



# Red Hat OpenStack Platform 16.1

## Keeping Red Hat OpenStack Platform Updated

Performing minor updates of Red Hat OpenStack Platform



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Performing minor updates of Red Hat OpenStack Platform

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## Abstract

This document provides procedures to perform a minor update of your Red Hat OpenStack Platform environment.

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# CHAPTER 1. INTRODUCTION

This document provides a workflow to help keep your Red Hat OpenStack Platform 16.1 environment updated with the latest packages and containers.

This guide provides an upgrade path through the following versions:

Old Overcloud Version	New Overcloud Version
Red Hat OpenStack Platform 16.0	Red Hat OpenStack Platform 16.1.z
Red Hat OpenStack Platform 16.1	Red Hat OpenStack Platform 16.1.z

## 1.1. HIGH LEVEL WORKFLOW

The following table provides an outline of the steps required for the upgrade process:

Step	Description
Updating the undercloud	Update the undercloud to the latest OpenStack Platform 16.1.z version.
Updating the overcloud	Update the overcloud to the latest OpenStack Platform 16.1.z version.
Updating the Ceph Storage nodes	Upgrade all Ceph Storage services.
Finalize the upgrade	Run the convergence command to refresh your overcloud stack.

## CHAPTER 2. PREPARING FOR A MINOR UPDATE

You must follow some preparation steps on the undercloud and overcloud before you begin the process to update **Red Hat OpenStack Platform 16.1** to the latest minor release.

### 2.1. LOCKING THE ENVIRONMENT TO A RED HAT ENTERPRISE LINUX RELEASE

Red Hat OpenStack Platform 16.1 is supported on Red Hat Enterprise Linux 8.2. Prior to performing the update, lock the undercloud and overcloud repositories to the Red Hat Enterprise Linux 8.2 release to avoid upgrading the operating system to a newer minor release.

#### Procedure

1. Log in to the undercloud as the **stack** user.
2. Source the **stackrc** file:

```
$ source ~/stackrc
```
3. Edit your overcloud subscription management environment file, which is the file that contains the **RhsmVars** parameter. The default name for this file is usually **rhsm.yml**.
4. Check your subscription management configuration for the **rhsm\_release** parameter. If this parameter is not set, add this parameter and set the parameter to 8.2:

```
parameter_defaults:
  RhsmVars:
    ...
    rhsm_username: "myusername"
    rhsm_password: "p@55w0rd!"
    rhsm_org_id: "1234567"
    rhsm_pool_ids: "1a85f9223e3d5e43013e3d6e8ff506fd"
    rhsm_method: "portal"
    rhsm_release: "8.2"
```

5. Save the overcloud subscription management environment file.
6. Create a static inventory file of your overcloud:

```
$ tripleo-ansible-inventory --ansible_ssh_user heat-admin --static-yaml-inventory
~/inventory.yaml
```

If you use an overcloud name different to the default overcloud name of **overcloud**, set the name of your overcloud with the **--plan** option.

7. Create a playbook that contains a task to lock the operating system version to Red Hat Enterprise Linux 8.2 on all nodes:

```
$ cat > ~/set_release.yaml <<'EOF'
- hosts: all
  gather_facts: false
  tasks:
    - name: set release to 8.2
```



```
command: subscription-manager release --set=8.2
become: true
EOF
```

- Run the **set\_release.yaml** playbook:

```
$ ansible-playbook -i ~/inventory.yaml -f 25 ~/set_release.yaml --limit
undercloud,Controller,Compute
```

Use the **--limit** option to apply the content to all Red Hat OpenStack Platform nodes. Do not run this playbook against Ceph Storage nodes because you are most likely using a different subscription for these nodes.



### NOTE

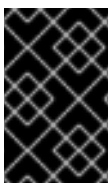
To manually lock a node to a version, log in to the node and run the **subscription-manager release** command:

```
$ sudo subscription-manager release --set=8.2
```

## 2.2. CHANGING TO EXTENDED UPDATE SUPPORT (EUS) REPOSITORIES

Your Red Hat OpenStack Platform subscription includes repositories for Red Hat Enterprise Linux 8.2 Extended Update Support (EUS). The EUS repositories include the latest security patches and bug fixes for Red Hat Enterprise Linux 8.2. Switch to the following repositories before performing a minor version update.

