**Dell EMC Ready Architecture for Red Hat OpenStack Platform v13.0**

**Automation Deployment Guide**

**Version 13.0**

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**Dell EMC Service Provider Solutions**

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**4** | Trademarks

**Trademarks**

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Notes, Cautions, and Warnings | **5**

**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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**6** | Overview



**Chapter**

**1**

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**Overview**

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**Topics:**

* [*Before You Begin*](#page7)
* [*Prerequisites*](#page7)
* [*Dependencies*](#page7)

This guide provides information necessary to deploy the Dell EMC Ready Architecture for Red Hat OpenStack platform v13.0 using an automation framework developed by Dell EMC and validated by Red Hat.



* **Servers**:
  + Dell EMC PowerEdge R630 with the Dell EMC PowerEdge H730 disk controller
* **Networking**:
  + Dell S4048T switches

Overview | **7**

**Before You Begin**

This guide assumes that you have racked the servers and networking hardware, and completed power and network cabling, as per the DellEMC Ready\_Architecture\_for\_Red\_Hat OpenStack platform v13.0-Architecture\_Guide – Version13.

The high-level steps required to install the Dell EMC Ready Architecture for Red Hat OpenStack Platform\_v13 using the automated installation procedures include:

1. Ensuring that your environment meets the [*Prerequisites*](#page7) on page 7
2. Ensuring that the [*Dependencies*](#page7) on page 7 are met
3. *Determining Pool IDs* on page 9
4. [*Downloading and Extracting Automation Files*](#page12) onpage 12
5. [*Preparing the Solution Admin Host Deployment*](#page14) onpage 14
6. [*Deploying the SAH Node*](#page16) onpage 17
7. [*Deploying the Undercloud and the OpenStack Cluster*](#page18) onpage 19

**Prerequisites**

The following prerequisites must be satisfied before proceeding with a Dell EMC Ready Architecture for Red Hat OpenStack platform v13.0 deployment:

**Note:** All nodes in the same roles must be of the same server models, with identical HDD, RAM,and NIC configurations. So, all Controller nodes must be identical to each other; all Compute nodes must be identical to each other; and so on. See the Dell EMC Ready Architecture for Red Hat OpenStack Platfrom - Version 13 for configuration options for each node role.



* Hardware racked and wired per the Dell EMC Ready Architecture for Red Hat OpenStack platform v13.0- Architecture Guide-Version 13.
* Hardware configured as per the Dell EMC Ready Architecture for Red Hat OpenStack platform v13.0 - Hardware Deployment Guide - Version 13
* Hardware is powered off after the hardware is configured per the Dell EMC Ready Architecture for Red Hat OpenStack Platform v13.0- Hardware Deployment Guide - Version 13
* Internet access, including but not limited to, Red Hat’s subscription manager service and repositories
* Valid Red Hat subscriptions
* Workstation used to extract the *JetPack-automation-13.0.tgz* file and begin building the collateral for the SAH node.

**Dependencies**

For customers performing a self-installation, these files are available upon request from Dell EMC. Please contact your account representative, or email [*openstack@dell.com*](mailto:openstack@dell.com) for instructions.

** NOTE:** The files are also **open sourced** and can be obtained from <https://github.com/dsp-jetpack/JetPack>.

The Dell EMC NFV Ready Bundle for Red Hat automated deployment dependencies include:

* [*Downloading and Extracting Automation Files*](#page12) onpage 12
* The automated install also requires that you have ISO file “Red Hat Enterprise Linux 7.6 Binary DVD”. It can be downloaded from the Red Hat Customer Portal here: *[https://access.redhat.com/downloads/content/69/ver=/rhel---7/7.2/x86\_64/](https://access.redhat.com/downloads/content/69/ver=/rhel---7/7.2/x86_64/product-software)* [*product-software*](https://access.redhat.com/downloads/content/69/ver=/rhel---7/7.2/x86_64/product-software)

**8** | Red Hat Subscriptions



**Chapter**

**2**

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**Red Hat Subscriptions**

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|  |  |
| --- | --- |
| **Topics:** | Once all prerequisites have been met, you must determine the |
|  | Appropriate Red Hat subscription entitlements for each cluster node. |



* [*Red Hat Subscription Manager*](#page9)[*Pool IDs*](#page9)

Red Hat Subscriptions | **9**

**Red Hat Subscription Manager Pool IDs**

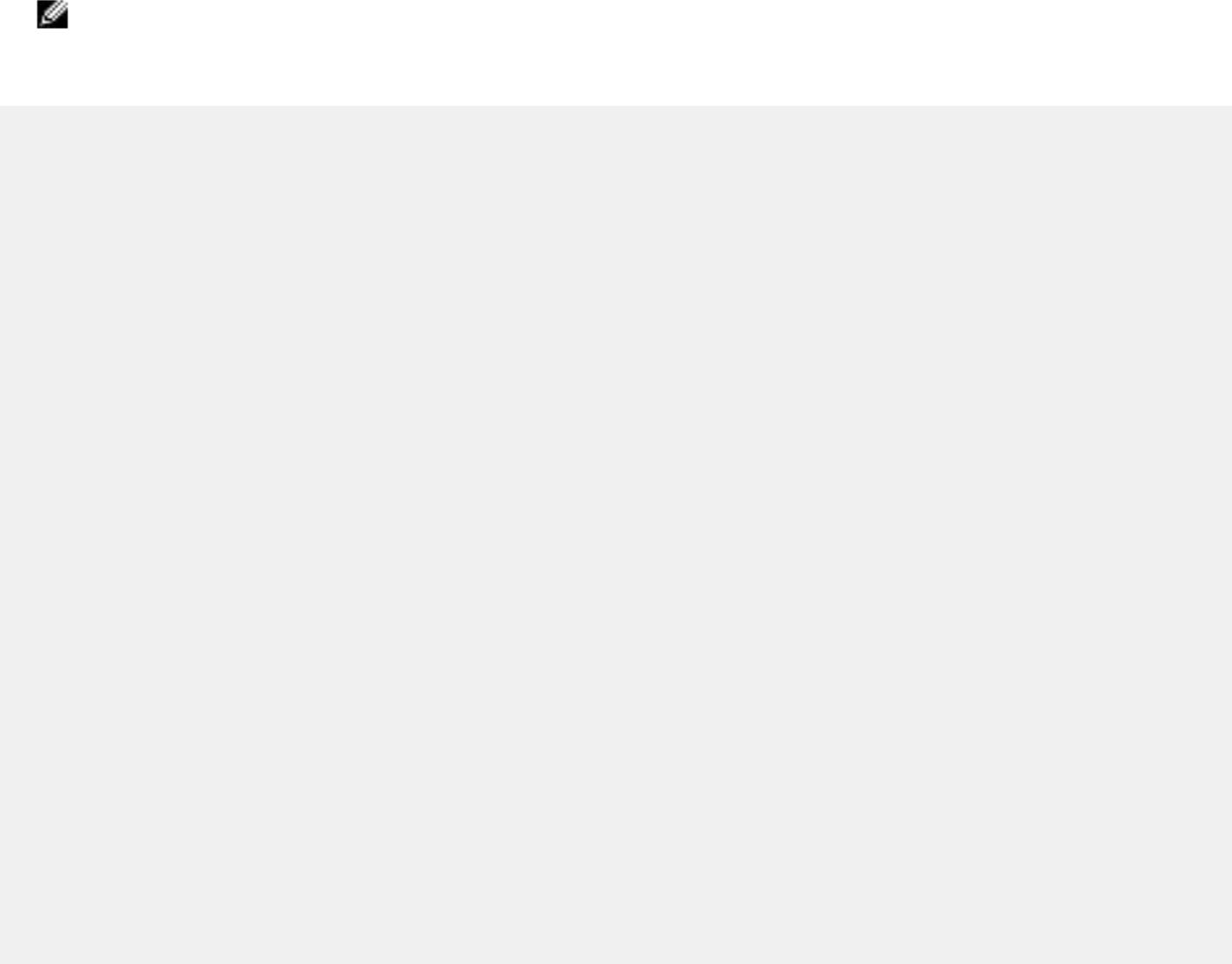
You must determine the pool ID to use for the Solution Admin Host (SAH) and each node in the cluster before proceeding with the installation. To determine the pool IDs, you must have an existing server that is registered to the Red Hat Hosted Services. This server must also be registered using the same credentials as the ones being used in this environment.

1. Once the server is correctly registered, execute the following command to see the available subscription pools.
   * subscription-manager list --all --available

The command will output a list of available pools. Each section of information lists what the subscription provides, its pool ID, how many are available, the type of system it is for, as well as other information.

1. Determine the correct pool ID needed for this environment and take note of it.

**Note:** Pay close attention to the **System Type**. The System Type can be*Virtual*or*Physical*. Ifnecessary you can use a physical license for a virtual node. However, you cannot use a virtual subscription for a physical node.



* subscription-manager list --all --available

[OUTPUT ABBREVIATED]

|  |  |  |
| --- | --- | --- |
| Subscription Name: | Red Hat | Cloud Infrastructure, Standard (8-sockets) |
| Provides: | Red Hat | Beta |
|  | Red Hat | OpenStack Beta |
|  | JBoss Enterprise Application Platform | |
|  | Red Hat | Software Collections (for RHEL Server) |
|  | Red Hat | Enterprise Virtualization |
|  | Oracle Java (for RHEL Server) | |
|  | Red Hat | OpenStack |
|  | Red Hat | Enterprise MRG Messaging |
|  | Red Hat | Enterprise Linux Server |
|  | Red Hat | Enterprise Linux High Availability (for RHEL |
| Server) |  |  |
|  | Red Hat | Software Collections Beta (for RHEL Server) |
|  | Red Hat | Enterprise Linux Load Balancer (for RHEL Server) |
|  | Red Hat | CloudForms |
| SKU: | RS00019 |  |
| Pool ID: | aaaa111bbb222ccc333ddd444eee5556 | |
| Available: | 7 |  |
| Suggested: | 1 |  |
| Service Level: | Standard |  |
| Service Type: | L1-L3 |  |
|  |  |  |
| Ends: | 06/22/2019 | |
| System Type: | Physical |  |

[OUTPUT ABBREVIATED]

The above output shows a subscription that contains the Red Hat OpenStack entitlement. The required entitlement types for each node are shown in [*Table 1: Red Hat Subscription Entitlements*](#page9) on page 9.

**Table 1: Red Hat Subscription Entitlements**

|  |  |  |
| --- | --- | --- |
| **Node Role** | **Entitlement** | **System Type** |
|  |  |  |
| Solution Admin Host | Red Hat Enterprise Linux Server | physical |
|  |  |  |

**10** | Red Hat Subscriptions

|  |  |  |
| --- | --- | --- |
| **Node Role** | **Entitlement** | **System Type** |
|  |  |  |
| Director Node | Red Hat OpenStack | virtual |
|  |  |  |
| Red Hat Ceph Storage Dashboard VM | Red Hat Ceph Storage Dashboard | physical (no virtual available at |
|  |  | this time) |
|  |  |  |
| Controller Node | Red Hat OpenStack | physical |
|  |  |  |
| Compute Node | Red Hat OpenStack | physical |
|  |  |  |
| Storage Node | Red Hat Ceph Storage | physical |
|  |  |  |

Automation Configuration Files | **11**

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**Chapter**

**3**

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**Automation Configuration Files**

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|  |  |
| --- | --- |
| **Topics:** | This chapter details obtaining the required configuration files. |



* [*Downloading and Extracting*](#page12)[*Automation Files*](#page12)

**12** | Automation Configuration Files

**Downloading and Extracting Automation Files**

The following procedure installs the required configuration files and scripts used to build the collateral

(*osp\_ks.img*) to begin deploying the solution. This system must be a RHEL 7.6 system and is only used to build up the initial kickstart file. It will not be used again as it is a one-time use, and will not be allocated permanently in the customer's OpenStack deployment.

1. Log into your RHEL 7.6 system as user *root*.
2. Download the *JetPack-automation-13.0.tgz* to the */root* directory.
3. Change the working directory to */root*.
4. Extract the tar file contents:
   * tar -xvf JetPack-automation-13.0.tgz
5. Download or copy the ISO of the Red Hat Enterprise Linux Server 7.6 installation DVD to */root/* *rhel76.iso*.

Preparing and Deploying the Solution Admin Host | **13**

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**Chapter**

**4**

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**Preparing and Deploying the Solution Admin Host**

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**Topics:**

* [*Preparing the Solution Admin*](#page14)[*Host Deployment*](#page14)
* [*Deploying the SAH Node*](#page16)

This topic describes preparing for, and performing, the Solution Admin Host (SAH) deployment.



* The Dell EMC PowerEdge R-Series servers require the Open Source Hardware Configuration Toolkit (OS-HCTK) to be run **only on the SAH**. See the Dell EMC Ready Architecture for Red Hat PowerEdge R-Series Hardware Deployment Guide.

**14** | Preparing and Deploying the Solution Admin Host

**Preparing the Solution Admin Host Deployment**

** CAUTION:** This operation will destroy all data on the SAH, with no option for recovery.

** Note:** This release uses the feature of profiles to determine the use case for a deployment. There are 2 different pre-defined profiles, CSP or xSP that can be used for a deployment. The CSP profile is designed for Telecommunications Providers, Cable TV Operators, Satellite TV, Internet Service Providers, etc. whereas the xSP profile is designed for Business & IT Services Providers such as Hosting Service Providers, Cloud Service Providers, Software-as-a-Service/Platform-as-a-Service Providers, Application Hosting Service Providers and Private Managed Cloud Service Providers.

1. Log into your RHEL 7.6 system as the *root* user.
2. Change the working directory to */root/JetPack/src/deploy/osp\_deployer/settings*.

# cd ~/JetPack/src/deploy/osp\_deployer/settings

** Note:** Pick the right sample configuration files for your deployment. There are 3

sample configuration files available, sample\_csp\_profile.ini, sample\_xsp\_profile.ini and

sample\_properties. Make sure you review Appendix D-F for additional information for the sample\_csp\_profile.ini file.

.

1. Copy the sample settings files to the ~/ directory and rename them for your deployment
   * + - * cp ~/JetStream/src/deploy/osp\_deployer/settings/sample.properties ~/acme.properties

**and**

# cp ~/JetPack/src/deploy/osp\_deployer/settings/sample\_csp\_profile.ini ~/acme.ini

**or**

# cp ~/JetPack/src/deploy/osp\_deployer/settings/sample\_xsp\_profile.ini ~/acme.ini

1. Edit your hardware stamp’s *.ini* and *.properties* files to match your hardware stamp documentation (i.e.,
   1. Solution Workbook). Use a text editor of your choice; our example uses *vi*:
      * vi ~/acme.ini
2. Change the pre-populated values in your stamp-specific .ini file to match your specific environment.

In addition, the IP addresses and the Subscription Manager Pool IDs must be changed to match

your deployment. Each section will have a brief description of the attributes.

1. The nic\_env\_file parameter must be set to the NIC configuration to use. The default value of 5\_port/

nic\_environment.yaml is appropriate for 10GbE or 25GbE Intel NICs with DPDK disabled.

** Note:** The overcloud deployment validated as of now with R630 servers is the normal compute nodes [standard deployment] without any NFV features. Although the additional information for the settings within the CSP profile can be found in the Appendixes D-F.

1. The Dell EMC Ready Bundle for Red Hat OpenStack Platform optimizes the performance of the

deployed overcloud. See Appendix G for instructions on how to further tune the performance

Optimization parameters.

1. By default, hugepages are disabled on the deployed compute nodes. To enable hugepages, see **Appendix D.**

Preparing and Deploying the Solution Admin Host | **15**

1. Edit the stamp-specific *.properties* file:
   * vi ~/acme.properties
2. Change the values in your *.properties* file to match your specific environment. You must supply a value for IP addresses, host names, passwords, interfaces, and storage OSDs/journals.

**The storage OSDs/journals configuration is not specified if the storage nodes are 14G servers with HBA330 controllers, but must be specified for all other storage node configurations.**

**Note:** Additional nodes can be added to your stamp-specific*.properties*file if your environmentcontains more than that supported by the base architecture, as described in the Dell EMC NFV Ready Bundle for Red Hat - Architecture Guide - Version 13.



The examples in this file are based on the Dell EMC NFV Ready Bundle for Red Hat – Architecture Guide- Version13, and the installation scripts rely on the VLAN IDs as specified in this file. For example, the Private API VLAN ID is 140. So, all addresses on the Private API network must have 140 as the third octet (e.g., 192.168.**140**.114). [*Table 2: VLAN IDs*](#page15) on page 15 below lists the VLAN IDs.

**Caution:** Deviating from the VLAN IDs listed below will cause the installation to fail.

|  |  |  |
| --- | --- | --- |
| **Table 2: VLAN IDs** |  |  |
|  |  |  |
| **VLAN ID** | **Name** |  |
|  |  |  |
| 110 | Management/Out of Band (OOB) Network (iDRAC) |  |
|  |  |  |
| 120 | Provisioning Network |  |
|  |  |  |
| 130 | Tenant Tunnel Network |  |
|  |  |  |
| 140 | Private API Network |  |
|  |  |  |
| 170 | Storage Network |  |
|  |  |  |
| 180 | Storage Clustering Network |  |
|  |  |  |
| 190 | Public API Network |  |
|  |  |  |
| 191 | External Tenant Network (Used for floating IP addresses) |  |
|  |  |  |
| 201-250 | Internal Tenant Network |  |
|  |  |  |

**16** | Preparing and Deploying the Solution Admin Host

** Note:** The*anaconda\_ip*is used for the initial installation of the SAH node, and requires anaddress that can access the Internet to obtain Red Hat software. When possible, the *anaconda\_iface* must be a dedicated interface using 1GbE that is only used for this purpose, and is not used in any other part of the configuration. For 10GbE or 25GbE Intel NICs, "em4" (the fourth nic on the motherboard) should be used. For 25GbE Mellanox NICs, "em2.<public\_api\_network\_vlan\_id>" (usually "em2.190") should be used.

1. Configure the Overcloud nodes' iDRACs to use either DHCP or statically-assigned IP addresses. A mix of these two choices is supported.
   1. Determine the service tag of the Overcloud nodes whose iDRAC is configured to use DHCP.
   2. Determine the IP addresses of the Overcloud nodes whose iDRAC is configured to use static IP addresses.
   3. When creating the automation *.properties* file:

• Add the following line to each node using DHCP, substituting the service tag for the node:

"service\_tag": "<serviceTagHere>",

* Add the following line to each node using static IP addressing, substituting IP address:

"idrac\_ip": "<idracIpHere>",

Only service\_tag or idrac\_ip should be specified for each Overcloud node, not both.

The iDRACs using DHCP will be assigned an IP address from the management allocation pool specified in the *.ini* file. The parameters that specify the pool range are:

* management\_allocation\_pool\_start
* management\_allocation\_pool\_end

During deployment, the iDRACs using DHCP will be automatically assigned an IP address and discovered. The IP addresses assigned to the nodes can be seen after the undercloud is deployed:

* In /var/lib/dhcpd/dhcpd.leases on the SAH Node
* In ~/instackenv.json on the Director Node
* By executing the following commands on the Director Node:

$ ironic node-list

$ ironic node-show <*node\_guid*>

**b.** When using Mellanox 25GbE NICs, add the following to each Overcloud node in the .properties file:

"pxe\_nic": "NIC.Integrated.1-1-1",

**17** | Preparing and Deploying the Solution Admin Host

1. Update your python path:
   * + export PYTHONPATH=/usr/bin/python:/lib/python2.7:/lib/python2.7/\ site-packages:~/JetPack/src/deploy
2. You can install the SAH node using either of the following methods:
   * Using a physical USB key (key must have 8GBs minimum of capacity):
     + 1. Plug your USB key into your RHEL 7.6 system.
       2. Run the setup script to prepare your USB key, passing in the USB device ID (*/dev/sdb* in the example below). This process can take up to 10 minutes to complete.

**Note:** Use full paths.



* + - cd ~/JetPack/src/deploy/setup
    - python setup\_usb\_idrac.py -s /root/acme.ini -usb\_key /dev/sdb
* Using an iDRAC virtual media image file. This requires your RHEL 7.6 system to have access to the iDRAC consoles to attach the image.
  1. Run the setup script to generate an image file that can later be attached to the SAH node.

**Note:** Use full paths.



# cd ~/JetPack/src/deploy/setup

# python setup\_usb\_idrac.py -s /root/acme.ini -idrac\_vmedia\_img

1. The output will be an image file generated in *~/* named *osp\_ks.img*.

**Deploying the SAH Node**

You can deploy the SAH node by one of two methods:

* Using a physical USB key generated above, plugged into the SAH node, or
* Using an iDRAC virtual media image generated above, made available using the **Map Removable** **Media** option on the iDRAC.

Proceed to [*Presenting the Image to the RHEL OS Installation Process*](#page16) on page 17.

**Presenting the Image to the RHEL OS Installation Process**

1. Attach the Red Hat Enterprise Linux Server 7.6 ISO as a virtual CD/DVD using the **Virtual Media** -> **Map CD/DVD** option.
2. Attach the ~/osp\_ks.img created above by using either of the following methods:
   * As a removable disk using the **Virtual Media** -> **Map Removable Disk** option, or
   * Plug in the USB key created above into the SAH.
3. Set the SAH node to boot from the virtual CD/DVD using the **Next Boot** -> **Virtual CD/DVD/ISO** option.
4. Boot the SAH node.

**a.** At the installation menu, select the **Install** option.*Do not press the [Enter] key*. **b.** Press the **Tab** key.

**c.** Move the cursor to the end of the line that begins withvmlinuz. **d.** Append the following to the end of the line:

ks=hd:sdb:/osp-sah.ks

Preparing and Deploying the Solution Admin Host | **18**

**Note:** The devicesdbcan change, depending upon the quantity of disks being presentedto the installation environment. These instructions assume that a single disk is presented. If otherwise, adjust accordingly.



1. Press the **[Enter]** key to start the installation.

**Note:** It may take a few minutes before progress is seen on the screen. Press the*[ESC]*key at thememory check to speed up the process.



**19** | Deploying the Undercloud and the OpenStack Cluster



**Chapter**

**5**

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**Deploying the Undercloud and the OpenStack Cluster**

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|  |  |
| --- | --- |
| **Topics:** | Now that the SAH node is installed you can deploy and validate the |
|  | rest of the Dell EMC NFV Ready Bundle for Red Hat nodes. |



* [*Deploying and Validating the*](#page19)[*Cluster*](#page19)

Deploying the Undercloud and the OpenStack Cluster | **20**

**Deploying and Validating the Cluster**

* **CAUTION:** This operation will destroy all data on the identified servers, with no option for recovery.

To deploy and validate the rest of the cluster:

1. Log in through the iDRAC console as *root*, or ssh into the SAH node.
2. Mount the USB media:
   * + mount /dev/sdb /mnt
3. Copy all the files locally:
   * + cp -rfv /mnt/\* /root
4. Start a tmux session to avoid losing progress if the connection drops:
   * + tmux
5. There are some post-deployment validation options in the [Sanity Test Settings] group and [Tempest Settings] group of the stamp-specific initialization file you should consider prior to deployment:
   * run\_sanity - If set to *true* the sanity\_test.sh script will be executed that will verify the basic functionality of your overcloud deployment.
   * run\_tempest - If set to *true* the Tempest integration test suite will be executed against your overcloud deployment.

**Note:** Tempest requires that the sanity test must be run first sorun\_sanity, above, mustalso be set to *true*. For more information about Tempest please refer to the *Dell EMC NFV Ready Bundle for Red* *Hat Overcloud Validation Guide*.



* + tempest\_smoke\_only - If run\_tempest, above, is set to *true* this option, which is set to *true* by default, will cause Tempest to run only a small subset of the test suite, where the tests are tagged as *"smoke"*. If set to *false* the entire Tempest suite will be run, which can take an hour or more to complete.

1. Run the deployment by executing the deployer.py command:
   * + cd /root/JetPack/src/deploy/osp\_deployer
     + python deployer.py -s <path\_to\_settings\_ini\_file> [-undercloud\_only]

[-overcloud\_only] [-skip\_dashboard\_vm]

Optional arguments include:

* + -undercloud\_only = Reinstall **only** the Undercloud
  + -overcloud\_only = Reinstall **only** the Overcloud
  + -skip\_dashboard\_vm = Do not reinstall the Red Hat Ceph Storage Dashobard VM

1. For installation details, execute a tail command on the */auto\_results/deployer.log.xxx* file on the SAH node. For example:
   * + tail -f /auto\_results/ deployer.log.2018.09.09-07.32
2. If issues are discovered during the installation process:

**a.** Identify the issue in the*deployer.log* **b.** Address the issue.

**c.** Rerun thepython deployer.pycommand above.

**21** | Deploying the Undercloud and the OpenStack Cluster

1. If the installation is successful, the *deployment\_summary.log* file will display some useful information for accessing the Dell EMC NFV Ready Bundle for Red Hat.
   * cd /auto\_results
   * cat deployment\_summary.log

The output will appear similar to this:

====================================

### nodes ip information ###

### Controllers ###

overcloud-controller-0 :

- provisioning ip : 192.168.120.128

- nova private ip : 192.168.140.110

- nova public ip : 10.118.135.20

- storage ip : 192.168.170.110

overcloud-controller-1 :

- provisioning ip : 192.168.120.129

- nova private ip : 192.168.140.109

- nova public ip : 10.118.135.21

- storage ip : 192.168.170.109

overcloud-controller-2 :

- provisioning ip : 192.168.120.127

- nova private ip : 192.168.140.117

- nova public ip : 10.118.135.22

- storage ip : 192.168.170.117

### Compute ###

overcloud-dell-compute-0 :

- provisioning ip : 192.168.120.131

- nova private ip : 192.168.140.112

- storage ip : 192.168.170.112

overcloud-dell-compute-1 :

- provisioning ip : 192.168.120.122

- nova private ip : 192.168.140.113

- storage ip : 192.168.170.113

### Storage ###

overcloud-cephstorage-0 :

- provisioning ip : 192.168.120.133

- storage cluster ip : 192.168.180.115

- storage ip : 192.168.170.115

overcloud-cephstorage-1 :

- provisioning ip : 192.168.120.124

- storage cluster ip : 192.168.180.108

- storage ip : 192.168.170.108

overcloud-cephstorage-2 :

- provisioning ip : 192.168.120.132

- storage cluster ip : 192.168.180.116

- storage ip : 192.168.170.116

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OverCloud Horizon : http://10.118.135.10:5000//v3

OverCloud admin password : AdZ3re629WZuYKMkRRpNMQPft

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Files References | **22**

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**Appendix**

**A**

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**Files References**

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**Topics:**

• *Solution Files* This appendix lists documents and script archives that are requiredto install and deploy the Dell EMC NFV Ready Bundle for Red Hat.Please contact your Dell EMC representative for copies if required.

**Solution Files**

Dell EMC NFV Ready Bundle for Red Hat include:

• *JetPack-manual-13.0.tgz* - Contains all manual deployment solution scripts

• *JetPack-automation-13.0.tgz -* Contains all automation deployment solution scripts

• *Dell EMC NFV Ready Bundle for Red Hat - Documentation Index Version - 13*

• *Dell EMC NFV Ready Bundle for Red Hat - Architecture Guide - 13*

• *Dell EMC NFV Ready Bundle for Red Hat - Hardware Deployment Guide - Version 13*

• *Dell EMC NFV Ready Bundle for Red Hat - Software Deployment Guide - 13*

• *Dell EMC NFV Ready Bundle for Red Hat Adding and Removing Compute and Storage Nodes Guide*

• *Dell EMC NFV Ready Bundle for Red Hat Workbook*

• *Dell EMC NFV Ready Bundle for Red Hat - Release Notes Version - 13*

**23** | Updating RPMs on Version Locked Nodes

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**Appendix**

**B**

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**Updating RPMs on Version Locked Nodes**

****

**Topics:**

* [*Updating the RPMs*](#page67)

At a high level, updating RPMs on a version locked node (Red Hat OpenStack Platform Director Node or Red Hat Ceph Storage Dashboard VM):

1. Identifies the RPMs that need to be updated.
2. Updated RPMs removed from the version lock list for that node.
3. Updates RPMs.
4. Adds the updated RPMs back into the version lock list.

