

# Technical Guide - Adding a Compute Node to the Dell Red Hat OpenStack Cloud Solution - Version 4.0



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## Notes, Cautions, and Warnings

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-  A **Note** indicates important information that helps you make better use of your system.
-  A **Caution** indicates potential damage to hardware or loss of data if instructions are not followed.
-  A **Warning** indicates a potential for property damage, personal injury, or death.

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## Executive Summary

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One of the common needs of a cloud platform is Compute expansion capacity for performance improvements. Over time there is often a need to add additional Compute resources, as the required VM (Virtual Machine) growth has exceeded planned capacity.

This technical guide explains the process of adding a Dell™ PowerEdge™ R430/R630/R730 Compute node to an existing Dell Red Hat® OpenStack Cloud Solution cluster.

Compute nodes are used for hosting VMs in the Dell Red Hat OpenStack Cloud Solution version 4.0.

## Intended Audience

This technical guide is written for OpenStack administrators or deployment engineers who are responsible for installation and ongoing operation of OpenStack clusters.

## Adding Compute Nodes

This section describes prerequisites and procedures to add a Compute node to a Dell Red Hat OpenStack Cloud Solution cluster. Topics discussed include:

- [Prerequisites](#) on page 6
- [Adding the Compute Node](#) on page 6

### Prerequisites

The following prerequisites must be met:

- Compute nodes' RAID and BIOS settings have been configured using the Dell Toolkit (DTK) utility
- Dell Red Hat OpenStack Cloud Solution version 4.0 installed
- *Dell Red Hat OpenStack Cloud Solution Deployment Guide* available for reference
- `hammer` deployment scripts available on the OpenStack Foreman Installer Node (OFI Node)

### Adding the Compute Node

To add a Compute node to a Dell Red Hat OpenStack Cloud Solution cluster:

1. Log onto the OFI Node as the `root` user.
2. Navigate to the directory in which the `hammer` deployment scripts reside. The Dell Red Hat OpenStack Cloud Solution places those scripts into the `/root/pilot` directory.
3. Ensure that the `osp_config.sh` file has been previously configured to the existing installation. All other settings for the Compute node, partition tables, repositories, etc., must be pre-defined. Modify or add the values for the bonds per the Compute node model. For example, if adding a R430, edit the line `R430_BONDS="( [bond0]=\"p1p1 p2p1\" [bond1]=\"p1p2 p2p2\" )"` to match your interfaces.
4. Execute the following command using values from a filled-out *Solution-Workbook.xls* and the `osp_config.sh` file:

```
./hammer-deploy-compute.sh <new_hostname> <PXE_interface_MAC_address>
<IP_address_for_provisioning> <server_model>
```

5. Execute the following command to return the `host_id` for the new node:

```
hammer host list
```

6. In the example output below, the newly provisioned Compute node has a host ID of `11`:

```
[root@fore ~]# hammer host list
ID | NAME | OPERATING SYSTEM | HOST GROUP | IP
   | MAC |                   |           |
2  | cnt11.13g.rcbd.lab | RHEL Server 7.1 | HA All In One Controller |
   | 192.168.120.44 | ec:f4:bb:c7:97:b4 |
3  | cnt12.13g.rcbd.lab | RHEL Server 7.1 | HA All In One Controller |
   | 192.168.120.45 | ec:f4:bb:c7:92:1c |
4  | cnt13.13g.rcbd.lab | RHEL Server 7.1 | HA All In One Controller |
   | 192.168.120.46 | ec:f4:bb:c7:93:4c |
1  | fore.13g.rcbd.lab | RHEL Server 7.1 | |
   | 10.148.44.42 | 52:54:00:6a:e0:c3 |
```

```

5 | nova1.13g.rcbd.lab | RHEL Server 7.1 | Compute (Neutron) |
192.168.120.47 | ec:f4:bb:c7:90:7c
6 | nova2.13g.rcbd.lab | RHEL Server 7.1 | Compute (Neutron) |
192.168.120.48 | ec:f4:bb:c7:93:b4
7 | nova3.13g.rcbd.lab | RHEL Server 7.1 | Compute (Neutron) |
192.168.120.49 | ec:f4:bb:c7:93:7c
11 | nova4.13g.rcbd.lab | RHEL Server 7.1 | Compute (Neutron) |
192.168.120.54 | 44:a8:42:24:0e:55
8 | ss1.13g.rcbd.lab | RHEL Server 7.1 | |
192.168.120.50 | ec:f4:bb:c7:96:d4
9 | ss2.13g.rcbd.lab | RHEL Server 7.1 | |
192.168.120.51 | ec:f4:bb:c7:96:6c
10 | ss3.13g.rcbd.lab | RHEL Server 7.1 | |
192.168.120.52 | ec:f4:bb:c7:92:a4
12 | ss4.13g.rcbd.lab | RHEL Server 7.1 | |
192.168.120.53 | ec:f4:bb:ce:d2:ec

```

7. Make the RPM version locking file available during provisioning by executing the following command, replacing `<new_host_ID_from_hammer_host_list>` with the ID value from the `hammer host list` command output (see above):

```
hammer host set-parameter --host-id <new_host_ID_from_hammer_host_list> --
name yum_versionlock_file -value \
'http://<IP_address_of_OFI_node>/compute.vlock'
```

8. PXE boot the new node by powering on the Compute node and selecting *F12 - PXE Boot*.

a. Ensure that the new node appears in the OFI UI.