Standard Repository	EUS Repository
rhel-8-for-x86_64-baseos-rpms	rhel-8-for-x86_64-baseos-eus-rpms
rhel-8-for-x86_64-appstream-eus-rpms	rhel-8-for-x86_64-appstream-eus-rpms
rhel-8-for-x86_64-highavailability-rpms	rhel-8-for-x86_64-highavailability-eus-rpms



### IMPORTANT

You must use EUS repositories to retain compatibility with a specific version of Podman. Later versions of Podman are untested for this Red Hat OpenStack Platform release and can cause unexpected results.

### Procedure

- Log in to the undercloud as the **stack** user.
- Source the **stackrc** file:

```
$ source ~/stackrc
```

3. Edit your overcloud subscription management environment file, which is the file that contains the **RhsmVars** parameter. The default name for this file is usually **rhsm.yml**.
4. Check the **rhsm\_repos** parameter in your subscription management configuration. If this parameter does not include the EUS repositories, change the relevant repositories to the EUS versions:

```
parameter_defaults:
  RhsmVars:
    rhsm_repos:
      - rhel-8-for-x86_64-baseos-eus-rpms
      - rhel-8-for-x86_64-appstream-eus-rpms
      - rhel-8-for-x86_64-highavailability-eus-rpms
      - ansible-2.9-for-rhel-8-x86_64-rpms
      - advanced-virt-for-rhel-8-x86_64-rpms
      - openstack-16.1-for-rhel-8-x86_64-rpms
      - rhceph-4-tools-for-rhel-8-x86_64-rpms
      - fast-datapath-for-rhel-8-x86_64-rpms
```

5. Save the overcloud subscription management environment file.
6. Create a static inventory file of your overcloud:

```
$ tripleo-ansible-inventory --ansible_ssh_user heat-admin --static-yaml-inventory
~/inventory.yaml
```

If you use an overcloud name different to the default overcloud name of **overcloud**, set the name of your overcloud with the **--plan** option.

7. Create a playbook that contains a task to set the repositories to Red Hat Enterprise Linux 8.2 EUS on all nodes:

```
$ cat > ~/change_eus.yaml <<'EOF'
- hosts: all
  gather_facts: false
  tasks:
    - name: change to eus repos
      command: subscription-manager repos --disable=rhel-8-for-x86_64-baseos-rpms --
disable=rhel-8-for-x86_64-appstream-rpms --disable=rhel-8-for-x86_64-highavailability-rpms
--enable=rhel-8-for-x86_64-baseos-eus-rpms --enable=rhel-8-for-x86_64-appstream-eus-
rpms --enable=rhel-8-for-x86_64-highavailability-eus-rpms
      become: true
EOF
```

8. Run the **change\_eus.yaml** playbook:

```
$ ansible-playbook -i ~/inventory.yaml -f 25 ~/change_eus.yaml --limit
undercloud,Controller,Compute
```

Use the **--limit** option to apply the content to all Red Hat OpenStack Platform nodes. Do not run this playbook against Ceph Storage nodes because you are most likely using a different subscription for these nodes.

## 2.3. UPDATING RED HAT OPENSTACK PLATFORM AND ANSIBLE REPOSITORIES

Update your repositories to use Red Hat OpenStack Platform 16.1 and Ansible 2.9 packages.

### Procedure

1. Log in to the undercloud as the **stack** user.
2. Source the **stackrc** file:

```
$ source ~/stackrc
```

3. Edit your overcloud subscription management environment file, which is the file that contains the **RhsmVars** parameter. The default name for this file is usually **rhsm.yml**.
4. Check the **rhsm\_repos** parameter in your subscription management configuration. If the **rhsm\_repos** parameter is using the Red Hat OpenStack Platform 16.0 and Ansible 2.9 repositories, change the repository to the correct versions:

```
parameter_defaults:
  RhsmVars:
    rhsm_repos:
      - rhel-8-for-x86_64-baseos-eus-rpms
      - rhel-8-for-x86_64-appstream-eus-rpms
      - rhel-8-for-x86_64-highavailability-eus-rpms
      - ansible-2.9-for-rhel-8-x86_64-rpms
      - advanced-virt-for-rhel-8-x86_64-rpms
      - openstack-16.1-for-rhel-8-x86_64-rpms
      - rhceph-4-osd-for-rhel-8-x86_64-rpms
      - rhceph-4-mon-for-rhel-8-x86_64-rpms
      - rhceph-4-tools-for-rhel-8-x86_64-rpms
      - fast-datapath-for-rhel-8-x86_64-rpms
```