This topic provides detailed information to perform those steps.

Updating RPMs on Version Locked Nodes | **24**

**Updating the RPMs**

To update the RPMs:

**Note:** All of the following commands should be run as the **root** user.

1. Produce a list of RPMs that are version locked on a node:
   * **a.** Login to a node.
   * **b.** Execute the following command to produce a list of RPMs that are version locked:
     + #yum versionlock list
2. Identify the RPMs to be updated from the output of the above command.
3. Remove the selected RPMs from the version lock list:
4. Execute the following command, substituting *VLockListEntry* with an RPM name from the output of the versionlock list command above:

**Note:** The*VLockListEntry*must **exactly** match an RPM name in the output of theyumversionlock list command.

* + - #yum versionlock delete *VLockListEntry*

b. Repeat for each RPM.

1. Update each of the selected RPMs:
   * a. Execute the following command for an RPM, substituting *RPMNameWithoutVersion* with the name of the RPM **without** the version number:
     + #yum update *RPMNameWithoutVersion*
   * b. Repeat for each subsequent RPM
2. Add each of the selected RPMs back into the version lock list:
   * Execute the following command, again substituting *RPMNameWithoutVersion* with the name of the RPM **without** the version number:
     + #yum versionlock add *RPMNameWithoutVersion*

**25** | OpenStack Operations Functional Test (Optional)



**Appendix**

**C**

**OpenStack Operations Functional Test (Optional)**

****

**Topics:**

* [*Creating Neutron Networks in*](#page69)[*thOvercloud*](#page69)
* [*Manual RHOSP Test*](#page70)
* [*Scripted RHOSP Sanity Test*](#page73)

This optional section includes instructions for creating the networks and testing a majority of your RHOSP environment using Glance configured with Red Hat Ceph Storage, SC Series, or any backend. These command line instructions are working examples that you may found on the OpenStack website.

OpenStack Operations Functional Test (Optional) | **26**

**Creating Neutron Networks in the Overcloud**

The following example commands create the required tenant and public networks, and their network interfaces. You must complete them prior to creating instances and volumes, and testing of the functional operations of OpenStack.

* **Note:** The following commands and those in the following section should be executed on theDirector Node.

1. Log into the Director Node using the user name and password specified when creating the node and source the *overcloudrc* file, or the name of the stack defined when deploying the overcloud :

$ cd ~/

$ source overcloudrc

1. Create the tenant network by executing the following commands:

* **Note:** Replace*tenant\_network\_name*with your desired values. (e.g.,neutron net-createtenant\_net --shared).

$ neutron net-create <tenant\_network\_name> --shared

1. Create the tenant subnet on the tenant network:

* **Note:** Replace*tenant\_network\_name*,*vlan\_network*,*vlan\_name*and*vlan\_gateway*with yourdesired values (e.g., neutron subnet-create tenant\_net 192.168.201.0/24 -- name tenant\_201).

$ neutron subnet-create <tenant\_network\_name> <vlan\_network> \ --name <vlan\_name>

1. Create the router:

* **Note:** Replace*tenant\_router*with your desired values (e.g.,neutron router-createtenant\_201\_router).

$ neutron router-create <tenant\_router>

1. Before you add the tenant network interface, you will need the subnets ID. Execute the following command to display them:

$ neutron net-list

The displayed output will be similar to the following (example truncated for brevity):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| +-------------------------------------- | + | ------------- | + | --------------- | ... |
| | id | | | name | | subnets | | ... |
| +-------------------------------------- | + | ------------- | + | --------------- | ... |
| | 52411536-ec43-402f-9736-4cabdc8c875d | | | tenant\_net |  | | 7329d413 ... | |
| | 0af01763-539e-41c7-ac32-abbaa62ee575 | | | HA network tenant | bdae0b72 ... | | | |
| +-------------------------------------- | + | ------------- | + | -------------- | ... |

1. Add the tenant network interface between the router and the tenant network:

* **Note:** Replace*tenant\_router*and*subnets\_id*with your desired values (e.g.,

neutron router-interface-add tenant\_201\_router 7329d413-ac23-56cf-8867-133b5ff8fc12).



$ neutron router-interface-add <tenant\_router> <subnets\_id>

1. Create the external network by executing the following commands:

**27** | OpenStack Operations Functional Test (Optional)

**Note:** Replace*external\_network\_name*and*external\_vlan\_id*with your desired value. (e.g.,



neutron net-create public --router:external --provider:network\_type

vlan --provider:physical\_network physext --provider:segmentation\_id 191).

$ neutron net-create <external\_network\_name> --router:external \ --provider:network\_type vlan --provider:physical\_network physext \ --provider:segmentation\_id <external\_vlan\_id>

1. Create the external subnet with floating IP addresses on the external network:

* **Note:** Replace*external\_subnet\_name*,*start\_ip*,*end\_ip*,*external\_network\_name*,*external\_vlan\_network* and *external\_gateway* with your desired values (e.g.,

neutron subnet-create --name external\_sub --allocation-pool start=192.168.191.2,end=192.168.191.30 --disable-dhcp --gateway 192.168.191.254 public 192.168.191.0/24).



$ neutron subnet-create --name <external\_subnet\_name> \

--allocation-pool start=<start\_ip>,end=<end\_ip> \

--disable-dhcp --gateway <gateway\_ip> <external\_network\_name>

<external\_vlan\_network>

1. Set the external network gateway for the router:

* **Note:** Replace*tenant\_router\_name*with the router name*external\_nework\_name*with theexternal network name (e.g., neutron router-gateway-set tenant\_201\_router public).



$ neutron router-gateway-set <tenant\_router\_name> <external\_network\_name>

**Manual RHOSP Test**

This example uses the Cirros image to test high-level functional operations of OpenStack.

1. Log into the Director Node using the user name and password specified when creating the node.
2. Download the Cirros image:

****

$ wget http://download.cirros-cloud.net/0.3.3/cirros-0.3.3-x86\_64-disk.img

1. Source your Overcloud credentials:

****$ cd ~/

$ source <overcloud\_name>rc

1. Create and upload the Glance image:

****$ openstack image create --disk-format <format> \

--container-format <format> --public --file <file\_path>

For example:

****$ openstack image create --disk-format qcow2 \

--container-format bare --public --file cirros-0.3.3-x86\_64-disk.img

1. List available images to verify that your image uploaded Successfully:

$ openstack image list

****

OpenStack Operations Functional Test (Optional) | **28**

1. To view more detailed information about an image, use the identifier of the image from the output of the openstack image list command above:

****

$ openstack image show <id>

1. ****Launch an instance using the boot image that uploaded:

**a.** Get the ID of the flavor you will use:

$ nova flavor-list

1. Get the image ID:

****

$ glance image-list

1. Get the tenant network ID:

****

$ openstack network list

1. Generate a key pair. The command below generates a new key pair; if you try using an existing key pair in the command, it fails.

* **Note:** MY\_KEY.pemis an output file created by thenova keypair-addcommand, and willbe used later.

****

$ nova keypair-add <key\_name> > MY\_KEY.pem

1. Create an instance using the nova boot command.

* **Note:** Change the*IDs*to your IDs from Steps 7a-c, and the*nameofinstance*and the*key\_name* from Step 7c:

****$ nova boot --flavor <flavor\_id> --key\_name <key\_name> \

--image <imageid> --nic net-id=<tenantNetID> <nameofinstance>

For example:

****

$ nova boot --flavor 2 --key\_name key\_name \ --image 0bde34f6-fba6-4174-a3ea-ff2a7918de2e \

--nic net-id=52411536-ec43-402f-9736-4cabdc8c875d cirros-test

1. List the instance you created:

****

$ nova list

1. If you have multiple backends, create a Cinder volume type for each backend. Get the <volume\_backend\_name> from the */etc/cinder/cinder.conf* file on the Controller node.

****$ cinder type-create <type\_name>

$ cinder type-key <type\_name> set \

volume\_backend\_name=<volume\_backend\_name>

For example:

****

$ cinder type-create rbd\_backend

$ cinder type-key rbd\_backend set volume\_backend\_name=tripleo\_ceph

$ cinder type-create dellsc\_backend

$ cinder type-key dellsc\_backend set volume\_backend\_name=dellsc

1. Create a new volume to test the Cinder volumes:

**29** | OpenStack Operations Functional Test (Optional)

* **Note:** If you have multiple backends defined, you must append the optional arguments--volume-type <*type-name*> from Step 7 to the command below.

****

$ cinder create --display-name <name> <sizeinGB>

For example:

****

$ cinder create --display-name vol\_test1 1

1. List the Cinder volumes:

****

$ cinder list

1. Attach the volume to the instance, specifying the server ID and the volume ID.

* **Note:** Replace the*server\_id*with the ID returned from thenova listcommand, andreplace the *volume\_id* with the ID returned from the cinder list command, from the previous steps.

****

$ nova volume-attach <server\_id> <volume\_id> <device>

For example:

****

$ nova volume-attach 84c6e57d-a6b1-44b6-81eb-fcb36afd31b5 \ 573e024d-5235-49ce-8332-be1576d323f8 /dev/vdb

1. **.**Access the instance.
   1. Find the active Controller by executing the following commands from the Director Node:

****

$ cd ~/

$ source stackrc

$ nova list (make note of the controllers ips)

$ ssh heat-admin@<controller ip>

$ sudo -i

# pcs cluster status

The displayed output will be similar to the following:

****

Cluster name: tripleo\_cluster

Last updated: Wed Apr 6 20:48:10 2016

Last change: Mon Apr 4 18:49:20 2016 by root via cibadmin on overcloud-

controller-1

Stack: corosync

Current DC: overcloud-controller-1 (version 1.1.13-10.el7\_2.2-44eb2dd) - partition with quorum

1. nodes and 112 resources configured
   1. Initiate an SSH session to the active Controller, as **heat-admin**.
   2. Find the instances by executing the following command:



$ sudo -i

# ip netns

The displayed output will be similar to the following:



qrouter-21eba0b0-b849-4083-ac40-44b794744e9f

qdhcp-f4a2c88f-1bc9-4785-b070-cc82d7c334f4

OpenStack Operations Functional Test (Optional) | **30**

* 1. Access an instance namespace by executing the following command:



# ip netns exec <namespace> bash

For example:



ip netns exec qdhcp-f4a2c88f-1bc9-4785-b070-cc82d7c334f4 bash

**e.** Verify that the namespace is the desired tenant network, by executing the following command:

ip a

The displayed output will be similar to the following:



1: lo: <LOOPBACK,UP,LOWER\_UP> mtu 65536 qdisc noqueue state UNKNOWN

link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00

inet 127.0.0.1/8 scope host lo

valid\_lft forever preferred\_lft forever

inet6 ::1/128 scope host

valid\_lft forever preferred\_lft forever

19: tap05a22fb4-4f: <BROADCAST,MULTICAST,UP,LOWER\_UP> mtu 1500 qdisc

noqueue state UNKNOWN

link/ether fa:16:3e:99:b9:88 brd ff:ff:ff:ff:ff:ff

inet 192.168.201.2/24 brd 192.168.201.255 scope global tap05a22fb4-4f ->

Tenant network

valid\_lft forever preferred\_lft forever

inet6 fe80::f816:3eff:fe99:b988/64 scope link

valid\_lft forever preferred\_lft forever

1. Ping the IP address of the instance.
2. SSH into the instance, as **cirros**, using the keypair generated above:



$ ssh -i MY\_KEY.pem cirros@<ip>

11. Format the drive and access it.

a. List storage devices:

$ sudo -i

# fdisk –l

b. Format the drive:

# mkfs.ext3 /dev/vdb

c. Mount the device, access it, and then unmount it:

# mkdir ~/mydrive

# mount /dev/vdb ~/mydrive

# cd ~/mydrive

# touch helloworld.txt

# ls

# umount ~/mydrive

**Scripted RHOSP Sanity Test**

As an alternative to manually testing your deployment script, we provide sanity\_test.sh, which tests all of the basic functionality outlined in [*Creating Neutron Networks in the Overcloud*](#page69) on page 26 and [*Manual RHOSP Test*](#page70) onpage 27.

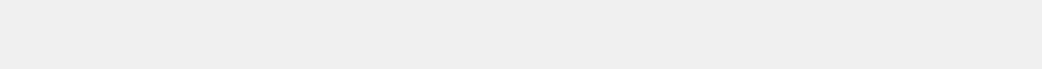
**31** | OpenStack Operations Functional Test (Optional)

To run the sanity test script:

1. Log into the Director Node using the user name and password specified when creating the node.
2. Review the pilot/deployment-validation/sanity.ini file, and modify the parameters as appropriate for your environment. If using OvsDpdp, set the value for ovs\_dpdk\_enabled= to True.

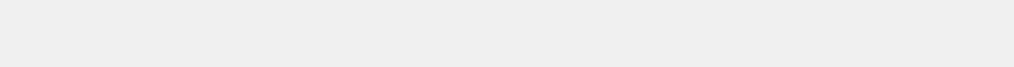
* **Note:** The sanity test generates the public/private SSH key pair using the name specifiedin sanity.ini in the sanity\_key\_name parameter. The public key is named *~/* *<sanity\_key\_name>.pub*, and the private key is named *~/<sanity\_key\_name>*.

1. From your home directory, execute the sanity\_test.sh script:

$ cd ~/

$ ./pilot/deployment-validation/sanity\_test.sh

1. If you wish to clean the environment once the sanity\_test.sh script has run successfully:

$ cd ~/

$ ./pilot/deployment-validation/sanity\_test.sh clean

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Hugepages | **32**

**Appendix**

**D**



**Hugepages**

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**Topics:**

* [*Hugepages Overview*](#page76)
* [*Prerequisites*](#page76)
* [*Enabling and Deploying*](#page76)[*Hugepages*](#page76)
* [*Logging*](#page77)
* [*Example of*](#page78)

[*sample\_csp\_profile.ini*](#page78)

This appendix details the guidelines for configuration of hugepages during the deployment of Dell EMC NFV Ready Bundle for Red Hat version 13. The number of Hugepages is now calculated at runtime and no longer needs to be specified by the user.

Hugepages | **33**

**Hugepages Overview**

The Dell EMC NFV Ready Bundle for Red Hat provides the ability to enable hugepage support on all Nova compute nodes in the solution.

The Linux kernel partitions memory into basic units called pages. The default number of pages is 49152 in the x86 architecture. Hugepages allow the Linux kernel to utilize the multiple page size capabilities of modern hardware architecture.

Earlier, in previous release, fixed values were used for the number of hugepages. The number of hugepages was set to 49152 and 96 when the hugepage size was set to 2MB and 1GB respectively.

In Dell EMC NFV Ready Bundle for Red Hat Software Deployment Guide - Version 13, the number of hugepages is computed during runtime. The OpenStack Ironic API is used to fetch the **total memory size** of a compute node, and the following formula is applied to calculate the number of hugepages:

Hugepage Number = ( Total Memory Size - ( Memory Reserved for Host OS + Memory Reserved for Kernel)) / Size of a Hugepage

The number of hugepages is calculated for each compute node based on that node's memory size. The smallest number of hugepages supported by all compute nodes is then used to configure all the compute nodes with this number of hugepages. This means that all compute nodes will be configured with the number of hugepages that are supported by the compute node with the least amount of memory.

**Prerequisites**

The following requirements must be met before enabling hugepages:

1. Memory size must be greater than or equal to 128GB on every compute node.

**Note:** It is assumed that:

* 1. The memory reserved for the host OS = 12GB
  2. The memory reserved for the kernel = 4GB

1. Refer to the automated or manual deployment sections before setting these values.

**Enabling and Deploying Hugepages**

This section provides the instructions to configure and deploy hugepage support.

**Enabling Hugepages**

**HugePages configuration parameters**

1. hpg\_enable: (true/false) (Set "true" for enabling hugepages and "false" for disabling it.)
2. hpg\_size: 1GB/2MB (The hugepage size to be configured on every compute node. The default is:

1GB)

Follow the procedure below to enable Hugepages on Dell EMC NFV Ready Bundle for Red Hat version 13:

1. Open an SSH session to the SAH node.
2. Log in as the root user.
3. Refer to section [*Automation configuration files*](#page14) in this document.
4. Set hpg\_enable=true
5. Set hpg\_size to the size of the hugepages to use

**Note:** Valid values are1GBand2MB



Refer to the [Dell NFV Settings] section of [*Example of sample\_csp\_profile.ini*](#page78) for details.

Hugepages | **34**

**Deploying with Hugepages**

After enabling hugepages in the hardware stamp's *.ini* file, perform the following steps to deploy hugepages in Dell EMC NFV Ready Bundle for Red Hat.

1. Open an SSH session to the SAH node.
2. Run the following commands to deploy the Overcloud with hugepages enabled:
   1. cd /root/JetPack/src/deploy/osp\_deployer
   2. python deployer.py -s <path\_to\_settings\_ini\_file>

**Note:** During deployment, JetPack takes the following actions:

1. Fetches the memory size of every compute node.
2. Selects the minimum memory size among all compute nodes.
3. Calculates the number of hugepages using the following formula:

**Hugepage Number = ( Total\_Mem - ( Host\_Mem + Kernel\_Mem )) / hugepage\_size**

**Logging**

Status messages are logged to /auto\_results/deployer.log<time\_stamp> on the SAH node and ~/pilot/overcloud\_deploy\_out.log on the director node.

1. When the deployment has successfully completed, the following message will be displayed in the log files:

HugePages has been successfully configured with size: 1GB

1. If the deployment fails due to either a validation failure or other error, refer to the table [*Table 18:*](#page77) [*Hugepages Error Messages*](#page77) onpage 77

Below is the table of log messages and actions to be taken upon encountering such errors. If other errors occur, please email [*openstack@dell.com*](mailto:openstack@dell.com).

**Table 18: Hugepages Error Messages**

|  |  |  |
| --- | --- | --- |
| **ErrorError Message** | | **Further Action** |
| **Description** | |  |
| RAM"Failed to | | RAM size must be |
| size calculate | | 128GB or more |
| is | hugepage | on all compute |
| less count RAM | | nodes. |
| than size is less | |  |
| 128GBthan 128GB | |  |
| on | make sure |  |
| one | to have all |  |
| or | prerequisites" |  |
| more | |  |
| compute | |  |
| nodes. | |  |
|  |  |  |

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**Example of sample\_csp\_profile.ini**

[Dell NFV Settings]

#Provide NFV features here.

#Enter value of enable\_hpg as true/false for HugePages hpg\_enable=true

#User should give this parameter in same format.

#Supported values for hpg\_size(Size of hugepages) is 2MB and 1GB.

hpg\_size=1GB

For more details, refer to the [Dell NFV Settings] section of the [*Sample CSP .ini File*](#page103) on page 103.

NUMA | **36**

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**Appendix**

**E**

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**NUMA**

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**Topics:**

* [*NUMA Overview*](#page80)
* [*Prerequisites*](#page80)
* [*Enabling and Deploying NUMA*](#page80)
* [*Logging*](#page81)
* [*Example of*](#page81)
* [*sample\_csp\_profile.ini*](#page81)

This appendix details the guidelines for configuration of NUMA during the deployment of Dell EMC NFV Ready Bundle for Red Hat version 13.

The last release offered basic and minimal NUMA enablement via Jetpack. The functionality was limited to the fixed and preset number of Host OS CPUs for NUMA enablement.

This release version, 13, offers hardware supported dynamic values of parameters required for NUMA enablement. Values are retrieved from the Ironic API during RHOSP deployment.

**37** | NUMA

**NUMA Overview**

The Dell EMC NFV Ready Bundle for Red Hat version 13 provides the ability to enable NUMA optimization and CPU pinning support on all Nova compute nodes in the solution.

Non-uniform memory access or NUMA allows multiple CPUs to share local memory, which improves performance due to improved memory access times.

This appendix provides the instructions to configure this feature at the time of deployment.

**Warning:** Do not reboot any nodes when optional feature scripts are active. If any node isrebooted, the deployment will fail.

**Prerequisites**

The following hardware requirements must be met for NUMA compatibility:

* + - Hyperthreading should be enabled and the degree of hyperthreading should be 2.
    - The number of CPU cores per socket must be 10, 12, 14, 16, or 32.
    - The total number of CPU sockets must be 2.

**Enabling and Deploying NUMA**

This section provides the instructions to configure NUMA.

**Enabling NUMA**

**NUMA configuration parameters**

* + numa\_enable: True/False (True for enabling NUMA and False for disabling it.)
  + numa\_hostos\_cpu\_count: 2|4|6|8 (The number of CPU cores to reserve for the host OS.)

Follow the procedure provided below to enable NUMA optimization and CPU pinning on Dell EMC NFV Ready Bundle for Red Hat version 13:

1. Open an SSH session to the SAH node.
2. Log in as the root user.
3. Refer to section [*Automation configuration files*](#page14) in this document.
4. Set numa\_enable=true.
5. Set numa\_hostos\_cpu\_count to the number of CPU cores to reserve for the host OS.

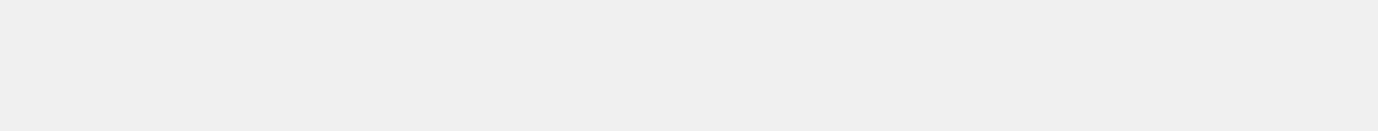
**Note:** Valid values are2,4,6, and8.

Refer to the [Dell NFV Settings] section of [*Example of sample\_csp\_profile.ini*](#page81) for details.

**Deploying with NUMA**

After enabling NUMA in the hardware stamp's *.ini* file, perform the following steps to deploy NUMA in Dell EMC NFV Ready Bundle for Red Hat.

1. Open an SSH session to the SAH node.
2. Run the following commands to deploy the Overcloud with NUMA enabled:
   1. cd /root/JetPack/src/deploy/osp\_deployer
   2. python deployer.py -s <path\_to\_settings\_ini\_file>



**Note:** During deployment, JetPack takes the following actions:



NUMA | **38**

1. Fetches the number of CPU cores of every compute node.
2. Takes the minimum number of CPU cores among all compute nodes.
3. Calculates the sibling pairs based on the CPU cores.
4. Reserves numa\_hostos\_cpu\_count CPU cores for the host OS.

**Logging**

Status messages are logged to /auto\_results/deployer.log<time\_stamp> on the SAH node and ~/pilot/overcloud\_deploy\_out.log on the director node.

1. When the deployment has successfully completed, the following messages will be displayed on the SAH node console and in the log files:

NUMA has been successfully configured with hostos\_cpu\_count:

<2/4/6/8>.OverCloud deployment status: CREATE\_COMPLETE

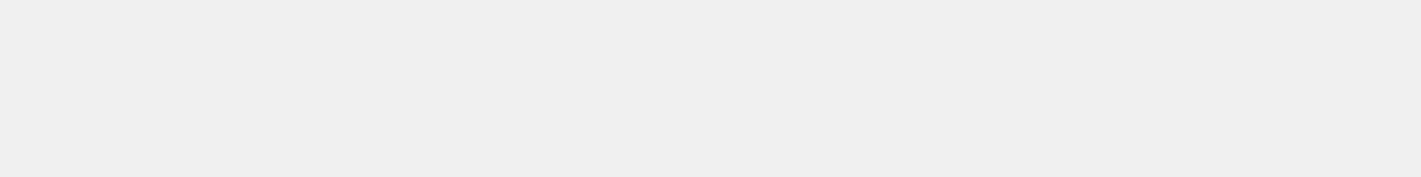
1. If the deployment fails due to either a validation failure or other error, refer to the table [*Table 19: NUMA*](#page81) [*Error Messages*](#page81) onpage 81.

Below is the table of log messages and actions to be taken upon encountering such errors. If other errors occur, please email [*openstack@dell.com*](mailto:openstack@dell.com).

**Table 19: NUMA Error Messages**

|  |  |  |
| --- | --- | --- |
| **Error Description** | **Error Message** | **Action** |
| Failed to calculate | "Failed to | Check drac client is up. Redeploy or contact support if |
| vcpu list of Numa. | calculate | the problem persists. |
|  | Numa Vcpu |  |
|  | list" |  |
|  |  |  |
| Hyper-threading | "Hyperthrea- | Enable hyper-threading in BIOS setting of all the |
| not enabled. | ding is not | compute nodes. Redeploy if problem persists. |
|  | enabled in |  |
|  | node\_id" |  |
|  |  |  |
| Invalid CPU count | "The number | Verify in .ini file the values in Dell NFV Settings |
| value. | of vCPUs, as | section are correct. |
|  | specified in |  |
|  | the reference |  |
|  | architecture, |  |
|  | must be one |  |
|  | of [40, 48, |  |
|  | 56, 64, 72, |  |
|  | 128] but |  |
|  | number of |  |
|  | vCPUs are 32" |  |
|  |  |  |

**Example of sample\_csp\_profile.ini**

****

[Dell NFV Settings]

#Provide NFV features here.

#Enter value of enable\_numa as true/false for NUMA

Dell EMC NFV Ready Bundle for Red Hat Software Deployment Guide Version 13

**39** | NUMA

numa\_enable=true

#Enter number of cores you want to reserve for Host OS #Supported values are 2 or 4 or 6 or 8 numa\_hostos\_cpu\_count=4

For more details, refer to the [Dell NFV Settings] section of the [*sample\_csp\_profile.ini*](#page103) file.

OVS-DPDK | **40**

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**Appendix**

**F**

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**OVS-DPDK**

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**Topics:**

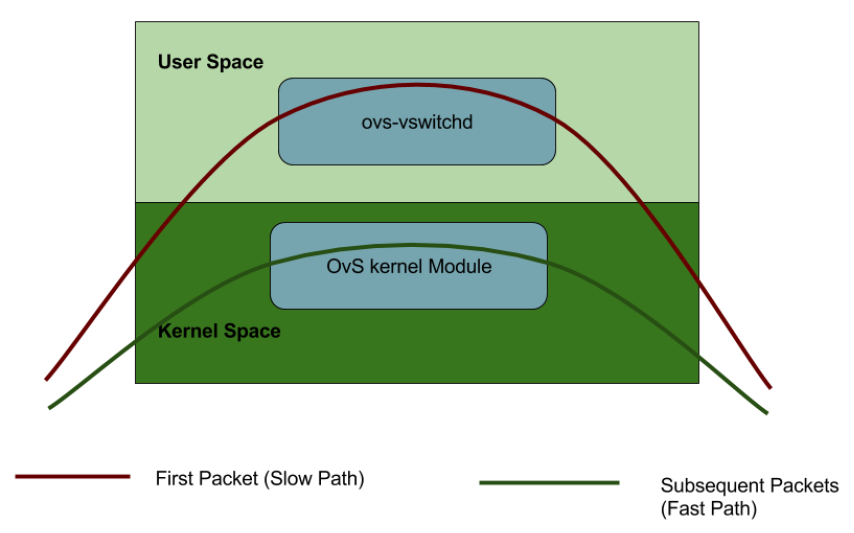
* [*OvS*](#page84)
* [*DPDK*](#page84)
* [*OVS-DPDK*](#page84)
* [*OVS-DPDK in Dell EMC NFV*](#page85)[*Ready Bundle for Red Hat*](#page85)
* [*Before You Begin*](#page85)
* [*Prerequisites*](#page85)
* [*Start Deployment*](#page90)
* [*Success*](#page90)
* [*Failure*](#page90)
* [*Post Deployment Steps*](#page92)
* [*Cores Distribution*](#page93)
* This appendix details the guidelines for configuration of OVS-DPDK at the time of deployment of Dell EMC Red Hat OpenStack NFV Solution 13.
* **Note:** OVS-DPDK has only been validated with [intel blurb]x710 and XXV710.

