modules.

To upgrade to Release 1.7 when you have the Gluster module installed:

1. Change the software package sources using the steps in [Changing the Software Packages Source](#).
2. Upgrade the operator node using the steps in [Upgrading the Operator Node](#).
3. Upgrade the Oracle Cloud Native Environment software on the Kubernetes nodes using the steps in [Updating the Kubernetes Nodes](#).
4. Install the Rook module and set up Ceph storage using the information in [Rook Module](#).

5. Migrate the Kubernetes applications to use the Ceph storage. The method to perform the migration from Gluster to Ceph is beyond the scope of this documentation. No single method is available to perform this migration. You must, at least, change any PersistentVolumeClaims to use the new Ceph StorageClasses you created when you set up Ceph.
6. On the operator node, remove the Gluster module using the `olcnectl module uninstall` command:

```
olcnectl module uninstall \  
--environment-name environment_name \  
--name module_name
```

7. Upgrade the Kubernetes module using the steps in [Upgrading the Kubernetes Cluster](#).
8. Upgrade any other modules you have installed, as outlined in this guide.