5. Save the overcloud subscription management environment file.
6. Create a static inventory file of your overcloud:

```
$ tripleo-ansible-inventory --ansible_ssh_user heat-admin --static-yaml-inventory
~/inventory.yaml
```

If you use an overcloud name different to the default overcloud name of **overcloud**, set the name of your overcloud with the **--plan** option.

7. Create a playbook that contains a task to set the repositories to Red Hat Enterprise Linux 16.1 on all nodes:

```
$ cat > ~/update_rhosp_repos.yaml <<'EOF'
- hosts: all
  gather_facts: false
  tasks:
    - name: change osp repos
      command: subscription-manager repos --disable=openstack-16-for-rhel-8-x86_64-rpms --
enable=openstack-16.1-for-rhel-8-x86_64-rpms --disable=ansible-2.8-for-rhel-8-x86_64-rpms
```

```
--enable=ansible-2.9-for-rhel-8-x86_64-rpms
  become: true
EOF
```

- Run the **update\_rhosp\_repos.yaml** playbook:

```
$ ansible-playbook -i ~/inventory.yaml -f 25 ~/update_rhosp_repos.yaml --limit
undercloud,Controller,Compute
```

Use the **--limit** option to apply the content to all Red Hat OpenStack Platform nodes. Do not run this playbook against Ceph Storage nodes because you are most likely using a different subscription for these nodes.

- Create a playbook that contains a task to set the repositories to Red Hat Enterprise Linux 16.1 on all nodes:

```
$ cat > ~/update_ceph_repos.yaml <<'EOF'
- hosts: all
  gather_facts: false
  tasks:
    - name: change ceph repos
      command: subscription-manager repos --disable=openstack-16-deployment-tools-for-
rhel-8-x86_64-rpms --enable=openstack-16.1-deployment-tools-for-rhel-8-x86_64-rpms --
disable=ansible-2.8-for-rhel-8-x86_64-rpms --enable=ansible-2.9-for-rhel-8-x86_64-rpms
      become: true
EOF
```

- Run the **update\_ceph\_repos.yaml** playbook:

```
$ ansible-playbook -i ~/inventory.yaml -f 25 ~/update_rhosp_repos.yaml --limit CephStorage
```

Use the **--limit** option to apply the content to Ceph Storage nodes.

## 2.4. SETTING THE CONTAINER-TOOLS AND VIRT MODULE VERSIONS

Set the **container-tools** module to version **2.0** and the **virt** module to **8.2** to ensure you use the correct package versions on all nodes.

### Procedure

- Log in to the undercloud as the **stack** user.
- Source the **stackrc** file:

```
$ source ~/stackrc
```

- Create a static inventory file of your overcloud:

```
$ tripleo-ansible-inventory --ansible_ssh_user heat-admin --static-yaml-inventory
~/inventory.yaml
```

If you use an overcloud name different to the default overcloud name of **overcloud**, set the name of your overcloud with the **--plan** option.

4. Create a playbook that contains a task to set the **container-tools** module to version **2.0** on all nodes:

```
$ cat > ~/container-tools.yaml <<'EOF'
- hosts: all
  gather_facts: false
  tasks:
    - name: disable default dnf module for container-tools
      command: dnf module disable -y container-tools:rhel8
      become: true
    - name: set dnf module for container-tools:2.0
      command: dnf module enable -y container-tools:2.0
      become: true
    - name: disable default dnf module for virt
      command: dnf module disable -y virt:rhel
      become: true
    - name: disable 8.1 dnf module for virt
      command: dnf module disable -y virt:8.1
      become: true
    - name: set dnf module for virt:8.2
      command: dnf module enable -y virt:8.2
      become: true
EOF
```

5. Run the **container-tools.yaml** playbook against all nodes:

```
$ ansible-playbook -i ~/inventory.yaml -f 25 ~/container-tools.yaml
```

## 2.5. UPDATING YOUR CONTAINER IMAGE PREPARATION FILE

Your container preparation file is the file that contains the **ContainerImagePrepare** parameter. You use this file to define the rules for obtaining container images for the undercloud and overcloud. Before updating your environment, check the file to ensure you obtain the correct image versions.