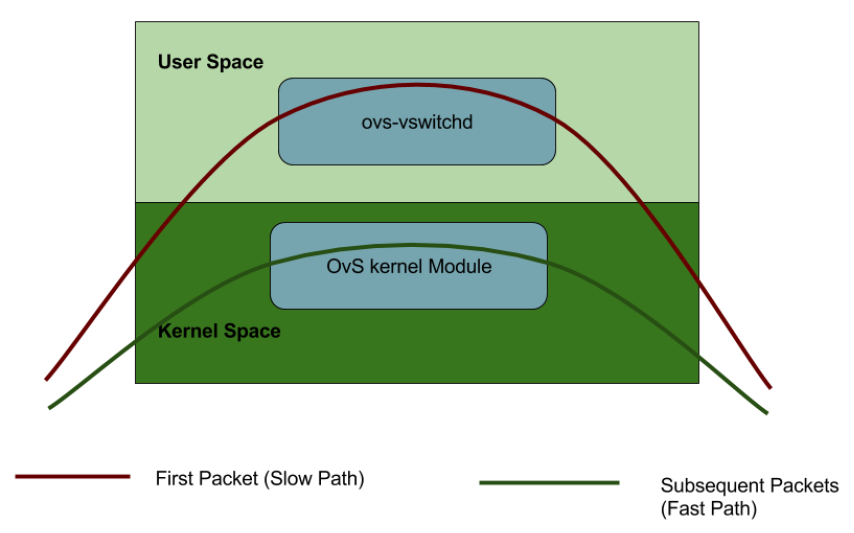
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**OvS**

**Open vSwitch (OvS)** is a multilayer software/virtual switch used to interconnect virtual machines in thesame host and between different hosts.

Open vSwitch makes use of kernel for packet forwarding through a data path known as “fastpath” which consists of a simple flow table with action rules for the received packets. Exception packets, i.e., packets with no corresponding forwarding rule in the flow table are sent to the user space (slowpath) first. Switching between two memory spaces creates much overhead, thus making the user space “slowpath”. User space takes a decision and updates the flow table in the kernel space accordingly so they can make use of fastpath in future.





**Figure 2: OvS Architecture**

As can be seen in the Figure 2, OVS kernel module acts as a cache for the user space. And just like a cache, its performance decreases as the number of rules increase in the user space.

**DPDK**

The Data Plane Development Kit (DPDK) is a set of data plane libraries and network interface controller drivers for fast packet processing from Intel. DPDK runs inside user space, and gives applications direct access to raw traffic from NIC, completely bypassing kernel and kernel IP Stack. It further utilizes poll mode drivers (PMDs) and Hugepages to increase network performance.

**OVS-DPDK**

With the help of DPDK, all the OVS processes are moved to user space. Since all the paths are in single space, it removes the bottleneck created by continuous switching between two spaces.

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**OVS-DPDK in Dell EMC NFV Ready Bundle for Red Hat**

OVS-DPDK is enabled as a part of the automated RHOSP deployment. There is no post deployment enablement support in this release.

If enabled, OVS-DPDK must be so on all compute nodes.

**Note:** OVS-DPDK deployment is enabled only on Dell Compute role.

OVS-DPDK requires an extra network bond; the already existing bonds (bond0 and bond1) carry storage network, OpenStack tunnelled tenant network and internal API network. The OVS-DPDK bond will carry OpenStack VLAN tenant networks.

**Before You Begin**

In this guide, it is assumed that the user has complete knowledge about the Dell EMC NFV Ready Bundle for Red Hat Version 13. This includes:

1. Knowledge about different nodes in Dell EMC NFV Ready Bundle for Red Hat version 13, like SAH, Director, Controller, Compute and Ceph-storage as explained in Dell EMC NFV Ready Bundle for Red Hat - Hardware Deployment Guide - Version 13 .
2. Hardware configurations including switch configurations as explained in Dell EMC NFV Ready Bundle for Red Hat - Hardware Deployment Guide - Version 13.
3. Automation scripts, settings, and properties files required for deployment are available in the Dell EMC NFV Ready Bundle for Red Hat - Software Deployment Guide Version - 13.

**Prerequisites**

Before starting the deployment of Dell EMC NFV Ready Bundle for Red Hat Version 13 with OVS-DPDK, following prerequisites must be met:

1. Hyperthreading should be enabled and degree of hyperthreading should be 2.
2. CPU core count per socket should be one of 10/12/14/16/32.
3. Total number of cpu sockets should be 2.
4. NUMA and Hugepages settings should be enabled in the .ini file.

**Note:** Hugepage Size should behpg\_size=1GBfor OVS-DPDK.

1. Extra NICs:

Two extra Intel x710 or XXV710 NICs in the compute nodes are attached. For Dell EMC PowerEdge R640, OVS-DPDK NICs are plugged in PCI Slot 2 & 3 and for Dell EMC PowerEdge R740xdOVS-DPDK NICs are plugged in PCI Slot 4 & 5. NDC (Network Daughter Card) and PCI Slot 1 NICs are used for deployment (bond0 and bond1).

1. Cabling and switch configuration:

To setup the switch configurations, connect the OVS-DPDK NICs to leaf switches. The connections need to be such that high availability (HA) is ensured. This means that one NIC is connected to leaf switch 1, and other to leaf switch 2. The bond is created over two NICs to ensure that network is up even when one NIC or a leaf switch goes down.

Switch configurations depend on the OVS-DPDK mode. With simple OVS, tenant networks are carried over bond0. In this case, assume that the VLAN range for tenant networks is 201-250.

**Note:** For successfully enabling OVS-DPDK, the following section provides guidance on theconfiguration changes done to the Dell EMC Networking Switch S6010. For guidance on other Dell EMC Networking Switch models or for implementation assistance please contact Dell EMC sales representatives.

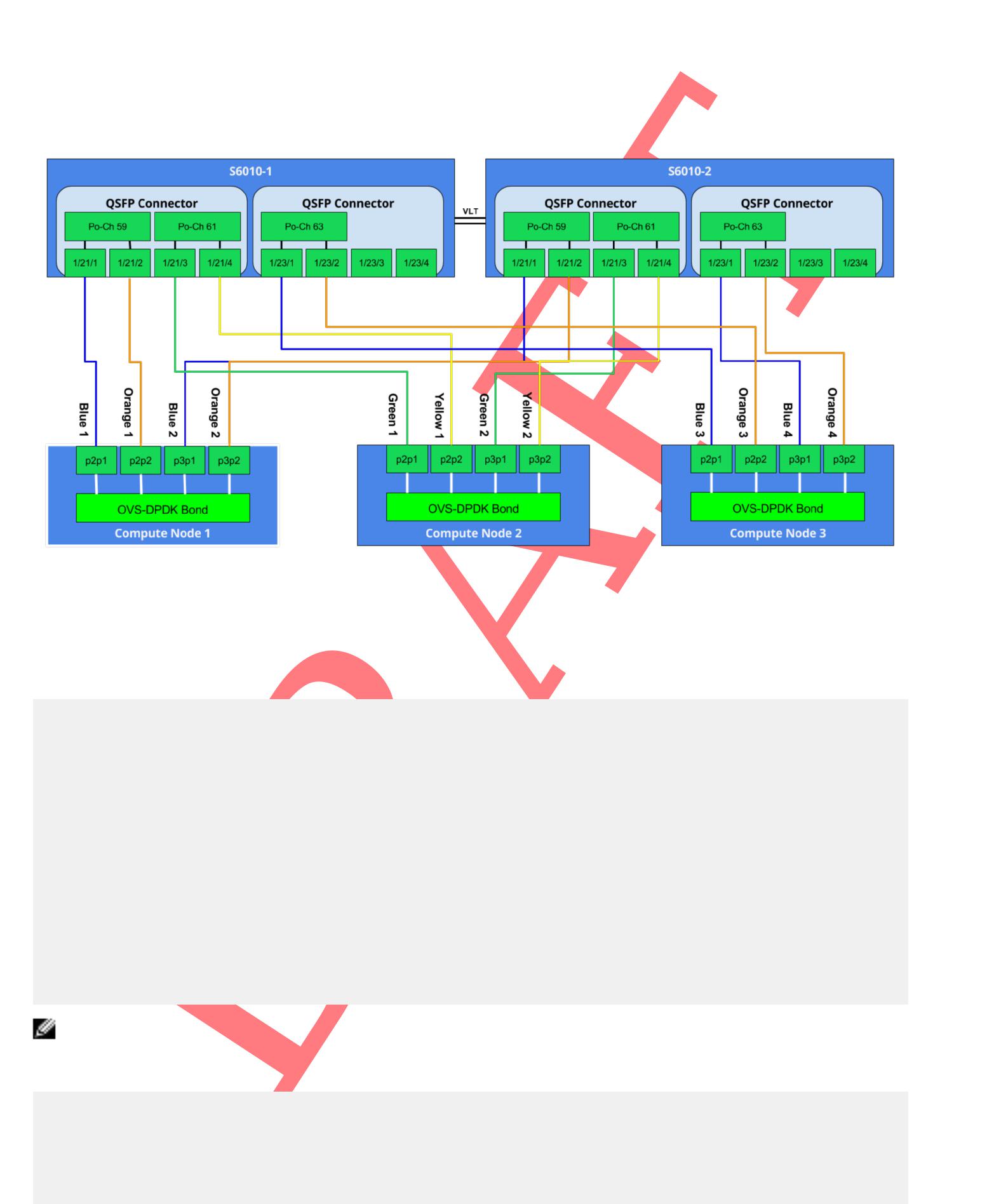


Dell EMC NFV Ready Bundle for Red Hat Software Deployment Guide Version 13

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**Mode 1, Tenant Networks Only:**

For this scenario, switch configuration will have three major changes:



* 1. Creation of new port channels for the new ports that will be used for OVS-DPDK bond. In this mode, LACP will be enabled on 4 ports.
  2. Removal of VLANs 201-250 from bond0. This means removing the tagged port channel from these VLANs that correspond with the compute nodes' bond0.
  3. Addition of new tagged port channels to these VLANs.

**Figure 3: OVS-DPDK Mode 1 reference wiring diagram**

Assuming that one of the compute node’s PCI Slot 2 is connected to Leaf-1 switch’s interfaces 1/21/1 and 1/21/2 and PCI Slot 3 to Leaf-2 switch’s interfaces 1/21/1 and 1/21/2, The configuration for these interfaces on both switches will be:

!

interface TenGigabitEthernet 1/21/1

no ip address

!

port-channel-protocol LACP

port-channel 59 mode active

no shutdown

!

interface TenGigabitEthernet 1/21/2

no ip address

!

port-channel-protocol LACP

port-channel 59 mode active

no shutdown

**Note:** Two interfaces are configured per port channel on each switch.

Also the port channel will have the following configuration on both switches:

!

interface Port-channel 59

no ip address

switchport

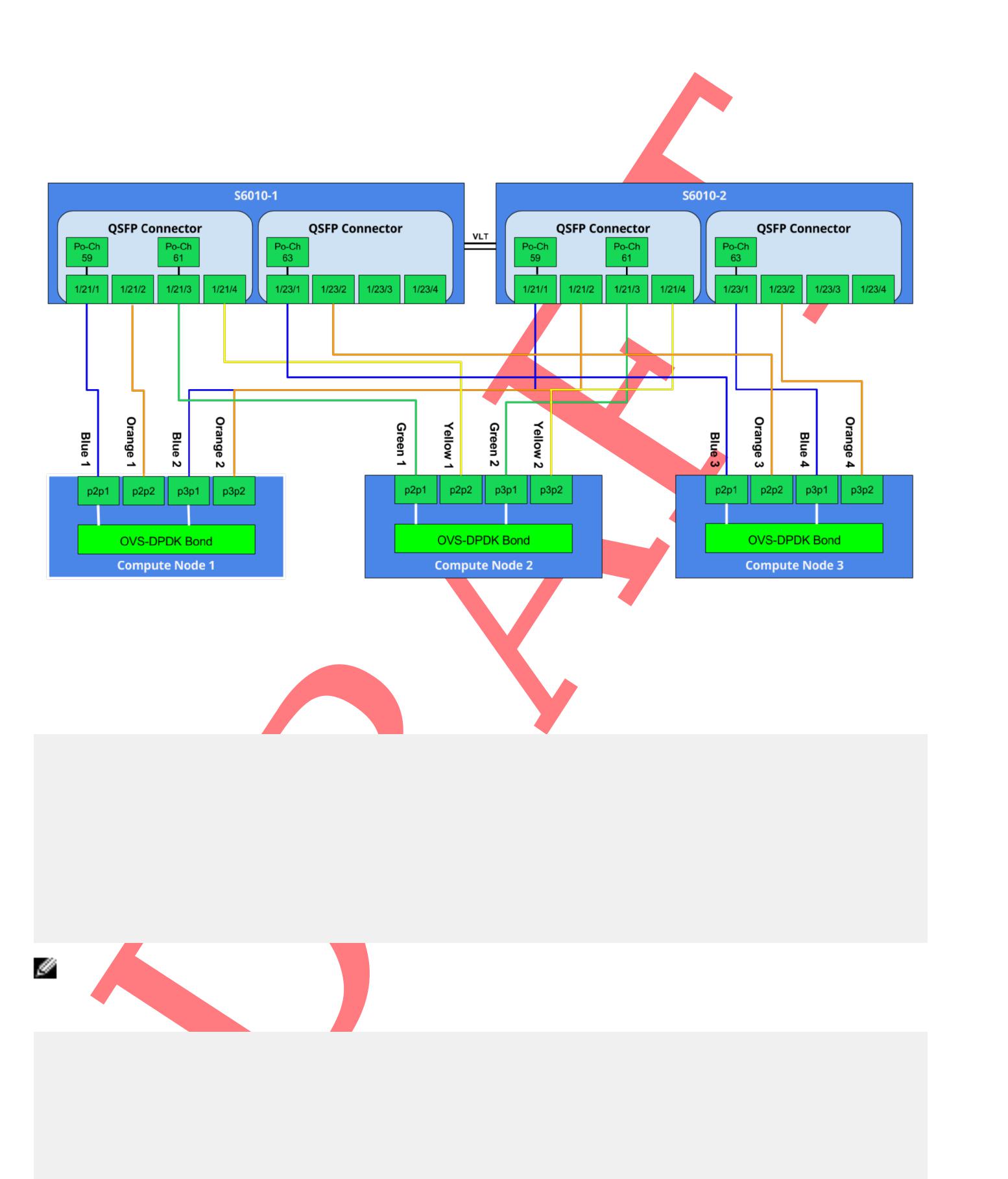
vlt-peer-lag port-channel 59

OVS-DPDK | **44**

no shutdown



**Mode 2, Tenant and External Networks:**

****

For this scenario, switch configuration will have three major changes:

1. Creation of new port channels for the new ports that will be used for OVS-DPDK bond.
2. Removal of VLANs 201-250 from bond0. This means removing the tagged port channel from these VLANs that correspond with the compute nodes' bond0.
3. Addition of new tagged port channels to these VLANs.

**Figure 4: OVS-DPDK Mode 2 reference wiring diagram**

Assuming that one of the compute node’s PCI Slot 2 is connected to Leaf-1 switch’s interfaces 1/21/1 and 1/21/2 and PCI Slot 3 to Leaf-2 switch’s interfaces 1/21/1 and 1/21/2, The configuration for these interfaces on both switches will be:

!

interface TenGigabitEthernet 1/21/1

no ip address

!

port-channel-protocol LACP

port-channel 59 mode active

no shutdown

!

**Note:** Only one interface is configured per port channel on each switch.

Also the port channel will have the following configuration on both switches:

!

interface Port-channel 59

no ip address

switchport

vlt-peer-lag port-channel 59

no shutdown

**7. Settings file parameters**

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To enable OVS-DPDK in the Dell EMC NFV Ready Bundle for Red Hat Version 13, following changes should be made in the settings file.

1. Open an SSH terminal as "root" user, to the SAH Node.
2. Open the settings file, and find "ovs\_dpdk\_enable". Assuming the name of settings file is "sample\_csp\_profile.ini" and it is present in the "/root" directory:

vi /root/sample\_csp\_profile.ini

All the parameters that are related to enabling OVS-DPDK are described in the table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** |  | **Value** |  | **Description** |
| numa\_enable |  | true or false |  | NUMA is enabled when set to 'true' |
|  |  |  |  |  |
| numa\_hostos\_cpu |  | Supported values are 2 or 4 or |  | Number of cores to be reserved for |
| \_count |  | 6 or 8 |  | Host OS |
|  |  |  |  |  |
| hpg\_enable |  | true or false |  | HUGEPAGES are enabled when set |
|  |  |  |  | to 'true' |
|  |  |  |  |  |
| hpg\_size |  | Should be set to 1GB |  | This will set hugepage size |
|  |  |  |  |  |
| ovs\_dpdk\_enable |  | true or false |  | OVS-DPDK is enabled when set to |
|  |  |  |  | 'true' |
|  |  |  |  |  |
| nic\_env\_file |  | This nic\_env\_file is used to |  | Set nic environment file according to |
|  |  | all OVS+DPDK. If you need |  | mode requirement. |
|  |  | to enable OVS-DPDK, then |  |  |
|  |  | use dpdk\_modeX\_5\_port |  |  |
|  |  | as nic home directory |  |  |
|  |  | where X represents the |  |  |
|  |  | mode: 1: Tenant-networks- |  |  |
|  |  | only 2: Tenant-and- |  |  |
|  |  | External-networks Eg : |  |  |
|  |  | nic\_env\_file=dpdk\_mode1\_5\_port/ | | |
|  |  | nic\_environment.yaml |  |  |
|  |  |  |  |  |
| ComputeOvsDpdk |  | Uncomment these lines when |  | The user should check if the Dell |
| Interface1=p2p1 |  | ovs\_dpdk\_enable set to ‘true’ |  | hardware model is R640 these |
| ComputeOvsDpdk |  |  |  | values should be used. |
| Interface2=p3p1 |  |  |  |  |
| ComputeOvsDpdk |  |  |  |  |
| Interface3=p2p2 |  |  |  |  |
| ComputeOvsDpdk |  |  |  |  |
| Interface4=p3p2 |  |  |  |  |
| BondInterface |  |  |  |  |
| OvsOptions |  |  |  |  |
| =bond\_mode=balance- | |  |  |  |
| tcp lacp=active | |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | OVS-DPDK | **46** | |
|  | |  |  |  |
| **Parameter** |  | **Value** | **Description** |  |
| ComputeOvsDpdk |  | Uncomment these lines when | The user should check if the Dell |  |
| Interface1=p4p1 |  | ovs\_dpdk\_enable set to ‘true’ | hardware model is R740 these |  |
| ComputeOvsDpdk |  |  | values should be used. |  |
| Interface2=p5p1 |  |  | Check if the Dell EMC PowerEdge |  |
| ComputeOvsDpdk |  |  |  |
|  |  | R640 values used. |  |
| Interface3=p4p2 |  |  |  |
|  |  |  |  |
| ComputeOvsDpdk |  |  |  |  |
| Interface4=p5p2 |  |  |  |  |
| BondInterface |  |  |  |  |
| OvsOptions |  |  |  |  |
| =bond\_mode=balance- | |  |  |  |
| tcp lacp=active | |  |  |  |
|  |  |  |  |  |

**Example mode 1:**

Settings for enabling OVS-DPDK in mode 1 with 5 port are following:

numa\_enable=true

numa\_hostos\_cpu\_count=4

hpg\_enable=true

hpg\_size=1GB

ovs\_dpdk\_enable=true

nic\_env\_file=dpdk\_mode1\_5\_port/nic\_environment.yaml

1. Note: the following interfaces need to be changed
2. as per the server model
3. R640 should use 'p2p1', 'p3p1', 'p2p2', 'p3p2'
4. R740/R740xd should use 'p4p1', 'p5p1', 'p4p2', 'p5p2'
5. The following lines should be commented out if ovs\_dpdk\_enable is set to false

ComputeOvsDpdkInterface1=p2p1

ComputeOvsDpdkInterface2=p3p1

ComputeOvsDpdkInterface3=p2p2

ComputeOvsDpdkInterface4=p3p2

BondInterfaceOvsOptions=bond\_mode=balance-tcp lacp=active

1. **Example mode 2:**

Settings for enabling OVS-DPDK in mode 2 with 5 port are following:

numa\_enable=true

numa\_hostos\_cpu\_count=4

hpg\_enable=true

hpg\_size=1GB

ovs\_dpdk\_enable=true

nic\_env\_file=dpdk\_mode2\_5\_port/nic\_environment.yaml

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1. Note: the following interfaces need to be changed
2. as per the server model
3. R640 should use 'p2p1', 'p3p1', 'p2p2', 'p3p2'
4. R740/R740xd should use 'p4p1', 'p5p1', 'p4p2', 'p5p2'
5. The following lines should be commented out if ovs\_dpdk\_enable is set

to false

ComputeOvsDpdkInterface1=p2p1

ComputeOvsDpdkInterface2=p3p1

ComputeOvsDpdkInterface3=p2p2

ComputeOvsDpdkInterface4=p3p2

BondInterfaceOvsOptions=bond\_mode=balance-tcp lacp=active

**Start Deployment**

Change the directory to /root/JetPack/src/deploy/osp\_deployer.

# cd /root/JetPack/src/deploy/osp\_deployer

Start the “deployer.py” script execution and pass the settings file using “-s” parameter.

# python deployer.py –s /root/sample\_csp\_profile.ini

Monitor the output of the script. For detailed logs open a new SSH terminal and tail the logs file in “/ auto\_results/” directory. The log files are timestamped.

**Success**

Output for successful deployment looks like this:

**Figure 5: Dell EMC NFV Ready Bundle for Red Hat with OVS-DPDK successful deployment**

At the start of deployment a log message shows whether OVS-DPDK is enabled or not. For a successful deployment, overcloud deployment status should be CREATE\_COMPLETE. And if sanity test was set to true in the .ini file, it should display VALIDATION SUCCESS message.

**Failure**

There are three types of deployment failures that can occur:

1. At the start of deployment, failures related to settings and properties file input validation may occur.
2. At the time of overcloud deployment preparations, in this part OVS-DPDK related parameters are configured.

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1. During the deployment, failure can be due to multiple reasons: a subset of these failures is related to “FAILED\_OVERCLOUD”. The OVS-DPDK related failure are part of this subset. The most likely reasons for these failures are following:
   1. Switch configurations.
   2. Hardware configuration like placing the extra NICs in the right PCI Slots.



Screenshots and solutions of common failure are given below.

**Start of Deployment**

Following errors can occur at the start of deployment i.e. during input validation.

**Unsupported value of ovs\_dpdk\_enable:**

**Figure 6: Unsupported value for ovs\_dpdk\_enable in the settings file**

Change the value in the settings to a supported one and deploy again.

**Unsupported value of nic\_env\_file:**

**Figure 7: Unsupported value for nic\_env\_file in the settings file**

Change the value in the settings to a supported one and deploy again.

**Comments not removed for OVS-DPDK interfaces:**

**Figure 8: Comments not removed for OVS-DPDK interfaces**

Uncomments required parameters and deploy again.

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**During Overcloud Deployment**

In this case deployment fails with overcloud deployment status as "CREATE\_FAILED". These errors can be due to a number of reasons. Following commands can be used to debug the issue. All of these commands are to be run on the director node.

Use the following command to get the stack name.

$ openstack stack list

List all the resources of the stack and using grep, filter out the resources which are created successfully and list only failed or in progress resources.

$ openstack stack resource list <stack-name> | grep -v COMPLETE

This will provide a general idea of which resource creation failed.

The following command can be used to list all the software deployments, which are either in "IN PROGRESS" or "FAILED" state.

$ openstack software deployment list | grep -v COMPLETE

To further filter out which server has failed or in progress, software deployment server option can be given.

First list all the servers and obtain the UUID of the servers.

$ openstack server list

Use the UUID to filter the output of software deployment list command.

$ openstack software deployment list server <server-uuid> | grep -v

COMPLETE

Failed software deployment reports also contain the reason for failure. Use the software deployment uuid to display all the information.

$ openstack software deployment show <uuid>

**Post Deployment Steps**

Flavors created on the OVS-DPDK enabled compute nodes need to have the following metadata tags :

1. hw:cpu\_policy=dedicated
2. hw:cpu\_thread\_policy=require
3. hw:mem\_page\_size=large
4. hw:numa\_nodes=1
5. hw:numa\_mempolicy=preferred

To create a custom flavor for OVS-DPDK instance, follow the steps below.

1. Source the overcloud resource configuration file.

$ source <overcloudrc>

1. Create the custom flavor.

****

$ openstack flavor create <flavor-name> --disk 40 --ram 4096 --vcpu 4

**Note:** Disk size, RAM and number of vCPUs can vary.



OVS-DPDK | **47**

1. Add the metadata tags to the newly created flavor.

$ openstack flavor set <flavor-name> \

--property hw:cpu\_policy=dedicated \

--property hw:cpu\_thread\_policy=require \

--property hw:mem\_page\_size=large \

--property hw:numa\_nodes=1 \

--property hw:numa\_mempolicy=preferred

* **Note:** To add metadata tags to an existing flavor, only step 3 is required.

**Cores Distribution**

Cores are distributed into three mutually exclusive groups. This distribution is based on performance and utilization policies and architecture of compute node.

**Groups**

There are limited number of physical cores available per compute node. To optimize the performance, all cores are divided into three different groups. Each group will be used for a dedicated purpose. This eliminates random scheduling by the kernel, and results in a more optimized use.

Currently the cores are distributed into three groups, which are as follow:

1. **PMD core list:** These vCPUs are used to run DPDK PMD threads. For best performance each thread isrun on a dedicated vCPU. This list can be further divided into two parts:
   1. PMD cores for physical interfaces, connecting OVS to physical interfaces. Cores needs to be from the same CPU sockets as the respective NICs are attached to.
   2. PMD for virtual interfaces (vNIC), connecting OVS to Virtual Machines. It needs to be from the socket on which the Instance is running.
2. **Host core list:** It runs all the host processes and other OVS processes like handlers and revalidators.
3. **VM core list:** Dedicated to Nova and used for computation of instances.

**Policies**

A policy based approach is used for core distribution. By changing the policy, the overall core distribution can be changed. Currently the only supported policy is “Balanced”. By using NICs on both CPU sockets, and utilizing both CPU sockets for Instances, a balance is achieved.

Following are other policies that can be enabled in future releases.

1. **Optimized for Performance:** To achieve optimal performance through lowest latency, Instance arescheduled only on the CPU socket which has both interfaces attached to it.
2. **Optimized for Utilization:** For optimal CPU utilization, performance is traded off for utilizing all theavailable resources.

**Architecture**

The Cores distribution may vary, depending upon the number of total cores and affinity of NICs.

With two extra NICs for OVS-DPDK, there are total of three Intel x520 10G cards on each compute node.

