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

Contents

Trademarks

Notes, Cautions, and Warnings

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

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

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  | cntl1.13g.rcbd.lab | RHEL Server 7.1  | HA All In One Controller |
 192.168.120.44 | ec:f4:bb:c7:97:b4
3  | cntl2.13g.rcbd.lab | RHEL Server 7.1  | HA All In One Controller |
 192.168.120.45 | ec:f4:bb:c7:92:1c
4  | cntl3.13g.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
   - Firewalld 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 cntl1.13g.rcbd.lab cntl1
```

```
192.168.170.45 cntl2.13g.rcbd.lab cntl2
192.168.170.46 cntl3.13g.rcbd.lab cntl3
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

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.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit *dell.com/support*.
2. Click your country/region at the bottom of the page. For a full listing of country/region, click **All**.
3. Click **All Support** from the **Support** menu.
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*.

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*.