### Procedure

1. Edit the container preparation file. The default name for this file is usually **containers-prepare-parameter.yaml**.
2. Check the **tag** parameter is set to **16.1** for each rule set:

```
parameter_defaults:
  ContainerImagePrepare:
    - push_destination: true
      set:
        ...
        tag: '16.1'
        tag_from_label: '{version}-{release}'
```

3. Save this file.

## 2.6. UPDATING YOUR SSL/TLS CONFIGURATION

If your overcloud uses SSL/TLS for public endpoints, you must unset the **InternalTLSCAFile** parameter when you update to Red Hat OpenStack Platform 16.1.

For more information about SSL/TLS for public endpoints, see ["Enabling SSL/TLS on Overcloud Public Endpoints"](#).

## Procedure

1. Log in to the undercloud as the **stack** user.
2. Source the **stackrc** file:

```
$ source ~/stackrc
```

3. Edit your custom overcloud SSL/TLS public endpoint file, which is usually named **~/templates/enable-tls.yaml**.
4. Remove the **NodeTLSData** resource from the `resource_registry`:

```
resource_registry:
  OS::TripleO::NodeTLSData: /usr/share/openstack-tripleo-heat-
  templates/puppet/extraconfig/tls/tls-cert-inject.yaml
  ...
```

The overcloud deployment uses a new service in HAProxy to determine if SSL/TLS is enabled.



### NOTE

If this is the only resource in the **resource\_registry** section of the **enable-tls.yaml** file, remove the complete **resource\_registry** section.

5. Add the **InternalTLSCAFile** parameter to the **parameter\_defaults** section of the file. Set the value of **InternalTLSCAFile** to an empty string ("):

```
parameter_defaults:
  InternalTLSCAFile: "
  SSLCertificate: |
    -----BEGIN CERTIFICATE-----
    MIIDgzCCAmugAwIBAgIJAKk46qw6ncJaMA0GCSqGS
    ...
    sFW3S2roS4X0Af/kSSD8mIBBTFTCMBAj6rtLBKLaQ
    -----END CERTIFICATE-----
```

6. Save the SSL/TLS public endpoint file file.

## CHAPTER 3. UPDATING THE UNDERCLOUD

This process updates the undercloud and its overcloud images to the latest **Red Hat OpenStack Platform 16.1** version.

### 3.1. PERFORMING A MINOR UPDATE OF A CONTAINERIZED UNDERCLOUD

The director provides commands to update the packages on the undercloud node. This allows you to perform a minor update within the current version of your OpenStack Platform environment.

#### Procedure

1. Log in to the director as the **stack** user.
2. Run **dnf** to upgrade the director's main packages:

```
$ sudo dnf update -y python3-tripleoclient* openstack-tripleo-common openstack-tripleo-heat-templates tripleo-ansible ansible
```

3. The director uses the **openstack undercloud upgrade** command to update the undercloud environment. Run the command:

```
$ openstack undercloud upgrade
```

4. Wait until the undercloud upgrade process completes.
5. Reboot the undercloud to update the operating system's kernel and other system packages:

```
$ sudo reboot
```

6. Wait until the node boots.

### 3.2. UPDATING THE OVERCLOUD IMAGES

You need to replace your current overcloud images with new versions. The new images ensure the director can introspect and provision your nodes using the latest version of OpenStack Platform software.

#### Prerequisites

- You have updated the undercloud to the latest version.

#### Procedure

1. Source the **stackrc** file:

```
$ source ~/stackrc
```

2. Remove any existing images from the **images** directory on the **stack** user's home (**/home/stack/images**):

```
$ rm -rf ~/images/*
```

3. Extract the archives:

```
$ cd ~/images
$ for i in /usr/share/rhosp-director-images/overcloud-full-latest-16.1.tar /usr/share/rhosp-
director-images/ironic-python-agent-latest-16.1.tar; do tar -xvf $i; done
$ cd ~
```

4. Import the latest images into the director:

```
$ openstack overcloud image upload --update-existing --image-path /home/stack/images/
```

5. Configure your nodes to use the new images:

```
$ openstack overcloud node configure $(openstack baremetal node list -c UUID -f value)
```

6. Verify the existence of the new images:

```
$ openstack image list
$ ls -l /var/lib/ironic/httpboot
```



### IMPORTANT

When deploying overcloud nodes, ensure the overcloud image version corresponds to the respective heat template version. For example, only use the OpenStack Platform 16.1 images with the OpenStack Platform 16.1 heat templates.