Currently the OVS-DPDK enablement is supported on two types of compute nodes that are listed below:

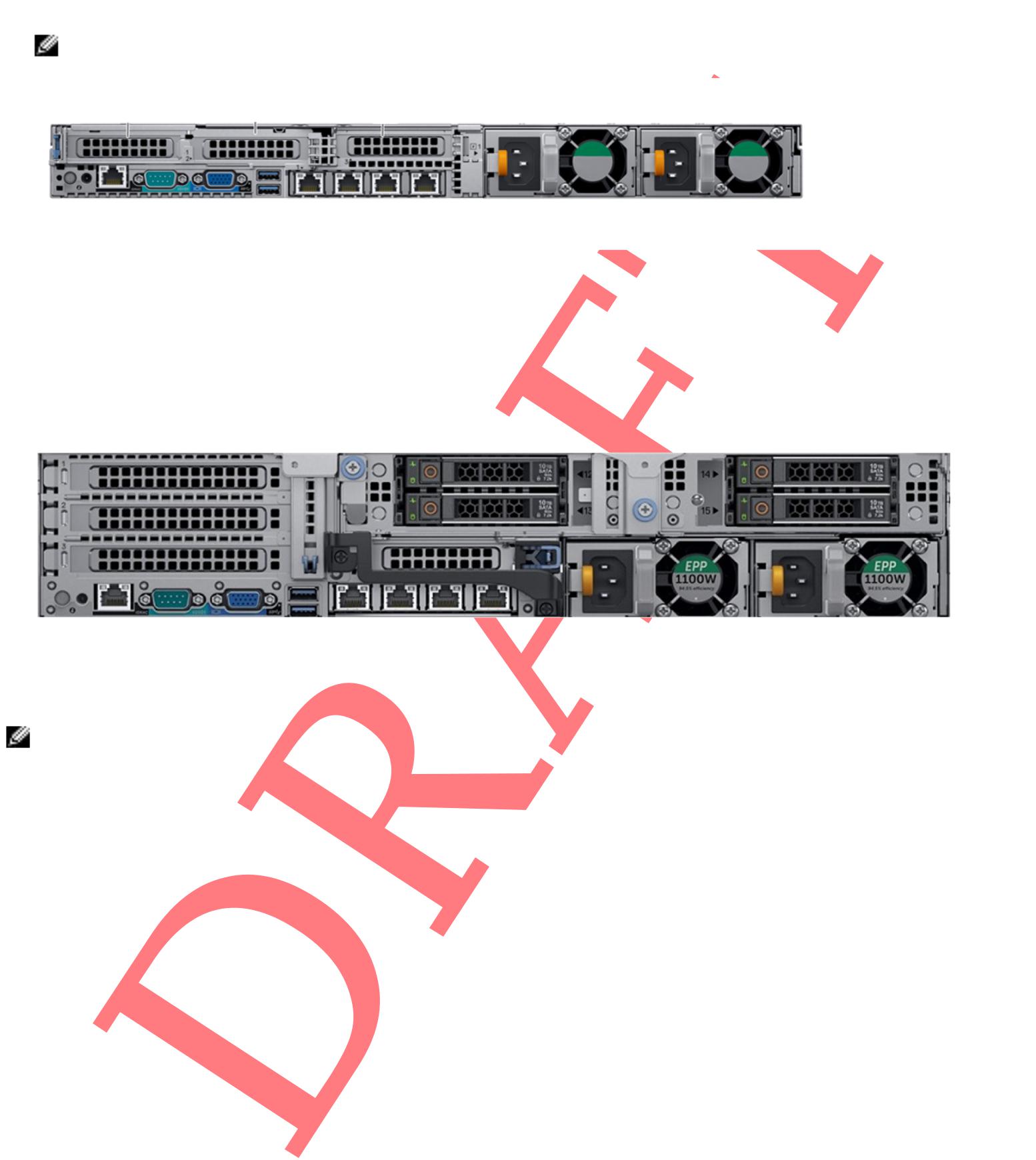
1. Dell EMC PowerEdge R640

Considering the current architecture of Dell EMC PowerEdge R640servers, two NICs (PCI Slot 1 & PCI Slot 2) corresponds to socket 1, while one (PCI Slot 3) corresonds with socket 0.

Selecting two slots for OVS-DPDK from the available PCI slots creates the following possibilities:

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1. PCI Slot 1 and PCI slot 2
2. PCI Slot 2 and PCI slot 3
3. PCI Slot 3 and PCI slot 1

****

**Note:** In this release only Option b is supported.

**Figure 9: Dell EMC PowerEdge R640 backplane with 3 NICs in PCI Slots**

1. Dell EMC PowerEdge R740xd

Dell EMC PowerEdge R740xdhave six PCI Slots as compared to three in the Dell EMC PowerEdge R640. In this release it is required that OVS-DPDK NICs should be in PCI Slot 4 & 5. PCI Slot 4 corresponds to CPU Socket 1 while PCI Slot 5 corresponds with CPU Socket 0.

This NIC attachment is similar to that of Dell EMC PowerEdge R640.

**Figure 10: Dell EMC PowerEdge R740xd backplane with 6 NICs in PCI Slots**

**Example Cores Distribution**

**Note:** All the calculations are done with 48 vCPUs. Increasing or decreasing the number of coresper socket will affect the total number of instances that can be run on the compute node.

One interface is attached to socket 0, and the other to socket 1, so the cores distribution for both modes will be as follows:

**Mode 1, Tenant Networks Only:**

Initially, each socket has 24 vCPUs available.

1. **Host OS Core List:**

Values for this parameter depends on numa\_hostos\_cpu\_count. If a user sets

numa\_hostos\_cpu\_count=4 then first two sibling pairs are set as Host OS cores i.e. 0,24,1,25

1. **PMD Core List:**
   1. **Physical:**

Having assigned cores to the Host OS, it leaves 22 vCPUs on both sockets to be selected from. A sibling pair is assigned from each socket i.e. 2,26,3,27.

* 1. **Virtual:**

This distribution leaves 20 vCPUs in each socket.

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PMD core list for virtual interfaces and the VM core list are interdependent on each other. For each instance, dedicated vCPUs need to be assigned for computation and for handling the vNICs.

In this example, 6 vCPUs are assigned to the VM core list for computation while 1 vCPU is assigned to PMD core list for vNIC.

Out of these 20 vCPUs 6 vCPUs are assigned to this list, and these vCPUs will be used by vNICs that are attached to Instances spawned on the other 14 vCPUs.

**3. VM Core List:**

Having assigned the vCPUs to the PMD core list, it leaves 14 vCPUs in each CPU socket. These remaining vCPUs are assigned to the VM core list to be used for instances.

**Note:** With Mode 1, up to 6 vNICs on each socket will be polled using dedicated vCPUs.Creating more vNICs will force vCPUs to poll more than one vNIC, which can lead to performance degradation.

**Mode 2, Tenant and External Networks:**

Initially, each socket has 24 vCPUs available.

1. **Host Core List:**

Values for this parameter depends on numa\_hostos\_cpu\_count. If a user sets

numa\_hostos\_cpu\_count=4 then first two sibling pairs are set as Host OS cores i.e. 0,24,1,25

1. **PMD Core List:**
   1. **Physical:**

Having assigned cores to the Host list, it leaves 22 vCPUs on both sockets to be selected from. Next sibling pair is assigned to this i.e. 2,26.

* 1. **Virtual:**

This distribution leaves 21 vCPUs in each socket.

PMD core list for virtual interfaces and the VM core list are interdependent on each other. For each instance, dedicated vCPUs need to be assigned for computation and for handling the vNICs.

In this example, 6 vCPUs are assigned to the VM core list for computation while 1 vCPU is assigned to PMD core list for vNIC.

Out of these 21 vCPUs 6 vCPUs are assigned to this list, and these vCPUs will be used by vNICs that are attached to Instances spawned on the other 15 vCPUs.

1. **VM Core List:**

Having assigned the vCPUs to the PMD core list, it leaves 15 vCPUs in each CPU socket. These remaining vCPUs are assigned to the VM core list to be used for instances.

**Note:** With Mode 2, up to 6 vNICs on each socket will be polled using dedicated vCPUs.Creating more vNICs will force vCPUs to poll more than one vNIC, which can lead to performance degradation.

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**NOT VALIDATED by PS**

**Appendix**

**G**

**Performance Optimization**

****

**Topics:**

* [*Overview*](#page97)
* [*Deploying Performance*](#page97)[*Optimization*](#page97)
* [*Logging*](#page98)
* [*List of Parameters to be*](#page98)[*Optimized by Default*](#page98)

This appendix details the guidelines for application of Performance Optimization at the time of deployment of Dell EMC NFV Ready Bundle for Red Hat version 13.

Performance Optimization | **51**

**Overview**

Performance optimization is the improvement of system response. Typically, in cloud infrastructure, the motivation for such activity is called a performance problem, which can be either real or anticipated. Most systems will respond to increased load (computation, networking etc.) with some degree of decreasing performance. A system's ability to accept higher load is called scalability, and modifying a system to handle a higher load is synonymous to performance tuning.

**Deploying Performance Optimization**

The Dell EMC NFV Ready Bundle for Red Hat version 13 provides the ability to apply Performance Optimization on all the nodes during deployment. This section provides the instructions to configure Deployment.

**Applying Performance Optimization Parameters**

**List of Performance Optimization user modifiable Parameters -**

* mariadb\_max\_connections: (1000 - 100000) The maximum permitted number of simultaneous client connections.

default : 15360

* innodb\_buffer\_pool\_size: InnoDB buffer pool size in GBs. (Max. value of this parameter depends on the hardware architecture)

default : dynamic (This assigns 75% ram size of controller node.)

* innodb\_buffer\_pool\_instances: (8 - 48) The number of regions that the InnoDB buffer pool is divided into.

default : 16

Follow the procedure provided below to apply Performance Optimization parameters with Dell EMC NFV Ready Bundle for Red Hat version 13:

1. Open an SSH session to the SAH node.
2. Log in as the root user.
3. Change the working directory to /root/JetPack/src/deploy/osp\_deployer/settings/

#cd */root/JetPack/src/deploy/osp\_deployer/settings/*

1. Edit the sample\_csp\_profile.ini or sample\_xsp\_profile.ini file. Change the settings under section [Performance and Optimization]. Please refer [*sample\_csp\_profile.ini and*](#page99) [*sample\_xsp\_profile.ini*](#page99) fordetails.

** **Note:**

Only two types of values are supported for innodb\_buffer\_pool\_size those are:

* For dynamically calculating and assigning 75% of total memory of respective controller node: innodb\_buffer\_pool\_size = dynamic
* For user value: innodb\_buffer\_pool\_size = 64G (Please follow the same format, an integer value followed by G).

**Deploy Performance Optimization Parameters**

After applying performance optimization parameters in sample\_csp\_profile.ini or

sample\_xsp\_profile.ini file, perform the following steps to deploy performance and optimization parameters inDell EMC NFV Ready Bundle for Red Hat version 13.

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1. Open an SSH session to the SAH node.
2. Ensure all hardware in the OpenStack Cluster is powered off.
3. Run the following command to deploy performance optimization:

#cd /root/JetPack/src/deploy/osp\_deployer

#python deployer.py -s < path-of-settings-file >

1. Upon successful execution, success log will be generated. Please refer section *Logging* for details.

There are more parameters which are by default optimized by Dell EMC NFV Ready Bundle for Red Hat version 10.2. These parameters can be seen in [*List of parameters to be optimized by default*](#page98) .

**Logging**

Below is the table of log messages and actions to be taken upon encountering such errors. Apart from these errors if any other error is received, please email [*openstack@dell.com*](mailto:openstack@dell.com).

**Table 20: Error log messages**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.** | **Error** | **Custom Error** | **Action** | **Log location** | **Further Action** |
| **No.** | **description** | **Message** |  |  |  |
| 1 | Invalid buffer | "innodb\_buffer | Login to the director VM | Director\_node | Check .ini file |
|  | pool size. | \_pool\_size | as the initial deployed |  | and verify the |
|  |  | is greater than | user. |  | given value of |
|  |  | available memory |  |  | innodb\_buffer |
|  |  | size" |  |  | \_pool\_size try |
|  |  |  |  |  | a lower value. |
|  |  |  |  |  | Once corrected |
|  |  |  |  |  | redeploy. |
|  |  |  |  |  |  |

**List of Parameters to be Optimized by Default**

**System Level Optimization**

1. **Linux OS Limits: (all nodes)**
   1. \* soft nofile 64000
   2. \* hard nofile 64000
   3. \* soft nproc 10240
   4. \* hard nproc unlimited
2. **Tuned Profiles**
   1. tuned-adm profile virtual-host ( for all computes )
   2. tuned-adm throughput-performance ( for all controllers and storage nodes )
   3. OVS-DPDK requires the tuned profile set to be cpu-partitioning

**Openstack Core Services**

1. **Nova (/etc/nova/nova.conf )**
   1. [DEFAULT] / rpc\_response\_timeout = 180
   2. [DEFAULT] / osapi\_max\_limit = 10000

Performance Optimization | **53**

* 1. [keystone\_authtoken] / revocation\_cache\_time = 300

1. **Neutron (/etc/neutron/neutron.conf)**
   1. [DEFAULT] / rpc\_response\_timeout = 180
   2. [keystone\_authtoken] / revocation\_cache\_time = 300
2. **Cinder (/etc/cinder/cinder.conf)**
   1. [DEFAULT] / rpc\_response\_timeout = 180
   2. [keystone\_authtoken] / revocation\_cache\_time = 300
3. **Glance (/etc/glance/glance-api.conf)**
   1. [DEFAULT] / rpc\_response\_timeout = 180
   2. [keystone\_authtoken] / revocation\_cache\_time = 300

**Openstack Components**

1. **MariaDB (/etc/my.cnf.d/galera.cnf):**
   1. [mysqld] / innodb\_log\_file\_size=1500M
   2. [mysqld] / innodb\_log\_files\_in\_group=2
   3. [mysqld] / innodb\_flush\_method = O\_DIRECT
   4. [mysqld] / innodb\_file\_per\_table = 1
   5. [mysqld] / innodb\_flush\_log\_at\_trx\_commit = 0
2. **HAproxy (/etc/haproxy/haproxy.cfg)**
   1. defaults / maxconn 10000

**Example of sample\_csp\_profile.ini and sample\_xsp\_profile.ini**

[Performance and Optimization]

1. mariadb\_max\_connections takes value from 1000 to 100000, it is mandatory. mariadb\_max\_connections = 15360
2. MariaDB innodb\_buffer\_pool\_size should be given value in GB, Example : 64G.
3. Default is 'dynamic' which assigns 75% ram size of controller node.
4. Note that innodb\_buffer\_pool\_size should be less than available ram size. innodb\_buffer\_pool\_size = dynamic
5. innodb\_buffer\_pool\_instances takes value from 8 to 48

innodb\_buffer\_pool\_instances = 16

For more details, refer to the [Performance and Optimization] section of the [*Sample CSP .ini File*](#page103) on page 103 and [*Sample xSP .ini File*](#page109) on page 109.

**54 |** Sample Files



**Appendix**

**H**

**Sample Files**

****

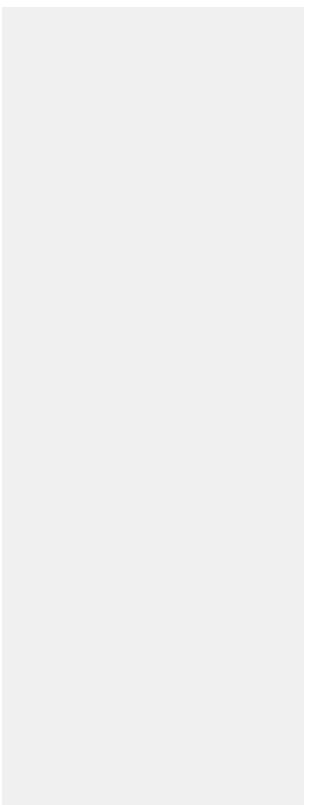
**Topics:**

* [*Sample Properties File*](#page101)
* [*Sample CSP .ini File*](#page103)
* [*Sample xSP .ini File*](#page109)
* [*Sample xSP/CSP Profile File*](#page116)[*Differences*](#page116)

This appendix details the sample properties file and describes the differences between the xSP and CSP sample profile files of Dell EMC NFV Ready Bundle for Red Hat version 13.

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**Sample Properties File**

****

[

{

"is\_sah": "true",

"hostname": "sah",

"idrac\_ip": "192.168.110.20",

"root\_password": "xxxxxxxxxx",

"anaconda\_ip":"192.168.190.134",

"anaconda\_iface":"em4",

"public\_bond": "bond1",

"public\_slaves": "em2 p1p2",

"public\_api\_ip":"192.168.190.12",

"private\_bond": "bond0",

"private\_slaves": "em1 p1p1",

"provisioning\_ip":"192.168.120.12",

"storage\_ip":"192.168.170.12",

"private\_api\_ip":"192.168.140.12",

"management\_ip":"192.168.110.12"

},

{

"is\_director": "true",

"hostname": "director",

"root\_password": "xxxxxxxxxx",

"provisioning\_ip": "192.168.120.13",

"management\_ip":"192.168.110.13",

"public\_api\_ip":"192.168.190.13",

"private\_api\_ip":"192.168.140.13"

},

{

"is\_dashboard": "true",

"hostname": "dashboard",

"root\_password": "xxxxxxxxx",

"public\_api\_ip": "192.168.190.14",

"storage\_ip": "192.168.170.14"

},

{

"is\_controller": "true",

"idrac\_ip": "192.168.110.21",

"public\_api\_ip": "192.168.190.21",

"private\_api\_ip": "192.168.140.21",

"storage\_ip": "192.168.170.21",

"tenant\_tunnel\_ip": "192.168.130.21"

},

{

"is\_controller": "true",

"service\_tag": "ABCXYZ",

"public\_api\_ip": "192.168.190.22",

"private\_api\_ip": "192.168.140.22",

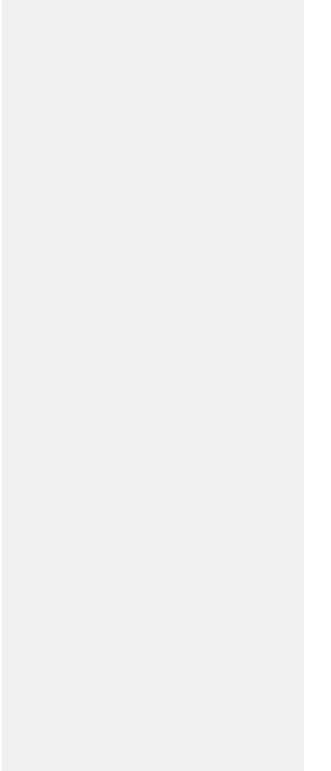
"storage\_ip": "192.168.170.22",

"tenant\_tunnel\_ip": "192.168.130.22"

},

**56** | Sample Files

{



"is\_controller": "true",

"idrac\_ip": "192.168.110.23",

"public\_api\_ip": "192.168.190.23",

"private\_api\_ip": "192.168.140.23",

"storage\_ip": "192.168.170.23",

"tenant\_tunnel\_ip": "192.168.130.23"

},

{

"is\_compute": "true",

"idrac\_ip": "192.168.110.31",

"private\_api\_ip": "192.168.140.31",

"storage\_ip": "192.168.170.31",

"tenant\_tunnel\_ip": "192.168.130.31"

},

{

"is\_compute": "true",

"service\_tag": "DEFUVW",

"private\_api\_ip": "192.168.140.32",

"storage\_ip": "192.168.170.32",

"tenant\_tunnel\_ip": "192.168.130.32"

},

{

"is\_compute": "true",

"idrac\_ip": "192.168.110.33",

"private\_api\_ip": "192.168.140.33",

"storage\_ip": "192.168.170.33",

"tenant\_tunnel\_ip": "192.168.130.33"

},

{

"is\_ceph\_storage": "true",

"idrac\_ip": "192.168.110.76",

"storage\_ip": "192.168.170.76",

"storage\_cluster\_ip": "192.168.180.76"

},

{

"is\_ceph\_storage": "true",

"service\_tag": "GHIRST",

"storage\_ip": "192.168.170.77",

"storage\_cluster\_ip": "192.168.180.77"

},

{

"is\_ceph\_storage": "true",

"idrac\_ip": "192.168.110.78",

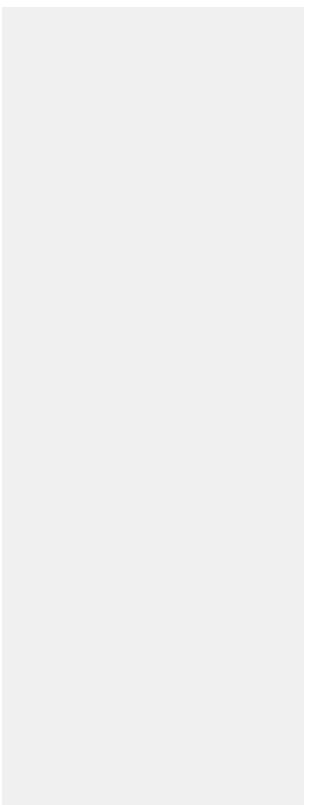
"storage\_ip": "192.168.170.78",

"storage\_cluster\_ip": "192.168.180.78"

}

]

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**Sample CSP .ini File**

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###########################################################################

# #

# Copy and rename this file for your own stamp. #

# Review ALL settings below, pay particular attention to paths/ip's etc.. #

# #

###########################################################################

[Network Settings]

# Nova public network details

public\_api\_network=192.168.190.0/24

public\_api\_vlanid=190

public\_api\_gateway=192.168.190.1

public\_api\_netmask=255.255.255.0

public\_api\_allocation\_pool\_start=192.168.190.121

public\_api\_allocation\_pool\_end=192.168.190.250

name\_server=8.8.8.8

# Private API network details

private\_api\_network=192.168.140.0/24

private\_api\_vlanid=140

private\_api\_netmask=255.255.255.0

private\_api\_allocation\_pool\_start=192.168.140.121

private\_api\_allocation\_pool\_end=192.168.140.250

# Storage network details

storage\_network=192.168.170.0/24

storage\_vlanid=170

storage\_netmask=255.255.255.0

storage\_allocation\_pool\_start=192.168.170.125

storage\_allocation\_pool\_end=192.168.170.250

# Provisioning network details

provisioning\_network=192.168.120.0/24

provisioning\_vlanid=120

provisioning\_netmask=255.255.255.0

provisioning\_gateway=192.168.120.1

provisioning\_net\_dhcp\_start=192.168.120.121

provisioning\_net\_dhcp\_end=192.168.120.250

discovery\_ip\_range=192.168.120.21,192.168.120.120

# Storage cluster network details

storage\_cluster\_network=192.168.180.0/24

storage\_cluster\_vlanid=180

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storage\_cluster\_allocation\_pool\_start=192.168.180.121

storage\_cluster\_allocation\_pool\_end=192.168.180.250

# Management network details

# Make sure the SAH node idrac ip defined in the .properties

# is NOT within the allocation pool below.

management\_network=192.168.110.0/24

management\_vlanid=110

management\_netmask=255.255.255.0

management\_gateway=192.168.110.1

management\_allocation\_pool\_start=192.168.110.100

management\_allocation\_pool\_end=192.168.110.199

# Tenant network details

# Not used unless you wish to configure Generic Routing Encapsulation (GRE)networks.

tenant\_tunnel\_network=192.168.130.0/24

tenant\_tunnel\_network\_allocation\_pool\_start=192.168.130.121

tenant\_tunnel\_network\_allocation\_pool\_end=192.168.130.250

tenant\_tunnel\_network\_vlanid=130

# Nova Private network details

tenant\_vlan\_range=201:250

[Vips Settings]

# Use static VIPs ip addresses for the overcloud

use\_static\_vips=true

# The following VIP settings apply if the above use\_static\_vips is enabled.

# VIP for the redis service on the Private API api network

# Note that this IP must lie outside the private\_api\_allocation\_pool\_start/end

# range

redis\_vip=192.168.140.251

# VIP for the provisioning network

# Note that this IP must lie outside the provisioning\_net\_dhcp\_start/endrange

provisioning\_vip=192.168.120.251

# VIP for the Private API network

# Note that this IP must lie outside the private\_api\_allocation\_pool\_start/end

# range

private\_api\_vip=192.168.140.252

# VIP for the Public API network

# Note that this IP must lie outside the public\_api\_allocation\_pool\_start/end

# range

public\_api\_vip=192.168.190.251

# VIP for the Storage network

# Note that this IP must lie outside the storage\_allocation\_pool\_start/end

# range

storage\_vip=192.168.170.251

# VIP for the Storage cluster network

# The Storage Clustering network is not connected to the controller nodes,

# so the VIP for this network must be mapped to the provisioning network

Sample Files | **59**



# Note that this IP must lie outside the provisioning\_net\_dhcp\_start/end

range

storage\_cluster\_vip=192.168.120.252

[Subscription Manager Settings]

# Subscription Manager account info for registering Red Hat subscriptions

subscription\_manager\_user=xxxxxxx

subscription\_manager\_password=xxxxxxxxxxxxxx

# The following pool IDs provide different collections of repositories.

# Each is labeled with possible subscription names.

# Red Hat Enterprise Linux (Physical Node)

subscription\_manager\_pool\_sah=xxxxxxxxxxxxxxxxxxxxxxxxxxxx44f5

# Red Hat Enterprise Linux OpenStack Platform (Virtual Node)

subscription\_manager\_pool\_vm\_rhel=xxxxxxxxxxxxxxxxxxxxxxxxxxxx454a

# Red Hat Ceph Storage (Physical Node)

subscription\_manager\_vm\_ceph=xxxxxxxxxxxxxxxxxxxxxxxxxxxx7826

subscription\_check\_retries=20

[Nodes Nics and Bonding Settings]

sah\_bond\_opts=mode=802.3ad miimon=100 xmit\_hash\_policy=layer3+4 lacp\_rate=1

# NIC environment file

# Note: If using 25 gig NICs, change the following to:

# 4\_port/nic\_environment.yaml

# If you need to enable OVS-DPDK, then use

# dpdk\_modeX\_4\_port or dpdk\_modeX\_5\_port as nic home directory

# where X represents the mode:

# 1: Tenant-networks-only

# 2: Tenant-and-External-networks

nic\_env\_file=5\_port/nic\_environment.yaml

# Interfaces and bonding options per node type.

# When using any 4 port NIC configuration, comment out or delete the

# ControllerProvisioningInterface line below.

ControllerProvisioningInterface=em3

ControllerBond0Interface1=em1

ControllerBond0Interface2=p1p1

ControllerBond1Interface1=em2

ControllerBond1Interface2=p1p2

ControllerBondInterfaceOptions=mode=802.3ad miimon=100

xmit\_hash\_policy=layer3+4 lacp\_rate=1

# When using any 4 port NIC configuration, comment out or delete the

# ComputeProvisioningInterface line below.

ComputeProvisioningInterface=em3

ComputeBond0Interface1=em1

ComputeBond0Interface2=p1p1

ComputeBond1Interface1=em2

ComputeBond1Interface2=p1p2

ComputeBondInterfaceOptions=mode=802.3ad miimon=100

xmit\_hash\_policy=layer3+4 lacp\_rate=1

# When using any 4 port NIC configuration, comment out or delete the

# StorageProvisioningInterface line below.

StorageProvisioningInterface=em3

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StorageBond0Interface1=em1



StorageBond0Interface2=p2p1

StorageBond1Interface1=em2

StorageBond1Interface2=p2p2

StorageBondInterfaceOptions=mode=802.3ad miimon=100

xmit\_hash\_policy=layer3+4 lacp\_rate=1

# Note: the following interfaces need to be changed

# as per the server model

# R640 should use 'p2p1', 'p3p1', 'p2p2', 'p3p2'

# R740/R740xd should use 'p4p1', 'p5p1', 'p4p2', 'p5p2'

# The following lines should be commented out if ovs\_dpdk\_enable is set to

false

#ComputeOvsDpdkInterface1=p2p1

#ComputeOvsDpdkInterface2=p3p1

#ComputeOvsDpdkInterface3=p2p2

#ComputeOvsDpdkInterface4=p3p2

#BondInterfaceOvsOptions=bond\_mode=balance-tcp lacp=active

[Dell NFV Settings]

#Provide NFV features here.

#Enter value of enable\_hpg as true/false for HugePages

hpg\_enable=true

#User should give this parameter in same format.

#Supported values for hpg\_size(Size of hugepages) is 2MB and 1 GB.

#For 2MB (# of hugepages), hpg\_num is 49152

#For 1GB (# of hugepages), hpg\_num is 96

hpg\_size=1GB

#Enter value of enable\_numa as true/false for NUMA

numa\_enable=true

# OVS-DPDK Settings

# Set the following option to true/false

ovs\_dpdk\_enable=false

#Enter number of cores you want to reserve for Host OS

#Supported values are 2 or 4 or 6 or 8

numa\_hostos\_cpu\_count=4

[Performance and Optimization]

# mariadb\_max\_connections takes value from 1000 to 100000, it is mandatory.

mariadb\_max\_connections = 15360

# MariaDB innodb\_buffer\_pool\_size should be given value in GB, Example :

64G.