9. Ensure that all settings are configured correctly on the newly-provisioned Compute node. These values will be set by the kickstart scripts that are a part of the solution. For example:

- Networking - Ensure the configured networks are communicating properly:
- SELinux=permissive
- Firewall is off and disabled
- NetworkManager is off and disabled
- NTPD is running

10. Execute the following commands:

```
hammer host list
hammer hostgroup list
```

11. Record the IDs for:

- The new Compute node
- The Compute (Neutron) hostgroup

12. Execute the `hammer host update` command to apply the Compute (Neutron) hostgroup:

```
hammer host update --hostgroup-id HOSTGROUP_ID --id HOST_ID
```

13. Run `puppet` on the new node:

```
puppet agent -tvd 2>&1 | tee /root/puppet.out
```

14. Log onto the Red Hat Ceph Storage Admin Node (Ceph VM) as the `root` user.

15. Open the `/etc/hosts` file for editing:

```
vi /etc/hosts
```

16. Edit the file to include the new host. For example:

```
192.168.170.43 ceph.13g.rcbd.lab ceph
192.168.170.44 cnt11.13g.rcbd.lab cnt11
```

```
192.168.170.45 cnt12.13g.rcbd.lab cnt12
192.168.170.46 cnt13.13g.rcbd.lab cnt13
192.168.170.47 nova1.13g.rcbd.lab nova1
192.168.170.48 nova2.13g.rcbd.lab nova2
192.168.170.49 nova3.13g.rcbd.lab nova3
192.168.170.50 ss1.13g.rcbd.lab ss1
192.168.170.51 ss2.13g.rcbd.lab ss2
192.168.170.52 ss3.13g.rcbd.lab ss3
192.168.170.53 nova4.13g.rcbd.lab nova4 (New node.)
```

17. Save the file, then execute the following commands:

```
ssh-copy-id nova4
ssh nova4 'echo -e "<ip_address_of_calamari_node>
<hostname_of_calamari_node> ceph" >> /etc/hosts'; done
ssh root@nova4 'useradd -g adm -m ceph-user';
ssh root@nova4 'passwd ceph-user';
ssh root@nova4 'echo -e "ceph-user ALL = (root) NOPASSWD:ALL" > /etc/
sudoers.d/ceph-user';
ssh root@nova4 'echo -e "Defaults:ceph-user !requiretty" >> /etc/
sudoers.d/ceph-user';
ssh root@nova4 'chmod 0440 /etc/sudoers.d/ceph-user';
```

18. Execute the following commands:

```
su - ceph-user
ssh-copy-id nova4
ceph-deploy install nova
```

19. Log onto the OpenStack Foreman Installer Node as the *root* user.

20. Navigate to the */root/pilot* directory.

21. Copy the *enable\_live\_migration.sc* script to the new node by executing the following command:

```
scp enable_live_migration.sh root@<IP_address_of_new_node>:/tmp
```

22. Log into the new Compute node, and *cd* into the */tmp* directory.

23. Execute the following command:

```
./enable_live_migration.sh
```

24. Rerun puppet by executing the following command:

```
puppet agent -tvd 2>&1 | tee /root/puppet.out
```

The new Compute node is now ready for use.

## Getting Help

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This appendix details contact and reference information for the Dell™ Red Hat® Cloud Solutions with Red Hat Enterprise Linux® OpenStack Platform.

### Contacting Dell

For customers in the United States, call 800-WWW-DELL (800-999-3355).

 **Note:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

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2. Click your country/region at the bottom of the page. For a full listing of country/region, click **All**.
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4. Select the appropriate service or support link based on your need.
5. Choose the method of contacting Dell that is convenient for you.

### References

Additional information can be obtained at <http://www.dell.com/openstack> or by e-mailing [openstack@dell.com](mailto:openstack@dell.com).

If you need additional services or implementation help, please contact your Dell sales representative.

### To Learn More

For more information on the Dell Red Hat OpenStack Cloud Solution with Red Hat Enterprise Linux™ OpenStack Platform visit <http://www.dell.com/openstack>.

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