### IMPORTANT

The new **overcloud-full** image replaces the old **overcloud-full** image. If you made changes to the old image, you must repeat the changes in the new image, especially if you want to deploy new nodes in the future.

## 3.3. UNDERCLOUD POST-UPGRADE NOTES

- If using a local set of core templates in your **stack** users home directory, ensure you update the templates using the recommended workflow in [Using Customized Core Heat Templates](#) in the *Advanced Overcloud Customization* guide. You must update the local copy before upgrading the overcloud.

## 3.4. NEXT STEPS

The undercloud upgrade is complete. You can now update the overcloud.



## CHAPTER 4. UPDATING THE OVERCLOUD

This process updates the overcloud.

### Prerequisites

- You have updated the undercloud to the latest version.

### 4.1. RUNNING THE OVERCLOUD UPDATE PREPARATION

The update requires running **openstack overcloud update prepare** command, which performs the following tasks:

- Updates the overcloud plan to OpenStack Platform 16.1
- Prepares the nodes for the update

### Procedure

1. Source the **stackrc** file:

```
$ source ~/stackrc
```

2. Run the update preparation command:

```
$ openstack overcloud update prepare \
  --templates \
  --stack STACK_NAME \
  -r ROLES_DATA_FILE \
  -n NETWORK_DATA_FILE \
  -e ENVIRONMENT_FILE \
  -e ENVIRONMENT_FILE \
  ...
```

Include the following options relevant to your environment:

- If the name of your overcloud stack is different to the default name **overcloud**, include the **--stack** option in the update preparation command and replace **<STACK\_NAME>** with the name of your stack.
  - If using your own custom roles, include your custom roles (**roles\_data**) file (**-r**)
  - If using custom networks, include your composable network (**network\_data**) file (**-n**)
  - Any custom configuration environment files (**-e**)
3. Wait until the update preparation completes.

### 4.2. RUNNING THE CONTAINER IMAGE PREPARATION

The overcloud requires the latest OpenStack Platform 16.1 container images before performing the update. This involves executing the **container\_image\_prepare** external update process. To execute this process, run the **openstack overcloud external-update run** command against tasks tagged with the **container\_image\_prepare** tag. These tasks:

- Automatically prepare all container image configuration relevant to your environment.
- Pull the relevant container images to your undercloud, unless you have previously disabled this option.

### Procedure

1. Source the **stackrc** file:

```
$ source ~/stackrc
```

2. Run the **openstack overcloud external-update run** command against tasks tagged with the **container\_image\_prepare** tag:

```
$ openstack overcloud external-update run --tags container_image_prepare
```

## 4.3. UPDATING ALL CONTROLLER NODES

This process updates all the Controller nodes to the latest OpenStack Platform 16.1 version. The process involves running the **openstack overcloud update run** command and including the **--limit Controller** option to restrict operations to the Controller nodes only.



### NOTE

If you are not using the default stack name (**overcloud**), set your stack name with the **--stack STACK\_NAME** option replacing **STACK\_NAME** with the name of your stack.

### Procedure

1. Source the **stackrc** file:

```
$ source ~/stackrc
```

2. Run the update command:

```
$ openstack overcloud update run --stack STACK_NAME --limit Controller --playbook all
```

3. Wait until the Controller node update completes.

## 4.4. UPDATING ALL COMPUTE NODES

This process updates all Compute nodes to the latest OpenStack Platform 16.1 version. The process involves running the **openstack overcloud update run** command and including the **--nodes Compute** option to restrict operations to the Compute nodes only.



### NOTE

If you are not using the default stack name (**overcloud**), set your stack name with the **--stack STACK\_NAME** option replacing **STACK\_NAME** with the name of your stack.