# Default is 'dynamic' which assigns 75% ram size of controller node.

# Note that innodb\_buffer\_pool\_size should be less than available ram size.

innodb\_buffer\_pool\_size = dynamic

# innodb\_buffer\_pool\_instances takes value from 8 to 48

innodb\_buffer\_pool\_instances = 16

[IPMI credentials Settings]

# DRAC credentials with IPMI privilege for the SAH node

sah\_ipmi\_user=root

sah\_ipmi\_password=xxxxxxx

# DRAC credentials with IPMI privilege for the overcloud nodes

Sample Files | 6**1**



ipmi\_user=root

ipmi\_password=xxxxxxx

# A password to change to on overcloud nodes if desired

new\_ipmi\_password=

[Deployment Settings]

profile=csp

# This pathname must be the full path to the properties file which

# describes the cluster. You should copy \*this\* sample settings file

# (sample.ini) and the sample properties file (sample.properties) to

# another directory, and customize them for your cluster. Then use the

# path to your customized properties file here.

cluster\_nodes\_configuration\_file=/root/acme.properties

# User for the undercloud/overcloud installation

director\_install\_user=osp\_admin

director\_install\_user\_password=xxxxxxx

# Name of the Overcloud.

# The nodes hostnames will be prepended with the given name and a dash

overcloud\_name=overcloud

# Domain name for the cluster (i.e., mycluster.lab)

domain=domain.net

# Optional : root passord for the overcloud nodes, no password is set if

left empty

overcloud\_nodes\_pwd=

# , separated list of ntp servers

ntp\_servers=0.centos.pool.ntp.org,1.centos.pool.ntp.org,2.centos.pool.ntp.org,3.centos.pool.time\_zone=America/Chicago

# Use static ip adresses for the overcloud nodes if set to true (ips need to

be defined in the .properties)

# Use dhcp if set to false (ips not required in the .properties)

overcloud\_static\_ips=true

# Set to true to enable cinder backend of Ceph for storage.

enable\_rbd\_backend=true

# Set to true to enable Nova usage of Ceph for ephemeral storage.

# If set to false, Nova uses the storage local to the compute.

enable\_rbd\_nova\_backend=true

# Set to false to disable fencing

# Please refer to the following document for more details on fencing:

# Ready Bundle for Red Hat OpenStack Platform Software Deployment Guide

enable\_fencing=true

# Set to true to enable instance HA

# Note : fencing must also be enabled (setting above)

# Please refer to following technical document for more details on Instance

HA:

# Ready Bundle for Red Hat OpenStack Platform Software Deployment Guide

enable\_instance\_ha=false

[Storage back-end Settings]

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# Compellent parameters. See the Software Deployment Guide for description of the parameters.

enable\_dellsc\_backend=false

dellsc\_backend\_name=CHANGEME

dellsc\_api\_port=3033

dellsc\_iscsi\_ip\_address=CHANGEME

dellsc\_iscsi\_port=3260

dellsc\_san\_ip=CHANGEME

dellsc\_san\_login=CHANGEME

dellsc\_san\_password=CHANGEME

dellsc\_ssn=CHANGEME

dellsc\_server\_folder=cmpl\_iscsi\_servers

dellsc\_volume\_folder=cmpl\_iscsi\_volumes

[Sanity Test Settings]

# If you want the sanity script to run on deployment completion (Appendix C,

etc.), you may do so.

run\_sanity=false

floating\_ip\_network=192.168.191.0/24

floating\_ip\_network\_start\_ip=192.168.191.20

floating\_ip\_network\_end\_ip=192.168.191.59

floating\_ip\_network\_gateway=192.168.191.1

floating\_ip\_network\_vlan=191

sanity\_tenant\_network=192.168.201.0/24

sanity\_user\_password=s@n1ty

sanity\_user\_email=someone@somewhere.com

sanity\_key\_name=sanity

# The number of instances to spin up in nova.

# Note that this will be limited by the instance quota in OpenStack, which

is

# 10 by default.

sanity\_number\_instances=1

sanity\_image\_url=http://download.cirros-cloud.net/0.3.3/cirros-0.3.3-x86\_64-

disk.img

[Tempest Settings]

# If you want to run Tempest post-deployment, you may do so. The sanity

script must also run to create networks for Tempest.

run\_tempest=false

tempest\_smoke\_only=true

[Advanced Settings]

#The following settings should typically only be used by developers

# Only developers should set to false.

enable\_version\_locking=true

# The list of RHSM repositories to enable to access the product. Repos

should

# be comma separated.

# Note that this parameter is defaulted as shown below when commented out or

# not specified. It should not be necessary to change it from the default

in

# most cases.

rhsm\_repos=rhel-7-server-openstack-10-rpms,rhel-7-server-openstack-10-

devtools-rpms

Sample Files | **63**



# Option below is to use a custom instack.json and skip discover\_nodes

use\_custom\_instack\_json=false

custom\_instack\_json=n/a

# Indicates if the deploy-overcloud.py script should be run in debug mode

deploy\_overcloud\_debug=false

use\_internal\_repo=false

# Semi-colon ( ; ) separated list of internal repos to use, if needed.

internal\_repos\_locations=CHANGEME\_INTERNAL\_REPO\_URL

cloud\_repo\_dir=/root/JetPack

rhel\_iso=/root/rhel75.iso

# Overcloud deployment timeout value - default is 120mns, but can be tweaked

here if required.

overcloud\_deploy\_timeout=120

# Default driver is DRAC.

use\_ipmi\_driver=false

# Default introspection method is out-of-band.

# Note that out-of-band introspection is only supported by the DRAC driver.

If

# use\_ipmi\_driver is set to "true" above then in-band introspection will be

# used regardless of the value below.

use\_in\_band\_introspection=false

# RDO cloud images

# Available to download @ https://access.redhat.com/downloads/content/191/

ver=8/rhel---7/8/x86\_64/product-software

discovery\_ram\_disk\_image=/pathto/discovery-ramdisk-7.1.0-39.tar

overcloud\_image=/pathto/overcloud-full-7.1.0-39.tar

# if option below is enabled, images will be pulled fom the cdn (and the

above x2 settings ignored)

pull\_images\_from\_cdn=true

# Occasionally there can be problems with Subscription Manager

# and a node may be properly registered yet "subscription manager status"

# will return "Unknown" which will cause checks to fail.

# Setting this to false will skip SM checks to get around this issue.

verify\_rhsm\_status=true

**Sample xSP .ini File**



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###########################################################################

# #

# Copy and rename this file for your own stamp. #

# Review ALL settings below, pay particular attention to paths/ip's etc.. #

# #

###########################################################################

[Network Settings]

* # Nova public network details public\_api\_network=192.168.190.0/24 public\_api\_vlanid=190 public\_api\_gateway=192.168.190.1 public\_api\_netmask=255.255.255.0 public\_api\_allocation\_pool\_start=192.168.190.121 public\_api\_allocation\_pool\_end=192.168.190.250 name\_server=8.8.8.8

# Private API network details

private\_api\_network=192.168.140.0/24

private\_api\_vlanid=140

private\_api\_netmask=255.255.255.0

private\_api\_allocation\_pool\_start=192.168.140.121

private\_api\_allocation\_pool\_end=192.168.140.250

* # Storage network details storage\_network=192.168.170.0/24 storage\_vlanid=170 storage\_netmask=255.255.255.0 storage\_allocation\_pool\_start=192.168.170.125 storage\_allocation\_pool\_end=192.168.170.250

# Provisioning network details

provisioning\_network=192.168.120.0/24

provisioning\_vlanid=120

provisioning\_netmask=255.255.255.0

provisioning\_gateway=192.168.120.1

provisioning\_net\_dhcp\_start=192.168.120.121

provisioning\_net\_dhcp\_end=192.168.120.250

discovery\_ip\_range=192.168.120.21,192.168.120.120

* # Storage cluster network details storage\_cluster\_network=192.168.180.0/24 storage\_cluster\_vlanid=180 storage\_cluster\_allocation\_pool\_start=192.168.180.121 storage\_cluster\_allocation\_pool\_end=192.168.180.250

# Management network details

# Make sure the SAH node idrac ip defined in the .properties

# is NOT within the allocation pool below.

management\_network=192.168.110.0/24

management\_vlanid=110

management\_netmask=255.255.255.0

management\_gateway=192.168.110.1

management\_allocation\_pool\_start=192.168.110.100

management\_allocation\_pool\_end=192.168.110.199

# Tenant network details

# Not used unless you wish to configure Generic Routing Encapsulation (GRE) networks.

tenant\_tunnel\_network=192.168.130.0/24

tenant\_tunnel\_network\_allocation\_pool\_start=192.168.130.121 tenant\_tunnel\_network\_allocation\_pool\_end=192.168.130.250

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tenant\_tunnel\_network\_vlanid=130

# Nova Private network details

tenant\_vlan\_range=201:250

[Vips Settings]

# Use static VIPs ip addresses for the overcloud

use\_static\_vips=true

# The following VIP settings apply if the above use\_static\_vips is enabled.

# VIP for the redis service on the Private API api network

# Note that this IP must lie outside the private\_api\_allocation\_pool\_start/

end

# range

redis\_vip=192.168.140.251

# VIP for the provisioning network

# Note that this IP must lie outside the provisioning\_net\_dhcp\_start/end

range

provisioning\_vip=192.168.120.251

# VIP for the Private API network

# Note that this IP must lie outside the private\_api\_allocation\_pool\_start/

end

# range

private\_api\_vip=192.168.140.252

# VIP for the Public API network

# Note that this IP must lie outside the public\_api\_allocation\_pool\_start/

end

# range

public\_api\_vip=192.168.190.251

# VIP for the Storage network

# Note that this IP must lie outside the storage\_allocation\_pool\_start/end

# range

storage\_vip=192.168.170.251

# VIP for the Storage cluster network

# The Storage Clustering network is not connected to the controller nodes,

# so the VIP for this network must be mapped to the provisioning network

# Note that this IP must lie outside the provisioning\_net\_dhcp\_start/end

range

storage\_cluster\_vip=192.168.120.252

[Subscription Manager Settings]

# Subscription Manager account info for registering Red Hat subscriptions

subscription\_manager\_user=xxxxxxx

subscription\_manager\_password=xxxxxxxxxxxxxx

# The following pool IDs provide different collections of repositories.

# Each is labeled with possible subscription names.

# Red Hat Enterprise Linux (Physical Node)

subscription\_manager\_pool\_sah=xxxxxxxxxxxxxxxxxxxxxxxxxxxx44f5

# Red Hat Enterprise Linux OpenStack Platform (Virtual Node)

subscription\_manager\_pool\_vm\_rhel=xxxxxxxxxxxxxxxxxxxxxxxxxxxx454a

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# Red Hat Ceph Storage (Physical Node)

subscription\_manager\_vm\_ceph=xxxxxxxxxxxxxxxxxxxxxxxxxxxx7826

subscription\_check\_retries=20

[Nodes Nics and Bonding Settings]

sah\_bond\_opts=mode=802.3ad miimon=100 xmit\_hash\_policy=layer3+4 lacp\_rate=1

# NIC environment file

# Note: If using 25 gig NICs, change the following to:

# 4\_port/nic\_environment.yaml

# If you need to enable OVS-DPDK, then use

# dpdk\_modeX\_4\_port or dpdk\_modeX\_5\_port as nic home directory

# where X represents the mode:

# 1: Tenant-networks-only

# 2: Tenant-and-External-networks

nic\_env\_file=5\_port/nic\_environment.yaml

# Interfaces and bonding options per node type.

# When using any 4 port NIC configuration, comment out or delete the

# ControllerProvisioningInterface line below.

ControllerProvisioningInterface=em3

ControllerBond0Interface1=em1

ControllerBond0Interface2=p1p1

ControllerBond1Interface1=em2

ControllerBond1Interface2=p1p2

ControllerBondInterfaceOptions=mode=802.3ad miimon=100

xmit\_hash\_policy=layer3+4 lacp\_rate=1

# When using any 4 port NIC configuration, comment out or delete the

# ComputeProvisioningInterface line below.

ComputeProvisioningInterface=em3

ComputeBond0Interface1=em1

ComputeBond0Interface2=p1p1

ComputeBond1Interface1=em2

ComputeBond1Interface2=p1p2

ComputeBondInterfaceOptions=mode=802.3ad miimon=100

xmit\_hash\_policy=layer3+4 lacp\_rate=1

# When using any 4 port NIC configuration, comment out or delete the

# StorageProvisioningInterface line below.

StorageProvisioningInterface=em3

StorageBond0Interface1=em1

StorageBond0Interface2=p2p1

StorageBond1Interface1=em2

StorageBond1Interface2=p2p2

StorageBondInterfaceOptions=mode=802.3ad miimon=100

xmit\_hash\_policy=layer3+4 lacp\_rate=1

# Note: the following interfaces need to be changed

# as per the server model

# R640 should use 'p2p1', 'p3p1', 'p2p2', 'p3p2'

# R740/R740xd should use 'p4p1', 'p5p1', 'p4p2', 'p5p2'

# The following lines should be commented out if ovs\_dpdk\_enable is set to

false

#ComputeOvsDpdkInterface1=p2p1

#ComputeOvsDpdkInterface2=p3p1

#ComputeOvsDpdkInterface3=p2p2

#ComputeOvsDpdkInterface4=p3p2

#BondInterfaceOvsOptions=bond\_mode=balance-tcp lacp=active

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[Dell NFV Settings]



#Provide NFV features here.

#Enter value of enable\_hpg as true/false for HugePages hpg\_enable=true

#User should give this parameter in same format.

#Supported values for hpg\_size(Size of hugepages) is 2MB and 1 GB.

#For 2MB (# of hugepages), hpg\_num is 49152

#For 1GB (# of hugepages), hpg\_num is 96

hpg\_size=1GB

#Enter value of enable\_numa as true/false for NUMA numa\_enable=true

* #OVS-DPDK Settings
* #Set the following option to true/false ovs\_dpdk\_enable=false

#Enter number of cores you want to reserve for HostOS #Supported values are 2 or 4 or 6 or 8 numa\_hostos\_cpu\_count=4

[Performance and Optimization]

* #mariadb\_max\_connections takes value from 1000 to 100000, it is mandatory. mariadb\_max\_connections = 15360
* #MariaDB innodb\_buffer\_pool\_size should be given value in GB, Example : 64G.
* #Default is 'dynamic' which assigns 75% ram size of controller node.
* #Note that innodb\_buffer\_pool\_size should be less than available ram size. innodb\_buffer\_pool\_size = dynamic

#innodb\_buffer\_pool\_instances takes value from 8 to 48

innodb\_buffer\_pool\_instances = 16

[IPMI credentials Settings]

* #DRAC credentials with IPMI privilege for the SAH node sah\_ipmi\_user=root

sah\_ipmi\_password=xxxxxxx

* #DRAC credentials with IPMI privilege for the overcloud nodes ipmi\_user=root

ipmi\_password=xxxxxxx

* #A password to change to on overcloud nodes if desired

new\_ipmi\_password=

[Deployment Settings]

profile=csp

* #This pathname must be the full path to the properties file which
* #describes the cluster. You should copy \*this\* sample settings file
* #(sample.ini) and the sample properties file (sample.properties) to
* #another directory, and customize them for your cluster. Then use the
* #path to your customized properties file here.

cluster\_nodes\_configuration\_file=/root/acme.properties

* #User for the undercloud/overcloud installation director\_install\_user=osp\_admin director\_install\_user\_password=xxxxxxx

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# Name of the Overcloud.

# The nodes hostnames will be prepended with the given name and a dash

overcloud\_name=overcloud

# Domain name for the cluster (i.e., mycluster.lab)

domain=domain.net

# Optional : root passord for the overcloud nodes, no password is set if

left empty

overcloud\_nodes\_pwd=

# , separated list of ntp servers

ntp\_servers=0.centos.pool.ntp.org,1.centos.pool.ntp.org,2.centos.pool.ntp.org,3.centos.pool.time\_zone=America/Chicago

# Use static ip adresses for the overcloud nodes if set to true (ips need to

be defined in the .properties)

# Use dhcp if set to false (ips not required in the .properties)

overcloud\_static\_ips=true

# Set to true to enable cinder backend of Ceph for storage.

enable\_rbd\_backend=true

# Set to true to enable Nova usage of Ceph for ephemeral storage.

# If set to false, Nova uses the storage local to the compute.

enable\_rbd\_nova\_backend=true

# Set to false to disable fencing

# Please refer to the following document for more details on fencing:

# Ready Bundle for Red Hat OpenStack Platform Software Deployment Guide

enable\_fencing=true

# Set to true to enable instance HA

# Note : fencing must also be enabled (setting above)

# Please refer to following technical document for more details on Instance

HA:

# Ready Bundle for Red Hat OpenStack Platform Software Deployment Guide

enable\_instance\_ha=false

[Storage back-end Settings]

# Compellent parameters. See the Software Deployment Guide for description

of the parameters.

enable\_dellsc\_backend=false

dellsc\_backend\_name=CHANGEME

dellsc\_api\_port=3033

dellsc\_iscsi\_ip\_address=CHANGEME

dellsc\_iscsi\_port=3260

dellsc\_san\_ip=CHANGEME

dellsc\_san\_login=CHANGEME

dellsc\_san\_password=CHANGEME

dellsc\_ssn=CHANGEME

dellsc\_server\_folder=cmpl\_iscsi\_servers

dellsc\_volume\_folder=cmpl\_iscsi\_volumes

[Sanity Test Settings]

# If you want the sanity script to run on deployment completion (Appendix C,

etc.), you may do so.

run\_sanity=false

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floating\_ip\_network=192.168.191.0/24



floating\_ip\_network\_start\_ip=192.168.191.20

floating\_ip\_network\_end\_ip=192.168.191.59

floating\_ip\_network\_gateway=192.168.191.1

floating\_ip\_network\_vlan=191

sanity\_tenant\_network=192.168.201.0/24

sanity\_user\_password=s@n1ty

sanity\_user\_email=someone@somewhere.com

sanity\_key\_name=sanity

# The number of instances to spin up in nova.

#Note that this will be limited by the instance quota in OpenStack, which is 10 by default.

sanity\_number\_instances=1

sanity\_image\_url=http://download.cirros-cloud.net/0.3.3/cirros-0.3.3-x86\_64-disk.img

[Tempest Settings]

* # If you want to run Tempest post-deployment, you may do so. The sanity script must also run to create networks for Tempest.

run\_tempest=false

tempest\_smoke\_only=true

[Advanced Settings]

#The following settings should typically only be used by developers

* # Only developers should set tofalse. enable\_version\_locking=true
* # The list of RHSM repositories to enable to access the product. Repos should be comma separated.
* #Note that this parameter is defaulted as shown below when commented out or
* #not specified. It should not be necessary to change it from the default in most cases.

rhsm\_repos=rhel-7-server-openstack-10-rpms,rhel-7-server-openstack-10-devtools-rpms

* # Option below is to use a custom instack.json and skip #discover\_nodes
* use\_custom\_instack\_json=false

custom\_instack\_json=n/a

* #Indicates if the deploy-overcloud.py script should be run in debug mode deploy\_overcloud\_debug=false

use\_internal\_repo=false

* #Semi-colon ( ; ) separated list of internal repos to use, if needed. internal\_repos\_locations=CHANGEME\_INTERNAL\_REPO\_URL

cloud\_repo\_dir=/root/JetPack

rhel\_iso=/root/rhel75.iso

# Overcloud deployment timeout value - default is 120mns, but can be tweaked here if required.

overcloud\_deploy\_timeout=120

* # Default driver is DRAC. use\_ipmi\_driver=false

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# Default introspection method is out-of-band.

# Note that out-of-band introspection is only supported by the DRAC driver.

If

# use\_ipmi\_driver is set to "true" above then in-band introspection will be

# used regardless of the value below.

use\_in\_band\_introspection=false

# RDO cloud images

# Available to download @ https://access.redhat.com/downloads/content/191/

ver=8/rhel---7/8/x86\_64/product-software

discovery\_ram\_disk\_image=/pathto/discovery-ramdisk-7.1.0-39.tar

overcloud\_image=/pathto/overcloud-full-7.1.0-39.tar

# if option below is enabled, images will be pulled fom the cdn (and the

above x2 settings ignored)

pull\_images\_from\_cdn=true

# Occasionally there can be problems with Subscription Manager

# and a node may be properly registered yet "subscription manager status"

# will return "Unknown" which will cause checks to fail.

# Setting this to false will skip SM checks to get around this issue.

verify\_rhsm\_status=true

**Sample xSP/CSP Profile File Differences**

The sample xSP and CSP profile files are very similar. The primary differences between them are that the CSP profile has various NFV features enabled, while the xSP profile has these features disabled.

The following features are enabled in the CSP profile and disabled in the xSP profile:

* + - Huge pages (hpg\_enable)
    - NUMA (numa\_enable)

See the [*JetPack open source repository*](https://github.com/dsp-jetpack/JetPack) for the entire content of each file, or if doing an automated install, see the *~/JetPack/src/deploy/osp\_deployer/settings* directory on the SAH node.

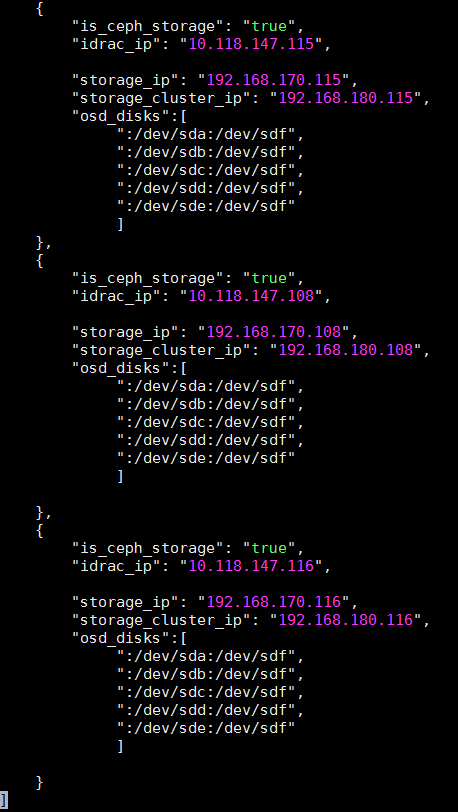
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***Acme.properties Example*** *for 13 G stamp (Power Edge R630 servers)*

*Each server for Ceph Nodes had total of 8 disks [slot 0 to 7]*

Ceph-Storage nodes: disks in last 2 slots are RAID-1 and used for OS installation (root disk) which are HDD disks Remaining 6 all are SSD disks are for 5 OSDs + 1 journal.

The name should follow as below in acme.properties for this scenario:



Also in the assign\_role.py, small tweak was done by changing ssd as media\_type\_filter instead of hdd. This is required since we are using all SSDs disk for Ceph OSDs.

<https://github.com/dsp-jetpack/JetPack/blob/master/src/pilot/assign_role.py#L517>

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**Appendix**

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**Solution Validation Overview**

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**Topics:**

* [*Solution Validation Hardware*](#page118)
* [*Solution Validation Tools and*](#page118)[*Certifications*](#page118)
* [*Tempest Results*](#page118)
* [*Test Results from Deployment*](#page118)[*Validation Sanity*](#page118)

Validation of the complete solution is based on the hardware in the Solution Bundle, as defined in the Dell EMC NFV Ready Bundle for Red Hat - Architecture Guide - Version 13, the JetPack software, and utilizes several tools to ensure the functionality of the solution. In addition, the Solution, once validated, is listed by the OpenStack Foundation ([*https://www.openstack.org/marketplace/distros/*](https://www.openstack.org/marketplace/distros/distribution/emc/dell-emc-ready-bundle-for-red-hat-openstack) [*distribution/emc/dell-emc-ready-bundle-for-red-hat-openstack*](https://www.openstack.org/marketplace/distros/distribution/emc/dell-emc-ready-bundle-for-red-hat-openstack))as aCertified Solution.

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**Solution Validation Hardware**

Hardware components used in the solution include:

* Node 1: Dell EMC PowerEdge R640 Solution Admin Host with the Red Hat OpenStack Platform Director and the Red Hat Ceph Storage Dashboard Installed
* Nodes 2 - 4: Dell EMC PowerEdge R640 OpenStack Controllers
* Nodes 5 - 7 Dell EMC PowerEdge R640 Nova Compute Nodes
* Nodes 8 - 10: Dell EMC PowerEdge R740xd Storage Nodes
* Dell Networking S3048-ON Switch
* Dell Networking S4048-ON Switch
* Dell Networking S4048-ON Switch

**Solution Validation Tools and Certifications**

The tools used to validate the deployed solution include:

* OpenStack Tempest Test Suite
* Deployment Scripted RHOSP Sanity Test
* Solution RefStack submission [*https://refstack.openstack.org/#/results/d1df0e3d-fcec-4968-86b2-ff1244326bad*](https://refstack.openstack.org/#/results/d1df0e3d-fcec-4968-86b2-ff1244326bad) forOpenStack Powered Compute

The certification listing of the Solution is listed on the OpenStack Marketplace at:

* [*https://www.openstack.org/marketplace/distros/distribution/emc/dell-emc-ready-bundle-for-red-hat-openstack*](https://www.openstack.org/marketplace/distros/distribution/emc/dell-emc-ready-bundle-for-red-hat-openstack)

**Tempest Results**

Results of a full Tempest run:

Ran: 2089 tests in 3559.522 sec.

* Passed: 1776
* Skipped: 296
* Expected Fail: 0
* Unexpected Success: 0
* Failed: 17

Failures are summarized in the Dell EMC NFV Ready Bundle for Red Hat Release Notes.

**Test Results from Deployment Validation Sanity**

Results of a complete run of the Deployment Scripted RHOSP Sanity Test:

2017-10-13 14:20:13: INFO: ###Appendix-C Openstack Operations Functional Test ###

2017-10-13 14:20:13: INFO: ### Random init stuff

2017-10-13 14:20:13: INFO: ### Collecting SSH keys... ###

2017-10-13 14:20:13: INFO: Executing: /home/osp\_admin/pilot/ update\_ssh\_config.py

2017-10-13 14:20:17: INFO: setting admin scope with: ~/MHTR18BLKrc.

2017-10-13 14:20:17: INFO: ### sourcing ~/MHTR18BLKrc

2017-10-13 14:20:17: INFO: ### PCS Status

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Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.



Cluster name: tripleo\_cluster

Stack: corosync

Current DC: mhtr18blk-controller-1 (version 1.1.16-12.el7\_4.2-94ff4df) - partition with quorum

Last updated: Fri Oct 13 18:20:17 2017

Last change: Fri Oct 13 16:06:52 2017 by root via cibadmin on mhtr18blk-controller-2

3 nodes configured

22 resources configured

Online: [ mhtr18blk-controller-0 mhtr18blk-controller-1 mhtr18blk-controller-2 ]

Full list of resources:

ip-192.168.140.211 (ocf::heartbeat:IPaddr2): Started mhtr18blk-controller-0

Clone Set: haproxy-clone [haproxy]

Started: [ mhtr18blk-controller-0 mhtr18blk-controller-1 mhtr18blk-controller-2 ]

Master/Slave Set: galera-master [galera]

Masters: [ mhtr18blk-controller-0 mhtr18blk-controller-1 mhtr18blk-controller-2 ]

ip-192.168.120.211 (ocf::heartbeat:IPaddr2): Started mhtr18blk-controller-1

ip-192.168.120.210 (ocf::heartbeat:IPaddr2): Started mhtr18blk-controller-2

ip-192.168.140.210 (ocf::heartbeat:IPaddr2): Started mhtr18blk-controller-0

Clone Set: rabbitmq-clone [rabbitmq]

Started: [ mhtr18blk-controller-0 mhtr18blk-controller-1 mhtr18blk-controller-2 ]

ip-192.168.170.210 (ocf::heartbeat:IPaddr2): Started mhtr18blk-controller-1

Master/Slave Set: redis-master [redis]

Masters: [ mhtr18blk-controller-1 ]

Slaves: [ mhtr18blk-controller-0 mhtr18blk-controller-2 ]

ip-100.84.122.62 (ocf::heartbeat:IPaddr2): Started mhtr18blk-controller-2

openstack-cinder-volume (systemd:openstack-cinder-volume): Started

mhtr18blk-controller-0

mhtr18blk-controller-0-ipmi (stonith:fence\_ipmilan): Started

mhtr18blk-controller-1-ipmi (stonith:fence\_ipmilan): Started

mhtr18blk-controller-2-ipmi (stonith:fence\_ipmilan): Started Daemon Status:

corosync: active/enabled

pacemaker: active/enabled

pcsd: active/enabled

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

2017-10-13 14:20:18: INFO: ###Ensure db and rabbit services are in the active state

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| rabbitmq | 78093 | 0.0 | 0.0 | 44728 | 732 | ? | S | 15:34 | 0:00 | /usr/ |
| lib64/erlang/erts-7.3.1.3/bin/epmd | | | | | -daemon | |  |  |  |  |
| root | 97942 | 0.0 | 0.0 | 11636 | 1352 | ? | Ss | 15:38 | 0:00 sh - | |
| c /usr/sbin/rabbitmq-server | | | | > /var/log/rabbitmq/startup\_log 2> /var/log/ | | | | | | |
| rabbitmq/startup\_err | | |  |  |  |  |  |  |  |  |
| root | 97950 | 0.0 | 0.0 | 11636 | 1436 | ? | S | 15:38 | 0:00 | /bin/sh / |
| usr/sbin/rabbitmq-server | | | |  |  |  |  |  |  |  |
| root | 97972 | 0.0 | 0.0 | 86120 | 2312 | ? | S | 15:38 | 0:00 | su |
| rabbitmq -s /bin/sh -c /usr/lib/rabbitmq/bin/rabbitmq-server | | | | | | | | |  |  |

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|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| rabbitmq | 97974 | 0.0 | 0.0 | 9516 1452 ? | Ss | 15:38 | 0:00 /bin/sh - |
| e /usr/lib/rabbitmq/bin/rabbitmq-server | | | | |  |  |  |
| rabbitmq | 98240 | 12.1 | 0.2 | 22607776 587808 ? | Sl | 15:38 | 19:40 /usr/ |
| lib64/erlang/erts-7.3.1.3/bin/beam.smp -W w -A 768 -K true -P 1048576 | | | | | | | |
| -K true -B i -- | | -root | /usr/lib64/erlang -progname erl -- -home / | | | | |
| var/lib/rabbitmq | | -- -pa /usr/lib/rabbitmq/lib/rabbitmq\_server-3.6.3/ | | | | | |
| ebin -noshell -noinput | | | -s rabbit boot -sname rabbit@mhtr18blk- | | | | |



controller-2 -boot start\_sasl -config /etc/rabbitmq/rabbitmq -kernel

inet\_default\_connect\_options [{nodelay,true},{raw,6,18,<<5000:64/native>>}]

-kernel inet\_default\_listen\_options [{raw,6,18,<<5000:64/native>>}] -

kernel inet\_default\_connect\_options [{nodelay,true}] -rabbit tcp\_listeners

[{"192.168.140.11",5672}] -sasl errlog\_type error -sasl sasl\_error\_logger

false -rabbit error\_logger {file,"/var/log/rabbitmq/rabbit@mhtr18blk-

controller-2.log"} -rabbit sasl\_error\_logger {file,"/var/log/rabbitmq/

rabbit@mhtr18blk-controller-2-sasl.log"} -rabbit enabled\_plugins\_file

"/etc/rabbitmq/enabled\_plugins" -rabbit plugins\_dir "/usr/lib/rabbitmq/

lib/rabbitmq\_server-3.6.3/plugins" -rabbit plugins\_expand\_dir "/var/lib/

rabbitmq/mnesia/rabbit@mhtr18blk-controller-2-plugins-expand" -os\_mon

start\_cpu\_sup false -os\_mon start\_disksup false -os\_mon start\_memsup false

-mnesia dir "/var/lib/rabbitmq/mnesia/rabbit@mhtr18blk-controller-2"

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| rabbitmq | 99235 | 0.0 | 0.0 | 11544 | 448 | ? | Ss | 15:38 | 0:00 |
| inet\_gethost 4 | |  |  |  |  |  |  |  |  |
| rabbitmq | 99237 | 0.0 | 0.0 | 13668 | 656 | ? | S | 15:38 | 0:00 |
| inet\_gethost 4 | |  |  |  |  |  |  |  |  |
| root | 918767 | 0.0 | 0.0 | 115516 | 1860 | ? | S | 18:20 | 0:00 /bin/sh / |
| usr/lib/ocf/resource.d/heartbeat/rabbitmq-cluster monitor | | | | | | | | |  |
| root | 918798 | 0.0 | 0.0 | 11636 | 1436 | ? | S | 18:20 | 0:00 /bin/sh / |
| usr/sbin/rabbitmqctl cluster\_status | | | | |  |  |  |  |  |
| root | 918809 | 0.0 | 0.0 | 86120 | 2308 | ? | S | 18:20 | 0:00 su |
| rabbitmq | -s /bin/sh -c /usr/lib/rabbitmq/bin/rabbitmqctl | | | | | | | | 'cluster\_status' |
| rabbitmq | 918810 | 31.0 | 0.0 | 4085264 | 70388 ? | | Ssl | 18:20 | 0:00 /usr/ |
| lib64/erlang/erts-7.3.1.3/bin/beam.smp -B -- -root /usr/lib64/erlang - | | | | | | | | | |
| progname erl -- -home /var/lib/rabbitmq | | | | | | -- -pa /usr/lib/rabbitmq/lib/ | | | |
| rabbitmq\_server-3.6.3/ebin | | | | -noshell -noinput -hidden -boot start\_clean -sasl | | | | | |

errlog\_type error -mnesia dir "/var/lib/rabbitmq/mnesia/rabbit@mhtr18blk-controller-2" -s rabbit\_control\_main -nodename rabbit@mhtr18blk-controller-2

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| -extra cluster\_status | |  |  |  |  |  |  |  |  |  |
| rabbitmq 918967 | 0.0 | 0.0 | 4143452 | 60016 ? | | | Ssl | 18:20 | 0:00 /usr/ | |
| lib64/erlang/erts-7.3.1.3/bin/beam.smp -- | | | | | | -root /usr/lib64/erlang -progname | | | | |
| erl -- -home /var/lib/rabbitmq -- -sname | | | | | | epmd-starter-815754527 -proto\_dist | | | | |
| "inet\_tcp" -noshell -eval | | | halt(). |  |  |  |  |  |  |  |
| heat-ad+ 919052 | 0.0 | 0.0 | 113128 | 1512 | ? |  | Ss | 18:20 | 0:00 | bash -c |
| sudo ps aux | grep rabbit | | |  |  |  |  |  |  |  |  |
| heat-ad+ 919060 | 0.0 | 0.0 | 112664 | 940 | ? |  | S | 18:20 | 0:00 | grep |
| rabbit |  |  |  |  |  |  |  |  |  |  |

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known

|  |  |  |  |
| --- | --- | --- | --- |
| hosts. |  |  |  |
| root | 93950 | 1 0 15:37 ? | 00:00:00 /bin/sh /usr/bin/ |

mysqld\_safe --defaults-file=/etc/my.cnf --pid-file=/var/run/mysql/mysqld.pid --socket=/var/lib/mysql/mysql.sock --datadir=/var/lib/mysql --log-error=/ var/log/mysqld.log --user=mysql --open-files-limit=16384 --wsrep-cluster-address=gcomm://

mysql 94902 93950 0 15:37 ? 00:00:42 /usr/libexec/mysqld

--defaults-file=/etc/my.cnf --basedir=/usr --datadir=/var/lib/mysql

--plugin-dir=/usr/lib64/mysql/plugin --user=mysql --wsrep-provider=/

usr/lib64/galera/libgalera\_smm.so --wsrep-cluster-address=gcomm:// -- log-error=/var/log/mysqld.log --open-files-limit=16384 --pid-file=/var/ run/mysql/mysqld.pid --socket=/var/lib/mysql/mysql.sock --port=3306 -- wsrep\_start\_position=00000000-0000-0000-0000-000000000000:-1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| heat-ad+ | 919087 | 919071 | 0 | 18:20 | ? | 00:00:00 | bash | -c ps -ef | grep |
| mysqld |  |  |  |  |  |  |  |  |
| heat-ad+ | 919095 | 919087 | 0 | 18:20 | ? | 00:00:00 | grep | mysqld |

Solution Validation Overview | **76**

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.



|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| heat-ad+ | 919212 | 919168 | 0 | 18:20 | ? | 00:00:00 | bash | -c ps -ef | grep |
| mariadb |  |  |  |  |  |  |  |  |
| heat-ad+ | 919270 | 919212 | 0 | 18:20 | ? | 00:00:00 | grep | mariadb |

2017-10-13 14:20:18: INFO: ### CREATION MODE

2017-10-13 14:20:18: INFO: ### Getting unique names

2017-10-13 14:20:18: INFO: setting admin scope with: ~/MHTR18BLKrc.

2017-10-13 14:20:18: INFO: ### sourcing ~/MHTR18BLKrc

2017-10-13 14:20:19: INFO: Generating sanityrc file.

2017-10-13 14:20:19: INFO: ### Setting up new project sanity1

2017-10-13 14:20:19: INFO: setting admin scope with: ~/MHTR18BLKrc.

2017-10-13 14:20:19: INFO: ### sourcing ~/MHTR18BLKrc No tenant with a name or ID of 'sanity1' exists.

2017-10-13 14:20:20: INFO: Executing: openstack project create sanity1

|  |  |  |  |
| --- | --- | --- | --- |
| +------------- | + | ---------------------------------- | + |
| | Field | | | Value | | |
| +------------- | + | ---------------------------------- | + |
| | description | | | None | | |
| | enabled | | | True | | |
| | id | | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | name | | | sanity1 | | |
| +------------- | + | ---------------------------------- | + |

2017-10-13 14:20:21: INFO: Executing: openstack user create --project sanity1 --password <<PASSWORD>> --email someone@somewhere.com sanity1

|  |  |  |  |
| --- | --- | --- | --- |
| +------------ | + | ---------------------------------- | + |
| | Field | | | Value | | |
| +------------ | + | ---------------------------------- | + |
| | email | | | someone@somewhere.com | | |
| | enabled | | | True | | |
| | id | | | 4442207de58448938694bdbd7b764cf4 | | |
| | name | | | sanity1 | | |
| | project\_id | | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | username | | | sanity1 | | |
| +------------ | + | ---------------------------------- | + |
| 2017-10-13 14:20:21: INFO: ### Creating the Networks #### | | | |
| 2017-10-13 14:20:21: INFO: setting admin scope with: ~/MHTR18BLKrc. | | | |
| 2017-10-13 14:20:21: INFO: ### sourcing ~/MHTR18BLKrc | | | |

2017-10-13 14:20:22: INFO: Executing: openstack network create --share

|  |  |  |
| --- | --- | --- |
| tenant\_net1 |  |  |
| +--------------------------- | +-------------------------------------- | + |
| | Field | | Value | | |
| +--------------------------- | +-------------------------------------- | + |
| | admin\_state\_up | | UP | | |
| | availability\_zone\_hints | | | | |
| | availability\_zones | | | | |
| | created\_at | | 2017-10-13T18:20:23Z | | |
| | description | | | | |
| | headers | | | | |
| | id | | e8e22aaf-0ee9-4c82-a295-f02788e97e8f | | |
| | ipv4\_address\_scope | | None | | |
| | ipv6\_address\_scope | | None | | |
| | mtu | | 1496 | | |
| | name | | tenant\_net1 | | |
| | port\_security\_enabled | | True | | |
| | project\_id | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | |
| | project\_id | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | |
| | provider:network\_type | | vlan | | |
| | provider:physical\_network | | physint | | |
| | provider:segmentation\_id | | 237 | | |
| | qos\_policy\_id | | None | | |
| | revision\_number | | 3 | | |
| | router:external | | Internal | | |

Solution Validation Overview | **77**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| | shared |  |  |  | | True | | |
| | status |  |  |  | | ACTIVE | | |
| | subnets |  |  |  | | | | |
| | tags |  |  |  | | [] | | |
| | updated\_at |  |  |  | | 2017-10-13T18:20:23Z | | |
| +--------------------------- | |  |  | +-------------------------------------- | + |
| 2017-10-13 14:20:24: INFO: Executing: neutron subnet-create tenant\_net1 | | | | | |
| 192.168.201.0/24 --name tenant\_2011 | | | | |  |
| Created a new subnet: | |  |  |  |  |
| +------------------- | + | ------------------------------------------------------ | |  | + |
| | Field | | | Value | |  | | |
| +------------------- | + | ------------------------------------------------------ | |  | + |
| | allocation\_pools | | | {"start": "192.168.201.2", "end": "192.168.201.254"} | | | | |
| | cidr | | | 192.168.201.0/24 | | | | |
| | created\_at | | | 2017-10-13T18:20:25Z | | | | |
| | description | | |  |  |  | | |
| | dns\_nameservers | | |  |  |  | | |
| | enable\_dhcp | | | True |  |  | | |
| | gateway\_ip | | | 192.168.201.1 | | | | |
| | host\_routes | | |  |  |  | | |
| | id | | | c8057c7b-777f-4f5d-bfe8-7d227da6c960 | | | | |
| | ip\_version | | | 4 |  |  | | |
| | ipv6\_address\_mode | | |  |  |  | | |
| | ipv6\_ra\_mode | | |  |  |  | | |
| | name | | | tenant\_2011 | | | | |
| | network\_id | | | e8e22aaf-0ee9-4c82-a295-f02788e97e8f | | | | |
| | project\_id | | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | | | |
| | revision\_number | | | 2 |  |  | | |
| | service\_types | | |  |  |  | | |
| | subnetpool\_id | | |  |  |  | | |
| | tenant\_id | | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | | | |
| | updated\_at | | | 2017-10-13T18:20:25Z | | | | |
| +------------------- | + | ------------------------------------------------------ | |  | + |
| 2017-10-13 14:20:26: INFO: Executing: neutron router-create | | | | |  |
| tenant\_201\_router1 |  |  |  |  |  |
| Created a new router: | |  |  |  |  |
| +------------------------- | |  | + | -------------------------------------- | + |
| | Field |  |  | | | Value | | |
| +------------------------- | |  | + | -------------------------------------- | + |
| | admin\_state\_up |  |  | | | True | | |
| | availability\_zone\_hints | | | | |  | | |
| | availability\_zones | |  | | |  | | |
| | created\_at |  |  | | | 2017-10-13T18:20:26Z | | |
| | description |  |  | | |  | | |
| | distributed |  |  | | | False | | |
| | external\_gateway\_info | | | | |  | | |
| | flavor\_id |  |  | | |  | | |
| | ha |  |  | | | True | | |
| | id |  |  | | | 5adcd390-b199-43cf-a32d-a708bcb1fb50 | | |
| | name |  |  | | | tenant\_201\_router1 | | |
| | project\_id |  |  | | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | |
| | revision\_number |  |  | | | 3 | | |
| | routes |  |  | | |  | | |
| | status |  |  | | | ACTIVE | | |
| | tenant\_id |  |  | | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | |
| | updated\_at |  |  | | | 2017-10-13T18:20:26Z | | |
| +------------------------- | |  | + | -------------------------------------- | + |
| 2017-10-13 14:20:29: INFO: Executing: neutron router-interface-add | | | | | |
| tenant\_201\_router1 | c8057c7b-777f-4f5d-bfe8-7d227da6c960 | | | |  |
| Added interface 7e458d5e-7c68-4607-8f32-64470d6d0359 to router | | | | |  |
| tenant\_201\_router1. | |  |  |  |  |



2017-10-13 14:20:30: INFO: Executing: ssh -o StrictHostKeyChecking=no -o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.138 sudo grep network\_vlan\_ranges /etc/neutron/plugin.ini

Solution Validation Overview | **78**

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.



#network\_vlan\_ranges =

network\_vlan\_ranges =physint:201:250,physext 2017-10-13 14:20:32: INFO: Executing: neutron net-create public -- router:external --provider:network\_type vlan --provider:physical\_network

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| physext --provider:segmentation\_id 1223 | | | | |  |
| Created a new network: | | |  |  |  |
| +--------------------------- | | | + | -------------------------------------- | + |
| | Field | | | | | Value | | |
| +--------------------------- | | | + | -------------------------------------- | + |
| | admin\_state\_up | | | | | True | | |
| | availability\_zone\_hints | | | | |  | | |
| | availability\_zones | | | | |  | | |
| | created\_at | | | | | 2017-10-13T18:20:32Z | | |
| | description | | | | |  | | |
| | id | | | | | 46cc68f3-0ee2-4ae1-8ee0-60ef6d89c0e6 | | |
| | ipv4\_address\_scope | | | | |  | | |
| | ipv6\_address\_scope | | | | |  | | |
| | is\_default | | | | | False | | |
| | mtu | | | | | 1496 | | |
| | name | | | | | public | | |
| | port\_security\_enabled | | | | | True | | |
| | project\_id | | | | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | |
| | provider:network\_type | | | | | vlan | | |
| | provider:physical\_network | | | | | physext | | |
| | provider:segmentation\_id | | | | | 1223 | | |
| | qos\_policy\_id | | | | |  | | |
| | revision\_number | | | | | 4 | | |
| | router:external | | | | | True | | |
| | shared | | | | | False | | |
| | status | | | | | ACTIVE | | |
| | subnets | | | | |  | | |
| | tags | | | | |  | | |
| | tenant\_id | | | | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | |
| | updated\_at | | | | | 2017-10-13T18:20:32Z | | |
| +--------------------------- | | | + | -------------------------------------- | + |
| 2017-10-13 14:20:32: INFO: Executing: neutron subnet-create --name | | | | | | |  |
| external\_sub --allocation-pool start=100.84.122.71,end=100.84.122.104 -- | | | | | | |  |
| gateway 100.84.122.65 | | --disable-dhcp public 100.84.122.64/26 | | | | |  |
| Created a new subnet: | |  | | | | |  |
| +------------------- | + | ----------------------------------------------------- | | | | | + |
| | Field | | | Value | | | | | | |
| +------------------- | + | ----------------------------------------------------- | | | | | + |
| | allocation\_pools | | | {"start": "100.84.122.71", "end": "100.84.122.104"} | | | | | | |
| | cidr | | | 100.84.122.64/26 | | | | | | |
| | created\_at | | | 2017-10-13T18:20:33Z | | | | | | |
| | description | | |  | | | | | | |
| | dns\_nameservers | | |  | | | | | | |
| | enable\_dhcp | | | False | | | | | | |
| | gateway\_ip | | | 100.84.122.65 | | | | | | |
| | host\_routes | | |  | | | | | | |
| | id | | | 957798ec-ec62-435f-a7a7-7bd749cb5d6f | | | | | | |
| | ip\_version | | | 4 | | | | | | |
| | ipv6\_address\_mode | | |  | | | | | | |
| | ipv6\_ra\_mode | | |  | | | | | | |
| | name | | | external\_sub | | | | | | |
| | network\_id | | | 46cc68f3-0ee2-4ae1-8ee0-60ef6d89c0e6 | | | | | | |
| | project\_id | | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | | | | | |
| | revision\_number | | | 2 | | | | | | |
| | service\_types | | |  | | | | | | |
| | subnetpool\_id | | |  | | | | | | |
| | tenant\_id | | | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | | | | | |

Solution Validation Overview | **79**

| updated\_at | 2017-10-13T18:20:33Z |



+-------------------+-----------------------------------------------------+

2017-10-13 14:20:33: INFO: Executing: openstack network list

+--------------------------------------

+----------------------------------------------------

+--------------------------------------+

| ID | Name

| Subnets |

+--------------------------------------

+----------------------------------------------------

+--------------------------------------+

| 46cc68f3-0ee2-4ae1-8ee0-60ef6d89c0e6 | public

| 957798ec-ec62-435f-a7a7-7bd749cb5d6f | | 76ad3e74-7171-4a4f-9d80-4d452d469f14 | HA network tenant

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 4790c5b2d4c64f6e9d6c367bc0b8b069 | c235034a-4403-4624-87c0-82ee742527ef | | | | | | |
| | e8e22aaf-0ee9-4c82-a295-f02788e97e8f | | | | | | tenant\_net1 |  |
|  |  | | c8057c7b-777f-4f5d-bfe8-7d227da6c960 | | | | |  |
| + | -------------------------------------- | |  |  |  |  |
| + | ---------------------------------------------------- | |  |  |  |  |
| + | -------------------------------------- | |  | + |  |  |
| 2017-10-13 14:20:34: INFO: Executing: openstack router list | | | | | |  |
| + | -------------------------------------- | |  | + | -------------------- | +-------- |
| + | -------+------------- | | +------ | +---------------------------------- | | + |
| | ID | |  |  | | | Name | | Status | State |
|  | | Distributed | HA | | | Project | | | |  |
| + | -------------------------------------- | |  | + | -------------------- | +-------- |
| + | -------+------------- | | +------ | +---------------------------------- | | + |
| | 5adcd390-b199-43cf-a32d-a708bcb1fb50 | | | | | | tenant\_201\_router1 | ACTIVE | UP | |
|  | | False | | True | 4790c5b2d4c64f6e9d6c367bc0b8b069 | | | | |  |
| + | -------------------------------------- | |  | + | -------------------- | +-------- |
| + | -------+------------- | | +------ | +---------------------------------- | | + |

2017-10-13 14:20:35: INFO: Executing: neutron router-gateway-set tenant\_201\_router1 public

Set gateway for router tenant\_201\_router1

2017-10-13 14:20:37: INFO: Setting tenant scope.

2017-10-13 14:20:39: INFO: ### Creating a Security Group ####

2017-10-13 14:20:39: INFO: Executing: neutron security-group-create sanity\_security\_group

Created a new security\_group:

+----------------------

+--------------------------------------------------------------------------------------

+

| Field | Value

|

+----------------------

+--------------------------------------------------------------------------------------

+

| created\_at | 2017-10-13T18:20:39Z

|

| description |

Solution Validation Overview | **80**

|

****| id | 429d26ae-d018-41c8-9331-debd33bebbff

|

| name | sanity\_security\_group

|

| project\_id | 26c77e1e763b4fecbc1833b9284e4986

|

|  |  |
| --- | --- |
| | revision\_number | | 1 |

|

| security\_group\_rules | {"remote\_group\_id": null, "direction":

"egress", "protocol": null, "description": null, "ethertype": "IPv4",

"remote\_ip\_prefix": null, "port\_range\_max": null, "updated\_at":

"2017-10-13T18:20:39Z", "security\_group\_id": "429d26ae-d018-41c8-9331-

debd33bebbff", "port\_range\_min": null, "revision\_number": 1,

"tenant\_id": "26c77e1e763b4fecbc1833b9284e4986", "created\_at":

"2017-10-13T18:20:39Z", "project\_id": "26c77e1e763b4fecbc1833b9284e4986",

"id": "1aa1def6-9405-4b60-bf71-65cc4499859f"} |

| | {"remote\_group\_id": null, "direction":

"egress", "protocol": null, "description": null, "ethertype": "IPv6",

"remote\_ip\_prefix": null, "port\_range\_max": null, "updated\_at":

"2017-10-13T18:20:39Z", "security\_group\_id": "429d26ae-d018-41c8-9331-

debd33bebbff", "port\_range\_min": null, "revision\_number": 1, "tenant\_id": "26c77e1e763b4fecbc1833b9284e4986", "created\_at": "2017-10-13T18:20:39Z", "project\_id": "26c77e1e763b4fecbc1833b9284e4986", "id": "fc6fe44a-c8de-4cd3-9cf2-aa13ae770259"} |

| tenant\_id | 26c77e1e763b4fecbc1833b9284e4986

|

| updated\_at | 2017-10-13T18:20:39Z

|

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Solution Validation Overview | **81**

2017-10-13 14:20:39: INFO: Executing: neutron security-group-rule-create --direction ingress --ethertype IPv4 --protocol icmp --remote-ip-prefix



|  |  |  |
| --- | --- | --- |
| 0.0.0.0/0 sanity\_security\_group | |  |
| Created a new security\_group\_rule: | |  |
| +------------------- | +-------------------------------------- | + |
| | Field | | Value | | |
| +------------------- | +-------------------------------------- | + |
| | created\_at | | 2017-10-13T18:20:40Z | | |
| | description | | | | |
| | direction | | ingress | | |
| | ethertype | | IPv4 | | |
| | id | | 282502a2-c60a-4e7d-b05d-2c079a5aeb0d | | |
| | port\_range\_max | | | | |
| | port\_range\_min | | | | |
| | project\_id | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | protocol | | icmp | | |
| | remote\_group\_id | | | | |
| | remote\_ip\_prefix | | 0.0.0.0/0 | | |
| | revision\_number | | 1 | | |
| | security\_group\_id | | 429d26ae-d018-41c8-9331-debd33bebbff | | |
| | tenant\_id | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | updated\_at | | 2017-10-13T18:20:40Z | | |
| +------------------- | +-------------------------------------- | + |
| 2017-10-13 14:20:40: INFO: Executing: neutron security-group-rule-create | | |
| --direction egress | --ethertype IPv4 --protocol icmp --remote-ip-prefix | |
| 0.0.0.0/0 sanity\_security\_group | |  |
| Created a new security\_group\_rule: | |  |
| +------------------- | +-------------------------------------- | + |
| | Field | | Value | | |
| +------------------- | +-------------------------------------- | + |
| | created\_at | | 2017-10-13T18:20:41Z | | |
| | description | | | | |
| | direction | | egress | | |
| | ethertype | | IPv4 | | |
| | id | | 2638d18f-9dd4-414b-988e-34de3f77a76e | | |
| | port\_range\_max | | | | |
| | port\_range\_min | | | | |
| | project\_id | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | protocol | | icmp | | |
| | remote\_group\_id | | | | |
| | remote\_ip\_prefix | | 0.0.0.0/0 | | |
| | revision\_number | | 1 | | |
| | security\_group\_id | | 429d26ae-d018-41c8-9331-debd33bebbff | | |
| | tenant\_id | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | updated\_at | | 2017-10-13T18:20:41Z | | |
| +------------------- | +-------------------------------------- | + |

2017-10-13 14:20:41: INFO: Executing: neutron security-group-rule-create -- direction ingress --ethertype IPv4 --protocol tcp --port-range-min 1 --port-range-max 65535 --remote-ip-prefix 0.0.0.0/0 sanity\_security\_group

|  |  |  |
| --- | --- | --- |
| Created a new security\_group\_rule: | |  |
| +------------------- | +-------------------------------------- | + |
| | Field | | Value | | |
| +------------------- | +-------------------------------------- | + |
| | created\_at | | 2017-10-13T18:20:41Z | | |
| | description | | | | |
| | direction | | ingress | | |
| | ethertype | | IPv4 | | |
| | id | | aaa2e0b0-f8ad-4f4f-ae25-a60cbb187af7 | | |
| | port\_range\_max | | 65535 | | |
| | port\_range\_min | | 1 | | |
| | project\_id | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | protocol | | tcp | | |
| | remote\_group\_id | | | | |
| | remote\_ip\_prefix | | 0.0.0.0/0 | | |

Solution Validation Overview | **82**

|  |  |  |  |
| --- | --- | --- | --- |
| | revision\_number | | | 1 | | |
| | security\_group\_id | | | 429d26ae-d018-41c8-9331-debd33bebbff | | |
| | tenant\_id | | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | updated\_at | | | 2017-10-13T18:20:41Z | | |
| +------------------- | + | -------------------------------------- | + |