### Procedure

1. Source the **stackrc** file:

```
$ source ~/stackrc
```

2. Run the update command:

```
$ openstack overcloud update run --stack _STACK_NAME_ --limit Compute --playbook all
```

3. Wait until the Compute node update completes.

## 4.5. UPDATING ALL CEPH STORAGE NODES

This process updates the Ceph Storage nodes. The process involves:

- Running the **openstack overcloud update run** command and including the **--nodes CephStorage** option to restrict operations to the Ceph Storage nodes only.
- Running the **openstack overcloud external-update run** command to run **ceph-ansible** as an external process and update the Red Hat Ceph Storage 3 containers.



### NOTE

If you are not using the default stack name (**overcloud**), set your stack name with the **--stack STACK\_NAME** option replacing **STACK\_NAME** with the name of your stack.

### Procedure

1. Source the **stackrc** file:

```
$ source ~/stackrc
```

2. Run the update command:

```
$ openstack overcloud update run --stack _STACK_NAME_ --limit CephStorage --playbook all
```

3. Wait until the node update completes.
4. Run the Ceph Storage container update command:

```
$ openstack overcloud external-update run --tags ceph
```

5. Wait until the Ceph Storage container update completes.

## 4.6. PERFORMING ONLINE DATABASE UPDATES

Some overcloud components require an online upgrade (or migration) of their databases tables. This involves executing the **online\_upgrade** external update process. To execute this process, run the **openstack overcloud external-update run** command against tasks tagged with the **online\_upgrade** tag. This performs online database updates to the following components:

- OpenStack Block Storage (cinder)

- OpenStack Compute (nova)

### Procedure

1. Source the **stackrc** file:

```
$ source ~/stackrc
```

2. Run the **openstack overcloud external-update run** command against tasks tagged with the **online\_upgrade** tag:

```
$ openstack overcloud external-update run --tags online_upgrade
```

## 4.7. FINALIZING THE UPDATE

The update requires a final step to update the overcloud stack. This ensures the stack's resource structure aligns with a regular deployment of OpenStack Platform 16.1 and allows you to perform standard **openstack overcloud deploy** functions in the future.

### Procedure

1. Source the **stackrc** file:

```
$ source ~/stackrc
```

2. Run the update finalization command:

```
$ openstack overcloud update converge \
  --templates \
  --stack _STACK_NAME_ \
  -r _ROLES_DATA_FILE_ \
  -n _NETWORK_DATA_FILE_ \
  -e _ENVIRONMENT_FILE_ \
  -e _ENVIRONMENT_FILE_ \
  ...
  ...
```

Include the following options relevant to your environment:

- If the name of your overcloud stack is different to the default name **overcloud**, include the **--stack** option in the update preparation command and replace **<STACK\_NAME>** with the name of your stack.
  - If using your own custom roles, include your custom roles (**roles\_data**) file (**-r**)
  - If using custom networks, include your composable network (**network\_data**) file (**-n**)
  - Any custom configuration environment files (**-e**).
3. Wait until the update finalization completes.

## CHAPTER 5. REBOOTING THE OVERCLOUD

After a minor Red Hat OpenStack version update, reboot your overcloud. The reboot refreshes the nodes with any associated kernel, system-level, and container component updates. These updates may provide performance and security benefits.

Plan downtime to perform the following reboot procedures.

### 5.1. REBOOTING CONTROLLER AND COMPOSABLE NODES

Complete the following steps to reboot Controller nodes and standalone nodes based on composable roles, excluding Compute nodes and Ceph Storage nodes.

#### Procedure

1. Log in to the node that you want to reboot.
2. Optional: If the node uses Pacemaker resources, stop the cluster:

```
[heat-admin@overcloud-controller-0 ~]$ sudo pcs cluster stop
```

3. Reboot the node:

```
[heat-admin@overcloud-controller-0 ~]$ sudo reboot
```

4. Wait until the node boots.
5. Check the services. For example:
  - a. If the node uses Pacemaker services, check that the node has rejoined the cluster:

```
[heat-admin@overcloud-controller-0 ~]$ sudo pcs status
```

- b. If the node uses Systemd services, check that all services are enabled:

```
[heat-admin@overcloud-controller-0 ~]$ sudo systemctl status
```

- c. If the node uses containerized services, check that all containers on the node are active:

```
[heat-admin@overcloud-controller-0 ~]$ sudo podman ps
```

### 5.2. REBOOTING A CEPH STORAGE (OSD) CLUSTER

Complete the following steps to reboot a cluster of Ceph Storage (OSD) nodes.