2017-10-13 14:20:41: INFO: Executing: neutron security-group-rule-create -- direction egress --ethertype IPv4 --protocol tcp --port-range-min 1 --port-range-max 65535 --remote-ip-prefix 0.0.0.0/0 sanity\_security\_group Created a new security\_group\_rule:

|  |  |  |  |
| --- | --- | --- | --- |
| +------------------- | + | -------------------------------------- | + |
| | Field | | | Value | | |
| +------------------- | + | -------------------------------------- | + |
| | created\_at | | | 2017-10-13T18:20:42Z | | |
| | description | | |  | | |
| | direction | | | egress | | |
| | ethertype | | | IPv4 | | |
| | id | | | c8627ddc-8100-4f11-8c30-40ace0d787b0 | | |
| | port\_range\_max | | | 65535 | | |
| | port\_range\_min | | | 1 | | |
| | project\_id | | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | protocol | | | tcp | | |
| | remote\_group\_id | | |  | | |
| | remote\_ip\_prefix | | | 0.0.0.0/0 | | |
| | revision\_number | | | 1 | | |
| | security\_group\_id | | | 429d26ae-d018-41c8-9331-debd33bebbff | | |
| | tenant\_id | | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | updated\_at | | | 2017-10-13T18:20:42Z | | |
| +------------------- | + | -------------------------------------- | + |

2017-10-13 14:20:42: INFO: Executing: neutron security-group-rule-create -- direction ingress --ethertype IPv4 --protocol udp --port-range-min 1 --port-range-max 65535 --remote-ip-prefix 0.0.0.0/0 sanity\_security\_group

|  |  |  |  |
| --- | --- | --- | --- |
| Created a new security\_group\_rule: | | |  |
| +------------------- | + | -------------------------------------- | + |
| | Field | | | Value | | |
| +------------------- | + | -------------------------------------- | + |
| | created\_at | | | 2017-10-13T18:20:43Z | | |
| | description | | |  | | |
| | direction | | | ingress | | |
| | ethertype | | | IPv4 | | |
| | id | | | 96b5be98-091d-48cc-a7db-9386fc753306 | | |
| | port\_range\_max | | | 65535 | | |
| | port\_range\_min | | | 1 | | |
| | project\_id | | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | protocol | | | udp | | |
| | remote\_group\_id | | |  | | |
| | remote\_ip\_prefix | | | 0.0.0.0/0 | | |
| | revision\_number | | | 1 | | |
| | security\_group\_id | | | 429d26ae-d018-41c8-9331-debd33bebbff | | |
| | tenant\_id | | | 26c77e1e763b4fecbc1833b9284e4986 | | |
| | updated\_at | | | 2017-10-13T18:20:43Z | | |
| +------------------- | + | -------------------------------------- | + |

2017-10-13 14:20:43: INFO: Executing: neutron security-group-rule-create -- direction egress --ethertype IPv4 --protocol udp --port-range-min 1 --port-range-max 65535 --remote-ip-prefix 0.0.0.0/0 sanity\_security\_group

|  |  |  |
| --- | --- | --- |
| Created a new security\_group\_rule: | |  |
| +------------------- | +-------------------------------------- | + |
| | Field | | Value | | |
| +------------------- | +-------------------------------------- | + |
| | created\_at | | 2017-10-13T18:20:43Z | | |
| | description | | | | |
| | direction | | egress | | |
| | ethertype | | IPv4 | | |
| | id | | f096278f-928c-4c0c-b90b-0af8775f110a | | |
| | port\_range\_max | | 65535 | | |

**83 |** Solution Validation Overview

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| | port\_range\_min | | | 1 |  | | |  |  |
| | project\_id | | | 26c77e1e763b4fecbc1833b9284e4986 | | | |  |  |
| | protocol | | | udp |  | | |  |  |
| | remote\_group\_id | | |  |  | | |  |  |
| | remote\_ip\_prefix | | | 0.0.0.0/0 |  | | |  |  |
| | revision\_number | | | 1 |  | | |  |  |
| | security\_group\_id | | | 429d26ae-d018-41c8-9331-debd33bebbff | | | |  |  |
| | tenant\_id | | | 26c77e1e763b4fecbc1833b9284e4986 | | | |  |  |
| | updated\_at | | | 2017-10-13T18:20:43Z | | | |  |  |
| +------------------- | + | -------------------------------------- | | + |  |  |
| 2017-10-13 14:20:43: INFO: ### Setting up glance | | | |  |  |  |
| 2017-10-13 14:20:43: INFO: setting admin scope with: ~/MHTR18BLKrc. | | | | | |  |
| 2017-10-13 14:20:43: INFO: ### sourcing ~/MHTR18BLKrc | | | |  |  |  |
| 2017-10-13 14:20:48: INFO: Executing: wget http://download.cirros- | | | | | |  |
| cloud.net/0.3.3/cirros-0.3.3-x86\_64-disk.img | | | |  |  |  |
| --2017-10-13 14:20:48 | | -- http://download.cirros-cloud.net/0.3.3/ | | |  |  |
| cirros-0.3.3-x86\_64-disk.img | | |  |  |  |  |
| Resolving download.cirros-cloud.net (download.cirros-cloud.net)... | | | | | |  |
| 64.90.42.85, 2607:f298:6:a036::bd6:a72a | | |  |  |  |  |
| Connecting to download.cirros-cloud.net (download.cirros-cloud.net)| | | | | | |  |
| 64.90.42.85|:80... | connected. | |  |  |  |  |
| HTTP request sent, awaiting response... | | | 200 OK |  |  |  |
| Length: 13200896 (13M) [text/plain] | | |  |  |  |  |
| Saving to: â€˜cirros-0.3.3-x86\_64-disk.imgâ€™ | | | |  |  |  |
| 0K .......... | .......... .......... .......... .......... | | | | 0% | 255K 50s |
| 50K .......... | .......... .......... .......... .......... | | | | 0% | 518K 37s |
| ... |  |  |  |  |  |  |
| ... |  |  |  |  |  |  |
| 12850K .......... | .......... .......... .......... . | | | 100% | |  |
| 6.36M=5.3s |  |  |  |  |  |  |



2017-10-13 14:20:54 (2.37 MB/s) - â€˜cirros-0.3.3-x86\_64-disk.imgâ€™ saved [13200896/13200896]

2017-10-13 14:20:55: INFO: Executing: openstack image create --disk-format qcow2 --container-format bare --file cirros-0.3.3-x86\_64-disk.img cirros --

|  |  |
| --- | --- |
| public |  |
| +------------------ |  |
| +-------------------------------------------------------------------------------------- | |
| + |  |
| | Field | | Value |
|  | | |
| +------------------ |  |
| +-------------------------------------------------------------------------------------- | |
| + |  |
| | checksum | | 133eae9fb1c98f45894a4e60d8736619 |
|  | | |
| | container\_format | bare | |
|  | | |
| | created\_at | | 2017-10-13T18:20:56Z |
|  | | |
| | disk\_format | | qcow2 |

|

Solution Validation Overview | **84**

| file | /v2/images/90dc3459-e253-49a5-b5fe-e403ce231110/file

|

| id | 90dc3459-e253-49a5-b5fe-e403ce231110

|

| min\_disk | 0

|

| min\_ram | 0

|

| name | cirros

|

| owner | 4790c5b2d4c64f6e9d6c367bc0b8b069

|

| properties | direct\_url='rbd://de4de876-b026-11e7-9a09-525400a5b196/

images/90dc3459-e253-49a5-b5fe-e403ce231110/snap', locations='[{u'url': u'rbd://de4de876-b026-11e7-9a09-525400a5b196/images/90dc3459-e253-49a5-b5fe-e403ce231110/snap', u'metadata': {}}]' |

| protected | False

|

| schema | /v2/schemas/image

|

| size | 13200896

|

| status | active

|

| tags |

|

| updated\_at | 2017-10-13T18:20:57Z

|

| virtual\_size | None

|

| visibility | public

|

+------------------

+--------------------------------------------------------------------------------------

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2017-10-13 14:20:58: INFO: Executing: openstack image list

**85** | Solution Validation Overview

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| +-------------------------------------- | +-------- | | +-------- | + |
| | ID | | | Name | | Status | | |
| +-------------------------------------- | +-------- | | +-------- | + |
| | 90dc3459-e253-49a5-b5fe-e403ce231110 | | | cirros | | active | | |
| +-------------------------------------- | +-------- | | +-------- | + |
| 2017-10-13 14:20:59: INFO: ### Setup Nova | |  |  |  |



2017-10-13 14:21:00: INFO: Executing: openstack flavor create --ram 2048 --

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| vcpus 1 --disk 20 sanity\_flavor | | | | | |  |  |
| + | ---------------------------- | |  |  | +-------------------------------------- | | + |
| | Field | |  |  |  | | | Value | | |
| + | ---------------------------- | |  |  | +-------------------------------------- | | + |
| | OS-FLV-DISABLED:disabled | | | | | | | False | | |
| | OS-FLV-EXT-DATA:ephemeral | | | | | | | 0 | | |
| | disk | |  |  |  | | | 20 | | |
| | id | |  |  |  | | | 3e2ad0a4-f094-457d-81ec-1f83a9a7f44d | | |
| | name | |  |  |  | | | sanity\_flavor | | |
| | os-flavor-access:is\_public | | | | | | | True | | |
| | properties | | |  |  | | |  | | |
| | ram | |  |  |  | | | 2048 | | |
| | rxtx\_factor | | |  |  | | | 1.0 | | |
| | swap | |  |  |  | | |  | | |
| | vcpus | |  |  |  | | | 1 | | |
| + | ---------------------------- | |  |  | +-------------------------------------- | | + |
| 2017-10-13 14:21:01: INFO: Setting tenant scope. | | | | | | |  |
| 2017-10-13 14:21:01: INFO: creating keypair sanity | | | | | | |  |
| Generating public/private rsa key pair. | | | | | | |  |
| Your identification | | | | has been | saved in /home/osp\_admin/sanity. | |  |
| Your public key has | | | | been saved | | in /home/osp\_admin/sanity.pub. |  |
| The key fingerprint | | | | is: |  |  |  |
| SHA256:kfQhn/uqx7XJ/nJgxVGCxhg2rNnLtctr6DSUZgAAfBA | | | | | | |  |
|  | osp\_admin@director.mhtr18blk.dfr | | | | | |  |
| The key's randomart | | | | image is: |  |  |  |
| + | ---[RSA 2048]---- | | + |  |  |  |  |
| | .E+... | | o.=+ ....| | |  |  |  |  |
| | | . . | o \*o++ .. | | |  |  |  |  |
| | | . | +++. . . | | |  |  |  |  |
| | |  | oo.o. o | | |  |  |  |  |
| | |  | S.\*o o | | |  |  |  |  |
| | |  | +o.= | | |  |  |  |  |
| | |  | .o\*.= | | |  |  |  |  |
| | |  | .+oO . | | |  |  |  |  |
| | |  | .+ooo=. | | |  |  |  |  |
| + | ----[SHA256]----- | | + |  |  |  |  |
| 2017-10-13 14:21:01: INFO: loading sanity keypair into nova | | | | | | |  |
| 2017-10-13 14:21:05: INFO: ### | | | | | | Initiating build of instances... |  |
| 2017-10-13 14:21:05: INFO: Executing: nova boot --security-groups | | | | | | |  |
|  | sanity\_security\_group --flavor sanity\_flavor --key-name sanity --image | | | | | | |
|  | 90dc3459-e253-49a5-b5fe-e403ce231110 --nic net-id=e8e22aaf-0ee9-4c82-a295- | | | | | | |

f02788e97e8f cirros\_test\_1

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| Property | Value

|

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| OS-DCF:diskConfig | MANUAL

|

| OS-EXT-AZ:availability\_zone |

|

| OS-EXT-STS:power\_state | 0

|

| OS-EXT-STS:task\_state | scheduling

|

Solution Validation Overview | **86**

|  |  |  |  |
| --- | --- | --- | --- |
| | OS-EXT-STS:vm\_state |  | | | building |
| | |  |  |  |
| | OS-SRV-USG:launched\_at | | | | - |
| | |  |  |  |
| | OS-SRV-USG:terminated\_at | | | | - |
| | |  |  |  |
| | accessIPv4 |  | | |  |
| | |  |  |  |
| | accessIPv6 |  | | |  |
| | |  |  |  |
| | adminPass |  | | | RC7ECQKnjrsJ |
| | |  |  |  |
| | config\_drive |  | | |  |
| | |  |  |  |
| | created |  | | | 2017-10-13T18:21:08Z |
| | |  |  |  |
| | description |  | | | - |
| | |  |  |  |
| | flavor |  | | | sanity\_flavor (3e2ad0a4- |
| f094-457d-81ec-1f83a9a7f44d) | | |  |  |
| | hostId |  | | |  |
| | |  |  |  |
| | id |  | | | 625b1245-445e-43d0- |
| b4ae-74a925cd95d0 |  | | |  |
| | image |  | | | cirros (90dc3459-e253-49a5-b5fe- |
| e403ce231110) | | |  |  |
| | key\_name |  | | | sanity |
| | |  |  |  |
| | locked |  | | | False |
| | |  |  |  |
| | metadata |  | | | {} |
| | |  |  |  |
| | name |  | | | cirros\_test\_1 |
| | |  |  |  |
| | os-extended-volumes:volumes\_attached | | | | [] |
| | |  |  |  |
| | progress |  | | | 0 |
| | |  |  |  |
| | security\_groups |  | | | sanity\_security\_group |
| | |  |  |  |
| | status |  | | | BUILD |
| | |  |  |  |
| | tags |  | | | [] |
| | |  |  |  |
| | tenant\_id |  | | | 26c77e1e763b4fecbc1833b9284e4986 |
| | |  |  |  |
| | updated |  | | | 2017-10-13T18:21:08Z |
| | |  |  |  |
| | user\_id |  | | | 4442207de58448938694bdbd7b764cf4 |
| | |  |  |  |
| +-------------------------------------- | |  |  |
| +------------------------------------------------------ | |  | + |
| 2017-10-13 14:21:09: INFO: Executing: nova boot --security-groups | | | |



sanity\_security\_group --flavor sanity\_flavor --key-name sanity --image 90dc3459-e253-49a5-b5fe-e403ce231110 --nic net-id=e8e22aaf-0ee9-4c82-a295-

f02788e97e8f cirros\_test\_2

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| Property | Value

|

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| OS-DCF:diskConfig | MANUAL

|

Dell EMC NFV Ready Bundle for Red Hat Software Deployment Guide Version 13

**87** | Solution Validation Overview

|  |  |  |  |
| --- | --- | --- | --- |
| | OS-EXT-AZ:availability\_zone | | | |  |
| | |  |  |  |
| | OS-EXT-STS:power\_state | | | | 0 |
| | |  |  |  |
| | OS-EXT-STS:task\_state | | | | scheduling |
| | |  |  |  |
| | OS-EXT-STS:vm\_state |  | | | building |
| | |  |  |  |
| | OS-SRV-USG:launched\_at | | | | - |
| | |  |  |  |
| | OS-SRV-USG:terminated\_at | | | | - |
| | |  |  |  |
| | accessIPv4 |  | | |  |
| | |  |  |  |
| | accessIPv6 |  | | |  |
| | |  |  |  |
| | adminPass |  | | | WKuE3wedfV49 |
| | |  |  |  |
| | config\_drive |  | | |  |
| | |  |  |  |
| | created |  | | | 2017-10-13T18:21:12Z |
| | |  |  |  |
| | description |  | | | - |
| | |  |  |  |
| | flavor |  | | | sanity\_flavor (3e2ad0a4- |
| f094-457d-81ec-1f83a9a7f44d) | | |  |  |
| | hostId |  | | |  |
| | |  |  |  |
| | id |  | | | c18f6d9e-8a51-49e5- |
| bca7-95f44774798e |  | | |  |
| | image |  | | | cirros (90dc3459-e253-49a5-b5fe- |
| e403ce231110) | | |  |  |
| | key\_name |  | | | sanity |
| | |  |  |  |
| | locked |  | | | False |
| | |  |  |  |
| | metadata |  | | | {} |
| | |  |  |  |
| | name |  | | | cirros\_test\_2 |
| | |  |  |  |
| | os-extended-volumes:volumes\_attached | | | | [] |
| | |  |  |  |
| | progress |  | | | 0 |
| | |  |  |  |
| | security\_groups |  | | | sanity\_security\_group |
| | |  |  |  |
| | status |  | | | BUILD |
| | |  |  |  |
| | tags |  | | | [] |
| | |  |  |  |
| | tenant\_id |  | | | 26c77e1e763b4fecbc1833b9284e4986 |
| | |  |  |  |
| | updated |  | | | 2017-10-13T18:21:12Z |
| | |  |  |  |
| | user\_id |  | | | 4442207de58448938694bdbd7b764cf4 |
| | |  |  |  |
| +-------------------------------------- | |  |  |
| +------------------------------------------------------ | |  | + |



2017-10-13 14:21:12: INFO: Executing: nova boot --security-groups

sanity\_security\_group --flavor sanity\_flavor --key-name sanity --image

90dc3459-e253-49a5-b5fe-e403ce231110 --nic net-id=e8e22aaf-0ee9-4c82-a295-

f02788e97e8f cirros\_test\_3

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Solution Validation Overview | **88**

|  |  |  |  |
| --- | --- | --- | --- |
| | Property |  | | | Value |
| | |  |  |  |
| +-------------------------------------- | |  |  |
| +------------------------------------------------------ | |  | + |
| | OS-DCF:diskConfig |  | | | MANUAL |
| | |  |  |  |
| | OS-EXT-AZ:availability\_zone | | | |  |
| | |  |  |  |
| | OS-EXT-STS:power\_state | | | | 0 |
| | |  |  |  |
| | OS-EXT-STS:task\_state | | | | scheduling |
| | |  |  |  |
| | OS-EXT-STS:vm\_state |  | | | building |
| | |  |  |  |
| | OS-SRV-USG:launched\_at | | | | - |
| | |  |  |  |
| | OS-SRV-USG:terminated\_at | | | | - |
| | |  |  |  |
| | accessIPv4 |  | | |  |
| | |  |  |  |
| | accessIPv6 |  | | |  |
| | |  |  |  |
| | adminPass |  | | | 8K3gdcEgALZn |
| | |  |  |  |
| | config\_drive |  | | |  |
| | |  |  |  |
| | created |  | | | 2017-10-13T18:21:16Z |
| | |  |  |  |
| | description |  | | | - |
| | |  |  |  |
| | flavor |  | | | sanity\_flavor (3e2ad0a4- |
| f094-457d-81ec-1f83a9a7f44d) | | |  |  |
| | hostId |  | | |  |
| | |  |  |  |
| | id |  | | |  |
| 836c1fbb-3ca3-4e13-966f-856622d1c9b5 | |  | | |
| | image |  | | | cirros (90dc3459-e253-49a5-b5fe- |
| e403ce231110) | | |  |  |
| | key\_name |  | | | sanity |
| | |  |  |  |
| | locked |  | | | False |
| | |  |  |  |
| | metadata |  | | | {} |
| | |  |  |  |
| | name |  | | | cirros\_test\_3 |
| | |  |  |  |
| | os-extended-volumes:volumes\_attached | | | | [] |
| | |  |  |  |
| | progress |  | | | 0 |
| | |  |  |  |
| | security\_groups |  | | | sanity\_security\_group |
| | |  |  |  |
| | status |  | | | BUILD |
| | |  |  |  |
| | tags |  | | | [] |
| | |  |  |  |
| | tenant\_id |  | | | 26c77e1e763b4fecbc1833b9284e4986 |
| | |  |  |  |
| | updated |  | | | 2017-10-13T18:21:16Z |
| | |  |  |  |
| | user\_id |  | | | 4442207de58448938694bdbd7b764cf4 |
| | |  |  |  |
| +-------------------------------------- | |  |  |
| +------------------------------------------------------ | |  | + |



**89** | Solution Validation Overview

2017-10-13 14:21:17: INFO: Executing: nova boot --security-groups sanity\_security\_group --flavor sanity\_flavor --key-name sanity --image 90dc3459-e253-49a5-b5fe-e403ce231110 --nic net-id=e8e22aaf-0ee9-4c82-a295-



|  |  |  |  |
| --- | --- | --- | --- |
| f02788e97e8f cirros\_test\_4 | |  |  |
| +-------------------------------------- | |  |  |
| +------------------------------------------------------ | |  | + |
| | Property |  | | | Value |
| | |  |  |  |
| +-------------------------------------- | |  |  |
| +------------------------------------------------------+ | | | |
| | OS-DCF:diskConfig |  | | | MANUAL |
| | |  |  |  |
| | OS-EXT-AZ:availability\_zone | | | |  |
| | |  |  |  |
| | OS-EXT-STS:power\_state | | | | 0 |
| | |  |  |  |
| | OS-EXT-STS:task\_state | | | | scheduling |
| | |  |  |  |
| | OS-EXT-STS:vm\_state |  | | | building |
| | |  |  |  |
| | OS-SRV-USG:launched\_at | | | | - |
| | |  |  |  |
| | OS-SRV-USG:terminated\_at | | | | - |
| | |  |  |  |
| | accessIPv4 |  | | |  |
| | |  |  |  |
| | accessIPv6 |  | | |  |
| | |  |  |  |
| | adminPass |  | | | 8zeMCa7jWjA2 |
| | |  |  |  |
| | config\_drive |  | | |  |
| | |  |  |  |
| | created |  | | | 2017-10-13T18:21:20Z |
| | |  |  |  |
| | description |  | | | - |
| | |  |  |  |
| | flavor |  | | | sanity\_flavor (3e2ad0a4- |
| f094-457d-81ec-1f83a9a7f44d) | | |  |  |
| | hostId |  | | |  |
| | |  |  |  |
| | id |  | | | ff93e1a4- |
| ea01-4c7b-8952-0cebfb3f9ff4 | |  | | |
| | image |  | | | cirros (90dc3459-e253-49a5-b5fe- |
| e403ce231110) | | |  |  |
| | key\_name |  | | | sanity |
| | |  |  |  |
| | locked |  | | | False |
| | |  |  |  |
| | metadata |  | | | {} |
| | |  |  |  |
| | name |  | | | cirros\_test\_4 |
| | |  |  |  |
| | os-extended-volumes:volumes\_attached | | | | [] |
| | |  |  |  |
| | progress |  | | | 0 |
| | |  |  |  |
| | security\_groups |  | | | sanity\_security\_group |
| | |  |  |  |
| | status |  | | | BUILD |
| | |  |  |  |
| | tags |  | | | [] |
| | |  |  |  |
| | tenant\_id |  | | | 26c77e1e763b4fecbc1833b9284e4986 |
| | |  |  |  |

Solution Validation Overview | **90**

| updated | 2017-10-13T18:21:20Z



|

| user\_id | 4442207de58448938694bdbd7b764cf4

|

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2017-10-13 14:21:20: INFO: Executing: nova boot --security-groups sanity\_security\_group --flavor sanity\_flavor --key-name sanity --image 90dc3459-e253-49a5-b5fe-e403ce231110 --nic net-id=e8e22aaf-0ee9-4c82-a295-

|  |  |  |  |
| --- | --- | --- | --- |
| f02788e97e8f cirros\_test\_5 | |  |  |
| +-------------------------------------- | |  |  |
| +------------------------------------------------------ | |  | + |
| | Property |  | | | Value |
| | |  |  |  |
| +-------------------------------------- | |  |  |
| +------------------------------------------------------ | |  | + |
| | OS-DCF:diskConfig |  | | | MANUAL |
| | |  |  |  |
| | OS-EXT-AZ:availability\_zone | | | |  |
| | |  |  |  |
| | OS-EXT-STS:power\_state | | | | 0 |
| | |  |  |  |
| | OS-EXT-STS:task\_state | | | | scheduling |
| | |  |  |  |
| | OS-EXT-STS:vm\_state |  | | | building |
| | |  |  |  |
| | OS-SRV-USG:launched\_at | | | | - |
| | |  |  |  |
| | OS-SRV-USG:terminated\_at | | | | - |
| | |  |  |  |
| | accessIPv4 |  | | |  |
| | |  |  |  |
| | accessIPv6 |  | | |  |
| | |  |  |  |
| | adminPass |  | | | UffoJW46qE4d |
| | |  |  |  |
| | config\_drive |  | | |  |
| | |  |  |  |
| | created |  | | | 2017-10-13T18:21:23Z |
| | |  |  |  |
| | description |  | | | - |
| | |  |  |  |
| | flavor |  | | | sanity\_flavor (3e2ad0a4- |
| f094-457d-81ec-1f83a9a7f44d) | | | |  |
| | hostId |  | | |  |
| | |  |  |  |
| | id |  | | | fde7800f-ebdd-44b1-af41- |
| e164ddff8715 |  | | |  |
| | image |  | | | cirros (90dc3459-e253-49a5-b5fe- |
| e403ce231110) | | |  |  |
| | key\_name |  | | | sanity |
| | |  |  |  |
| | locked |  | | | False |
| | |  |  |  |
| | metadata |  | | | {} |
| | |  |  |  |
| | name |  | | | cirros\_test\_5 |
| | |  |  |  |
| | os-extended-volumes:volumes\_attached | | | | [] |
| | |  |  |  |
| | progress |  | | | 0 |
| | |  |  |  |
| | security\_groups |  | | | sanity\_security\_group |
| | |  |  |  |

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| | status |  |  | | | BUILD |  |
|  | | |  |  |  |  |
| | tags |  |  | | | [] |  |
|  | | |  |  |  |  |
| | tenant\_id |  |  | | | 26c77e1e763b4fecbc1833b9284e4986 | |
|  | | |  |  |  |  |
| | updated |  |  | | | 2017-10-13T18:21:23Z | |
|  | | |  |  |  |  |
| | user\_id |  |  | | | 4442207de58448938694bdbd7b764cf4 | |
|  | | |  |  |  |  |
| +-------------------------------------- | |  |  |  |  |
| +------------------------------------------------------ | |  |  |  | + |
| 2017-10-13 14:21:24: INFO: ### Waiting for the instances to be built... | | | | | |
| 2017-10-13 14:21:32: INFO: ### Instances | | | | are successfully built | |
| 2017-10-13 14:21:32: INFO: Executing: nova list | | | | |  |
| +-------------------------------------- | |  | + | --------------- | +-------- |
| +------------ | +------------- | + | ---------------------------- | | + |
| | ID |  |  | | | Name | | Status | Task State |
| | Power State | Networks | |  |  | | |  |
| +-------------------------------------- | |  | + | --------------- | +-------- |
| +------------ | +------------- | + | ---------------------------- | | + |



| 625b1245-445e-43d0-b4ae-74a925cd95d0 | cirros\_test\_1 | ACTIVE | -

| Running | tenant\_net1=192.168.201.8 |

| c18f6d9e-8a51-49e5-bca7-95f44774798e | cirros\_test\_2 | ACTIVE | -

| Running | tenant\_net1=192.168.201.5 |

| 836c1fbb-3ca3-4e13-966f-856622d1c9b5 | cirros\_test\_3 | ACTIVE | -

| Running | tenant\_net1=192.168.201.10 |

| ff93e1a4-ea01-4c7b-8952-0cebfb3f9ff4 | cirros\_test\_4 | ACTIVE | -

| Running | tenant\_net1=192.168.201.14 |

| fde7800f-ebdd-44b1-af41-e164ddff8715 | cirros\_test\_5 | ACTIVE | -

| Running | tenant\_net1=192.168.201.7 |

+--------------------------------------+---------------+-------- +------------+-------------+----------------------------+ 2017-10-13 14:21:33: INFO: setting admin scope with: ~/MHTR18BLKrc. 2017-10-13 14:21:33: INFO: ### sourcing ~/MHTR18BLKrc 2017-10-13 14:21:34: INFO: Setting tenant scope.

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.128' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

2017-10-13 14:21:37: INFO: ### Pinging 192.168.201.7 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133

2017-10-13 14:21:37: INFO: Executing: ssh -o StrictHostKeyChecking=no -o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.133 sudo ip netns exec qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f ping -c 1 -w 5 192.168.201.7

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

PING 192.168.201.7 (192.168.201.7) 56(84) bytes of data.

64 bytes from 192.168.201.7: icmp\_seq=1 ttl=64 time=0.227 ms

--- 192.168.201.7 ping statistics ---

1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 0.227/0.227/0.227/0.000 ms

2017-10-13 14:21:37: INFO: ### Successfully pinged 192.168.201.7 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133 2017-10-13 14:21:37: INFO: Allocating floating IP

2017-10-13 14:21:39: INFO: setting admin scope with: ~/MHTR18BLKrc.