#### Procedure

1. Log into a Ceph MON or Controller node and disable Ceph Storage cluster rebalancing temporarily:

```
$ sudo podman exec -it ceph-mon-controller-0 ceph osd set noout
$ sudo podman exec -it ceph-mon-controller-0 ceph osd set norebalance
```

2. Select the first Ceph Storage node that you want to reboot and log in to the node.

3. Reboot the node:

```
$ sudo reboot
```

4. Wait until the node boots.

5. Log into the node and check the cluster status:

```
$ sudo podman exec -it ceph-mon-controller-0 ceph status
```

Check that the **pgmap** reports all **pgs** as normal (**active+clean**).

6. Log out of the node, reboot the next node, and check its status. Repeat this process until you have rebooted all Ceph storage nodes.

7. When complete, log into a Ceph MON or Controller node and re-enable cluster rebalancing:

```
$ sudo podman exec -it ceph-mon-controller-0 ceph osd unset noout
$ sudo podman exec -it ceph-mon-controller-0 ceph osd unset norebalance
```

8. Perform a final status check to verify that the cluster reports **HEALTH\_OK**:

```
$ sudo podman exec -it ceph-mon-controller-0 ceph status
```

## 5.3. REBOOTING COMPUTE NODES

Complete the following steps to reboot Compute nodes. To ensure minimal downtime of instances in your Red Hat OpenStack Platform environment, this procedure also includes instructions about migrating instances from the Compute node that you want to reboot. This involves the following workflow:

- Decide whether to migrate instances to another Compute node before rebooting the node.
- Select and disable the Compute node you want to reboot so that it does not provision new instances.
- Migrate the instances to another Compute node.
- Reboot the empty Compute node.
- Enable the empty Compute node.

### Prerequisites

Before you reboot the Compute node, you must decide whether to migrate instances to another Compute node while the node is rebooting.

If for some reason you cannot or do not want to migrate the instances, you can set the following core template parameters to control the state of the instances after the Compute node reboots:

### **NovaResumeGuestsStateOnHostBoot**

Determines whether to return instances to the same state on the Compute node after reboot. When set to **False**, the instances remain down and you must start them manually. Default value is: **False**

## NovaResumeGuestsShutdownTimeout

Number of seconds to wait for an instance to shut down before rebooting. It is not recommended to set this value to **0**. Default value is: 300

For more information about overcloud parameters and their usage, see [Overcloud Parameters](#).

### Procedure

1. Log in to the undercloud as the **stack** user.
2. List all Compute nodes and their UUIDs:

```
$ source ~/stackrc
(undercloud) $ openstack server list --name compute
```

Identify the UUID of the Compute node that you want to reboot.

3. From the undercloud, select a Compute node. Disable the node:

```
$ source ~/overcloudrc
(overcloud) $ openstack compute service list
(overcloud) $ openstack compute service set [hostname] nova-compute --disable
```

4. List all instances on the Compute node:

```
(overcloud) $ openstack server list --host [hostname] --all-projects
```

5. If you decide not to migrate instances, skip to [this step](#).
6. If you decide to migrate the instances to another Compute node, use one of the following commands:

- Migrate the instance to a different host:

```
(overcloud) $ openstack server migrate [instance-id] --live [target-host]--wait
```

- Let **nova-scheduler** automatically select the target host:

```
(overcloud) $ nova live-migration [instance-id]
```

- Live migrate all instances at once:

```
$ nova host-evacuate-live [hostname]
```



### NOTE

The **nova** command might cause some deprecation warnings, which are safe to ignore.

7. Wait until migration completes.
8. Confirm that the migration was successful:

```
(overcloud) $ openstack server list --host [hostname] --all-projects
```

9. Continue to migrate instances until none remain on the chosen Compute node.

10. Log in to the Compute node and reboot the node:

```
[heat-admin@overcloud-compute-0 ~]$ sudo reboot
```

11. Wait until the node boots.

12. Re-enable the Compute node:

```
$ source ~/overcloudrc  
(overcloud) $ openstack compute service set [hostname] nova-compute --enable
```

13. Check that the Compute node is enabled:

```
(overcloud) $ openstack compute service list
```