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2017-10-13 14:21:39: INFO: ### sourcing ~/MHTR18BLKrc



2017-10-13 14:21:39: INFO: Setting tenant scope.

2017-10-13 14:21:39: INFO: Executing: neutron floatingip-associate db9c0bb6-0ebc-4676-90ac-8870981cf741 ce160385-8e28-4d3a-b894-d37055ddabd1 Associated floating IP db9c0bb6-0ebc-4676-90ac-8870981cf741

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.128' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

2017-10-13 14:21:41: INFO: ### Pinging 192.168.201.14 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133

2017-10-13 14:21:41: INFO: Executing: ssh -o StrictHostKeyChecking=no -o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.133 sudo ip netns exec qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f ping -c 1 -w 5 192.168.201.14

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

PING 192.168.201.14 (192.168.201.14) 56(84) bytes of data.

64 bytes from 192.168.201.14: icmp\_seq=1 ttl=64 time=0.599 ms --- 192.168.201.14 ping statistics ---

1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 0.599/0.599/0.599/0.000 ms

2017-10-13 14:21:41: INFO: ### Successfully pinged 192.168.201.14 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133 2017-10-13 14:21:41: INFO: Allocating floating IP

2017-10-13 14:21:43: INFO: setting admin scope with: ~/MHTR18BLKrc.

2017-10-13 14:21:43: INFO: ### sourcing ~/MHTR18BLKrc

2017-10-13 14:21:43: INFO: Setting tenant scope.

2017-10-13 14:21:43: INFO: Executing: neutron floatingip-associate 013f86a5-20f7-4bf3-b28b-62011f72bab4 28ec9e01-2210-402f-9013-f92b752ddf9c Associated floating IP 013f86a5-20f7-4bf3-b28b-62011f72bab4

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.128' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

2017-10-13 14:21:46: INFO: ### Pinging 192.168.201.10 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133

2017-10-13 14:21:46: INFO: Executing: ssh -o StrictHostKeyChecking=no -o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.133 sudo ip netns exec qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f ping -c 1 -w 5 192.168.201.10

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

PING 192.168.201.10 (192.168.201.10) 56(84) bytes of data. 64 bytes from 192.168.201.10: icmp\_seq=1 ttl=64 time=1.11 ms

--- 192.168.201.10 ping statistics ---

1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 1.119/1.119/1.119/0.000 ms

2017-10-13 14:21:46: INFO: ### Successfully pinged 192.168.201.10 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133

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2017-10-13 14:21:46: INFO: Allocating floating IP



2017-10-13 14:21:48: INFO: setting admin scope with: ~/MHTR18BLKrc.

2017-10-13 14:21:48: INFO: ### sourcing ~/MHTR18BLKrc

2017-10-13 14:21:48: INFO: Setting tenant scope.

2017-10-13 14:21:48: INFO: Executing: neutron floatingip-associate 9e679f7d-591e-45f3-9565-51b240ad9f23 ca3ac3de-46f6-4468-9717-78c6ac6f2415 Associated floating IP 9e679f7d-591e-45f3-9565-51b240ad9f23

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.128' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

2017-10-13 14:21:50: INFO: ### Pinging 192.168.201.5 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133

2017-10-13 14:21:50: INFO: Executing: ssh -o StrictHostKeyChecking=no -o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.133 sudo ip netns exec qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f ping -c 1 -w 5 192.168.201.5

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

PING 192.168.201.5 (192.168.201.5) 56(84) bytes of data.

64 bytes from 192.168.201.5: icmp\_seq=1 ttl=64 time=0.446 ms

--- 192.168.201.5 ping statistics ---

1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 0.446/0.446/0.446/0.000 ms

2017-10-13 14:21:50: INFO: ### Successfully pinged 192.168.201.5 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133 2017-10-13 14:21:50: INFO: Allocating floating IP

2017-10-13 14:21:52: INFO: setting admin scope with: ~/MHTR18BLKrc.

2017-10-13 14:21:52: INFO: ### sourcing ~/MHTR18BLKrc

2017-10-13 14:21:53: INFO: Setting tenant scope.

2017-10-13 14:21:53: INFO: Executing: neutron floatingip-associate 6723b319-3926-4050-a712-34bbf9d2ffc1 b333704f-4bf5-48c5-bebf-e94d3e713db3 Associated floating IP 6723b319-3926-4050-a712-34bbf9d2ffc1

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.128' (ECDSA) to the list of known hosts.

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

2017-10-13 14:21:54: INFO: ### Pinging 192.168.201.8 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133

2017-10-13 14:21:54: INFO: Executing: ssh -o StrictHostKeyChecking=no -o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.133 sudo ip netns exec qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f ping -c 1 -w 5 192.168.201.8

Warning: Permanently added '192.168.120.133' (ECDSA) to the list of known hosts.

PING 192.168.201.8 (192.168.201.8) 56(84) bytes of data.

64 bytes from 192.168.201.8: icmp\_seq=1 ttl=64 time=0.606 ms

--- 192.168.201.8 ping statistics ---

1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 0.606/0.606/0.606/0.000 ms

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2017-10-13 14:21:55: INFO: ### Successfully pinged 192.168.201.8 from netns qdhcp-e8e22aaf-0ee9-4c82-a295-f02788e97e8f on controller 192.168.120.133 2017-10-13 14:21:55: INFO: Allocating floating IP



2017-10-13 14:21:57: INFO: setting admin scope with: ~/MHTR18BLKrc.

2017-10-13 14:21:57: INFO: ### sourcing ~/MHTR18BLKrc

2017-10-13 14:21:57: INFO: Setting tenant scope.

2017-10-13 14:21:57: INFO: Executing: neutron floatingip-associate bdd66e64-299c-4d8c-bd68-4ce467526aeb 40987052-eddf-4595-9bba-a1df9602948f Associated floating IP bdd66e64-299c-4d8c-bd68-4ce467526aeb

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

2017-10-13 14:22:02: INFO: ### Pinging 100.84.122.72 from netns qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 2017-10-13 14:22:02: INFO: Executing: ssh -o StrictHostKeyChecking=no

-o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.138 sudo ip netns exec qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 ping -c 1 -w 5 100.84.122.72

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

PING 100.84.122.72 (100.84.122.72) 56(84) bytes of data.

64 bytes from 100.84.122.72: icmp\_seq=1 ttl=64 time=0.615 ms

--- 100.84.122.72 ping statistics ---

1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 0.615/0.615/0.615/0.000 ms

2017-10-13 14:22:02: INFO: ### Successfully pinged 100.84.122.72 from netns qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

2017-10-13 14:22:02: INFO: ### Pinging 100.84.122.82 from netns qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 2017-10-13 14:22:02: INFO: Executing: ssh -o StrictHostKeyChecking=no

-o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.138 sudo ip netns exec qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 ping -c 1 -w 5 100.84.122.82

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

PING 100.84.122.82 (100.84.122.82) 56(84) bytes of data.

64 bytes from 100.84.122.82: icmp\_seq=1 ttl=64 time=0.704 ms

--- 100.84.122.82 ping statistics ---

1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 0.704/0.704/0.704/0.000 ms

2017-10-13 14:22:03: INFO: ### Successfully pinged 100.84.122.82 from netns qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

2017-10-13 14:22:03: INFO: ### Pinging 100.84.122.73 from netns qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 2017-10-13 14:22:03: INFO: Executing: ssh -o StrictHostKeyChecking=no

-o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.138 sudo ip netns exec qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 ping -c 1 -w 5 100.84.122.73

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

PING 100.84.122.73 (100.84.122.73) 56(84) bytes of data.

64 bytes from 100.84.122.73: icmp\_seq=1 ttl=64 time=0.869 ms

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--- 100.84.122.73 ping statistics ---

1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 0.869/0.869/0.869/0.000 ms

2017-10-13 14:22:03: INFO: ### Successfully pinged 100.84.122.73 from netns qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

2017-10-13 14:22:03: INFO: ### Pinging 100.84.122.75 from netns qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 2017-10-13 14:22:03: INFO: Executing: ssh -o StrictHostKeyChecking=no

-o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.138 sudo ip netns exec qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 ping -c 1 -w 5 100.84.122.75

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

PING 100.84.122.75 (100.84.122.75) 56(84) bytes of data.

64 bytes from 100.84.122.75: icmp\_seq=1 ttl=64 time=0.615 ms

--- 100.84.122.75 ping statistics ---

1 packets transmitted, 1 received, 0% packet loss, time 0ms rtt min/avg/max/mdev = 0.615/0.615/0.615/0.000 ms

2017-10-13 14:22:04: INFO: ### Successfully pinged 100.84.122.75 from netns qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

2017-10-13 14:22:04: INFO: ### Pinging 100.84.122.71 from netns qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 2017-10-13 14:22:04: INFO: Executing: ssh -o StrictHostKeyChecking=no

-o UserKnownHostsFile=/dev/null -o KbdInteractiveDevices=no heat-admin@192.168.120.138 sudo ip netns exec qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 ping -c 1 -w 5 100.84.122.71

Warning: Permanently added '192.168.120.138' (ECDSA) to the list of known hosts.

PING 100.84.122.71 (100.84.122.71) 56(84) bytes of data.

64 bytes from 100.84.122.71: icmp\_seq=1 ttl=64 time=0.635 ms

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| --- 100.84.122.71 ping statistics --- | | | | |  |  |  |  |
| 1 | packets transmitted, 1 received, 0% packet loss, time 0ms | | | | | | |  |
| rtt min/avg/max/mdev | | | = 0.635/0.635/0.635/0.000 ms | | |  |  |  |
| 2017-10-13 | | 14:22:04: INFO: ### Successfully pinged 100.84.122.71 from netns | | | | | | |
|  | qrouter-5adcd390-b199-43cf-a32d-a708bcb1fb50 on controller 192.168.120.138 | | | | | | | |
| 2017-10-13 | | 14:22:04: INFO: ### Cinder test | | | |  |  |  |
| 2017-10-13 | | 14:22:04: INFO: Setting tenant scope. | | | |  |  |  |
| 2017-10-13 | | 14:22:04: INFO: Executing: cinder list | | | |  |  |  |
| + | ----+-------- | +------ | +------ | +------------- | +---------- | + | ------------- | + |
| | ID | Status | Name | Size | Volume Type | Bootable | | | | | | | | Attached to | | |
| + | ----+-------- | +------ | +------ | +------------- | +---------- | + | ------------- | + |
| + | ----+-------- | +------ | +------ | +------------- | +---------- | + | ------------- | + |
| 2017-10-13 | | 14:22:06: INFO: ### Kicking off volume creation... | | | | | |  |
| 2017-10-13 | | 14:22:09: INFO: ### Creating volume volume\_test\_5 | | | | | |  |
| 2017-10-13 | | 14:22:09: INFO: Executing: cinder type-list | | | | |  |  |
| + | -------------------------------------- | |  |  | +------------- | + | ------------- |  |
| + | ----------- | + |  |  |  |  |  |  |
| | ID | |  |  |  | | Name | | | Description | | |
|  | Is\_Public | | |  |  |  |  |  |  |
| + | -------------------------------------- | |  |  | +------------- | + | ------------- |  |
| + | ----------- | + |  |  |  |  |  |  |
| | c57d99f2-00de-42c8-a5cd-41011182704c | rbd\_backend | | | | | | | | - | | True |
|  | | |  |  |  |  |  |  |  |

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| +-------------------------------------- |  |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| 2017-10-13 14:22:09: INFO: Executing: cinder create --display-name | | | | |  |
| volume\_test\_5 1 --volume-type=rbd\_backend | | | |  |  |
| +------------------------------ | | + | -------------------------------------- | | + |
| | Property |  | | | Value |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |
| | attachments | | | | [] |  | | |
| | availability\_zone | | | | nova |  | | |
| | bootable |  | | | false |  | | |
| | consistencygroup\_id | | | | None |  | | |
| | created\_at |  | | | 2017-10-13T18:22:10.000000 | | | |
| | description | | | | None |  | | |
| | encrypted |  | | | False |  | | |
| | id |  | | | c48d7ace-808d-4d4e-8643-5b2d2fabff36 | | | |
| | metadata |  | | | {} |  | | |
| | multiattach | | | | False |  | | |
| | name |  | | | volume\_test\_5 |  | | |
| | os-vol-tenant-attr:tenant\_id | | | | 26c77e1e763b4fecbc1833b9284e4986 | | | |
| | replication\_status | | | | disabled |  | | |
| | size |  | | | 1 |  | | |
| | snapshot\_id | | | | None |  | | |
| | source\_volid | | | | None |  | | |
| | status |  | | | creating |  | | |
| | updated\_at |  | | | 2017-10-13T18:22:10.000000 | | | |
| | user\_id |  | | | 4442207de58448938694bdbd7b764cf4 | | | |
| | volume\_type | | | | rbd\_backend |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |
| 2017-10-13 14:22:11: INFO: ### Creating volume volume\_test\_4 | | | | |  |
| 2017-10-13 14:22:11: INFO: Executing: cinder type-list | | | | |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| | ID |  |  | | Name | | Description | | |
| Is\_Public | |  |  |  |  |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| | c57d99f2-00de-42c8-a5cd-41011182704c | rbd\_backend | - | | | | | | True |
| | |  |  |  |  |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| 2017-10-13 14:22:11: INFO: Executing: cinder create --display-name | | | | |  |
| volume\_test\_4 1 --volume-type=rbd\_backend | | | |  |  |
| +------------------------------ | | + | -------------------------------------- | | + |
| | Property |  | | | Value |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |
| | attachments | | | | [] |  | | |
| | availability\_zone | | | | nova |  | | |
| | bootable |  | | | false |  | | |
| | consistencygroup\_id | | | | None |  | | |
| | created\_at |  | | | 2017-10-13T18:22:12.000000 | | | |
| | description | | | | None |  | | |
| | encrypted |  | | | False |  | | |
| | id |  | | | 79bbed71-6941-4610-9031-39ed2946d2fc | | | |
| | metadata |  | | | {} |  | | |
| | multiattach | | | | False |  | | |
| | name |  | | | volume\_test\_4 |  | | |
| | os-vol-tenant-attr:tenant\_id | | | | 26c77e1e763b4fecbc1833b9284e4986 | | | |
| | replication\_status | | | | disabled |  | | |
| | size |  | | | 1 |  | | |
| | snapshot\_id | | | | None |  | | |
| | source\_volid | | | | None |  | | |
| | status |  | | | available |  | | |
| | updated\_at |  | | | 2017-10-13T18:22:12.000000 | | | |
| | user\_id |  | | | 4442207de58448938694bdbd7b764cf4 | | | |



**97** | Solution Validation Overview

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| | volume\_type | | | | rbd\_backend |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |
| 2017-10-13 14:22:14: INFO: ### Creating volume volume\_test\_3 | | | | |  |
| 2017-10-13 14:22:14: INFO: Executing: cinder type-list | | | | |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| | ID |  |  | | Name | | Description | | |
| Is\_Public | |  |  |  |  |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| | c57d99f2-00de-42c8-a5cd-41011182704c | rbd\_backend | - | | | | | | True |
| | |  |  |  |  |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| 2017-10-13 14:22:14: INFO: Executing: cinder create --display-name | | | | |  |
| volume\_test\_3 1 --volume-type=rbd\_backend | | | |  |  |
| +------------------------------ | | + | -------------------------------------- | | + |
| | Property |  | | | Value |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |
| | attachments | | | | [] |  | | |
| | availability\_zone | | | | nova |  | | |
| | bootable |  | | | false |  | | |
| | consistencygroup\_id | | | | None |  | | |
| | created\_at |  | | | 2017-10-13T18:22:15.000000 | | | |
| | description | | | | None |  | | |
| | encrypted |  | | | False |  | | |
| | id |  | | | 79d0ce2b-ef49-4640-8d45-96f88ecd1a32 | | | |
| | metadata |  | | | {} |  | | |
| | multiattach | | | | False |  | | |
| | name |  | | | volume\_test\_3 |  | | |
| | os-vol-tenant-attr:tenant\_id | | | | 26c77e1e763b4fecbc1833b9284e4986 | | | |
| | replication\_status | | | | disabled |  | | |
| | size |  | | | 1 |  | | |
| | snapshot\_id | | | | None |  | | |
| | source\_volid | | | | None |  | | |
| | status |  | | | creating |  | | |
| | updated\_at |  | | | 2017-10-13T18:22:15.000000 | | | |
| | user\_id |  | | | 4442207de58448938694bdbd7b764cf4 | | | |
| | volume\_type | | | | rbd\_backend |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |
| 2017-10-13 14:22:16: INFO: ### Creating volume volume\_test\_2 | | | | |  |
| 2017-10-13 14:22:16: INFO: Executing: cinder type-list | | | | |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| | ID |  |  | | Name | | Description | | |
| Is\_Public | |  |  |  |  |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| | c57d99f2-00de-42c8-a5cd-41011182704c | rbd\_backend | - | | | | | | True |
| | |  |  |  |  |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| 2017-10-13 14:22:17: INFO: Executing: cinder create --display-name | | | | |  |
| volume\_test\_2 1 --volume-type=rbd\_backend | | | |  |  |
| +------------------------------ | | + | -------------------------------------- | | + |
| | Property |  | | | Value |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |
| | attachments | | | | [] |  | | |
| | availability\_zone | | | | nova |  | | |
| | bootable |  | | | false |  | | |
| | consistencygroup\_id | | | | None |  | | |
| | created\_at |  | | | 2017-10-13T18:22:18.000000 | | | |
| | description | | | | None |  | | |
| | encrypted |  | | | False |  | | |



Solution Validation Overview | **98**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| | id |  | | | 4c17b29d-d866-4d5f-a40c-7e8031ec07c4 | | | |
| | metadata |  | | | {} |  | | |
| | multiattach | | | | False |  | | |
| | name |  | | | volume\_test\_2 |  | | |
| | os-vol-tenant-attr:tenant\_id | | | | 26c77e1e763b4fecbc1833b9284e4986 | | | |
| | replication\_status | | | | disabled |  | | |
| | size |  | | | 1 |  | | |
| | snapshot\_id | | | | None |  | | |
| | source\_volid | | | | None |  | | |
| | status |  | | | creating |  | | |
| | updated\_at |  | | | None |  | | |
| | user\_id |  | | | 4442207de58448938694bdbd7b764cf4 | | | |
| | volume\_type | | | | rbd\_backend |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |
| 2017-10-13 14:22:19: INFO: ### Creating volume volume\_test\_1 | | | | |  |
| 2017-10-13 14:22:19: INFO: Executing: cinder type-list | | | | |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| | ID |  |  | | Name | | Description | | |
| Is\_Public | |  |  |  |  |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| | c57d99f2-00de-42c8-a5cd-41011182704c | rbd\_backend | - | | | | | | True |
| | |  |  |  |  |  |
| +-------------------------------------- | |  | +------------- | +------------- |  |
| +----------- | + |  |  |  |  |
| 2017-10-13 14:22:19: INFO: Executing: cinder create --display-name | | | | |  |
| volume\_test\_1 1 --volume-type=rbd\_backend | | | |  |  |
| +------------------------------ | | + | -------------------------------------- | | + |
| | Property |  | | | Value |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |
| | attachments | | | | [] |  | | |
| | availability\_zone | | | | nova |  | | |
| | bootable |  | | | false |  | | |
| | consistencygroup\_id | | | | None |  | | |
| | created\_at |  | | | 2017-10-13T18:22:21.000000 | | | |
| | description | | | | None |  | | |
| | encrypted |  | | | False |  | | |
| | id |  | | | 866f999b-2099-4932-a27a-c3f762dc9c41 | | | |
| | metadata |  | | | {} |  | | |
| | multiattach | | | | False |  | | |
| | name |  | | | volume\_test\_1 |  | | |
| | os-vol-tenant-attr:tenant\_id | | | | 26c77e1e763b4fecbc1833b9284e4986 | | | |
| | replication\_status | | | | disabled |  | | |
| | size |  | | | 1 |  | | |
| | snapshot\_id | | | | None |  | | |
| | source\_volid | | | | None |  | | |
| | status |  | | | creating |  | | |
| | updated\_at |  | | | 2017-10-13T18:22:21.000000 | | | |
| | user\_id |  | | | 4442207de58448938694bdbd7b764cf4 | | | |
| | volume\_type | | | | rbd\_backend |  | | |
| +------------------------------ | | + | -------------------------------------- | | + |



|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2017-10-13 14:22:21: INFO: Executing: cinder list | | | | |  |  |  |  |
| + | -------------------------------------- | | + | ----------- | +--------------- | + | ------ |  |
| + | -------------+---------- | + | -------------+ |  |  |  |  |  |
| | ID | |  | | | Status | | Name | | | Size | | |
|  | Volume Type | Bootable | Attached to | | | |  |  |  |  |  |
| + | -------------------------------------- | | + | ----------- | +--------------- | + | ------ |  |
| + | -------------+---------- | + | -------------+ |  |  |  |  |  |
| | 4c17b29d-d866-4d5f-a40c-7e8031ec07c4 | | | | | available | | volume\_test\_2 | | | 1 | | |
|  | rbd\_backend | false | | | | |  |  |  |  |  |
| | 79bbed71-6941-4610-9031-39ed2946d2fc | | | | | available | | volume\_test\_4 | | | 1 | | |
|  | rbd\_backend | false | | | | |  |  |  |  |  |

**99** | Solution Validation Overview

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | 79d0ce2b-ef49-4640-8d45-96f88ecd1a32 | available | volume\_test\_3 | 1 | | | | | | | | |
| rbd\_backend | | | false | | | | |  |  |  |
| | 866f999b-2099-4932-a27a-c3f762dc9c41 | available | volume\_test\_1 | 1 | | | | | | | | |
| rbd\_backend | | | false | | | | |  |  |  |
| | c48d7ace-808d-4d4e-8643-5b2d2fabff36 | available | volume\_test\_5 | 1 | | | | | | | | |
| rbd\_backend | | | false | | | | |  |  |  |
| +-------------------------------------- | |  |  | +----------- | +--------------- | +------ |  |
| +------------- | | +---------- | + | -------------+ |  |  |  |
| 2017-10-13 | 14:22:22: INFO: ### Waiting for volumes status to change to | | | | | |  |
| available... | |  |  |  |  |  |  |
| 2017-10-13 | 14:22:22: INFO: ### Attaching volumes to instances... | | | | |  |  |
| 2017-10-13 | 14:22:25: INFO: Executing: nova volume-attach fde7800f-ebdd-44b1- | | | | | | |
| af41-e164ddff8715 c48d7ace-808d-4d4e-8643-5b2d2fabff36 /dev/vdb | | | | | |  |  |
| +---------- | + | -------------------------------------- | | + |  |  |  |
| | Property | | | Value |  | | |  |  |  |
| +---------- | + | -------------------------------------- | | + |  |  |  |
| | device | | | /dev/vdb |  | | |  |  |  |
| | id | | | c48d7ace-808d-4d4e-8643-5b2d2fabff36 | | | |  |  |  |
| | serverId | | | fde7800f-ebdd-44b1-af41-e164ddff8715 | | | |  |  |  |
| | volumeId | | | c48d7ace-808d-4d4e-8643-5b2d2fabff36 | | | |  |  |  |
| +---------- | + | -------------------------------------- | | + |  |  |  |
| 2017-10-13 | 14:22:27: INFO: Volume volume\_test\_5 attached to cirros\_test\_5. | | | | | |  |
| ssh in and verify | | |  |  |  |  |  |
| 2017-10-13 | 14:22:27: INFO: Executing: nova volume-attach ff93e1a4- | | | | |  |  |
| ea01-4c7b-8952-0cebfb3f9ff4 79bbed71-6941-4610-9031-39ed2946d2fc /dev/vdb | | | | | | |  |
| +---------- | + | -------------------------------------- | | + |  |  |  |
| | Property | | | Value |  | | |  |  |  |
| +---------- | + | -------------------------------------- | | + |  |  |  |
| | device | | | /dev/vdb |  | | |  |  |  |
| | id | | | 79bbed71-6941-4610-9031-39ed2946d2fc | | | |  |  |  |
| | serverId | | | ff93e1a4-ea01-4c7b-8952-0cebfb3f9ff4 | | | |  |  |  |
| | volumeId | | | 79bbed71-6941-4610-9031-39ed2946d2fc | | | |  |  |  |
| +---------- | + | -------------------------------------- | | + |  |  |  |
| 2017-10-13 | 14:22:30: INFO: Volume volume\_test\_4 attached to cirros\_test\_4. | | | | | |  |
| ssh in and verify | | |  |  |  |  |  |
| 2017-10-13 | 14:22:31: INFO: Executing: nova volume-attach | | | | |  |  |



836c1fbb-3ca3-4e13-966f-856622d1c9b5 79d0ce2b-ef49-4640-8d45-96f88ecd1a32 /

|  |  |  |  |
| --- | --- | --- | --- |
| dev/vdb |  |  |  |
| +---------- | + | -------------------------------------- | + |
| | Property | | | Value | | |
| +---------- | + | -------------------------------------- | + |
| | device | | | /dev/vdb | | |
| | id | | | 79d0ce2b-ef49-4640-8d45-96f88ecd1a32 | | |
| | serverId | | | 836c1fbb-3ca3-4e13-966f-856622d1c9b5 | | |
| | volumeId | | | 79d0ce2b-ef49-4640-8d45-96f88ecd1a32 | | |
| +---------- | + | -------------------------------------- | + |

2017-10-13 14:22:32: INFO: Volume volume\_test\_3 attached to cirros\_test\_3. ssh in and verify

2017-10-13 14:22:33: INFO: Executing: nova volume-attach c18f6d9e-8a51-49e5-bca7-95f44774798e 4c17b29d-d866-4d5f-a40c-7e8031ec07c4 /dev/vdb

|  |  |  |  |
| --- | --- | --- | --- |
| +---------- | + | -------------------------------------- | + |
| | Property | | | Value | | |
| +---------- | + | -------------------------------------- | + |
| | device | | | /dev/vdb | | |
| | id | | | 4c17b29d-d866-4d5f-a40c-7e8031ec07c4 | | |
| | serverId | | | c18f6d9e-8a51-49e5-bca7-95f44774798e | | |
| | volumeId | | | 4c17b29d-d866-4d5f-a40c-7e8031ec07c4 | | |
| +---------- | + | -------------------------------------- | + |

2017-10-13 14:22:35: INFO: Volume volume\_test\_2 attached to cirros\_test\_2.

ssh in and verify

2017-10-13 14:22:35: INFO: Executing: nova volume-attach 625b1245-445e-43d0-

b4ae-74a925cd95d0 866f999b-2099-4932-a27a-c3f762dc9c41 /dev/vdb

+----------+--------------------------------------+

| Property | Value |

Solution Validation Overview | **100**

|  |  |  |
| --- | --- | --- |
| +---------- | +-------------------------------------- | + |
| | device | | /dev/vdb | | |
| | id | | 866f999b-2099-4932-a27a-c3f762dc9c41 | | |
| | serverId | | 625b1245-445e-43d0-b4ae-74a925cd95d0 | | |
| | volumeId | | 866f999b-2099-4932-a27a-c3f762dc9c41 | | |
| +---------- | +-------------------------------------- | + |
| 2017-10-13 | 14:22:39: INFO: Volume volume\_test\_1 attached to cirros\_test\_1. | |
| ssh in and verify | |  |
| 2017-10-13 | 14:22:39: INFO: ### RadosGW test |  |
| 2017-10-13 | 14:22:39: INFO: Setting tenant scope. |  |
| 2017-10-13 | 14:22:39: INFO: Executing: swift post sanity\_container\_1 | |
| 2017-10-13 | 14:22:39: INFO: Executing: swift list |  |
| sanity\_container\_1 | |  |
| 2017-10-13 | 14:22:39: INFO: Executing: swift upload sanity\_container\_1 | |
| test\_file |  |  |
| test\_file |  |  |
| 2017-10-13 | 14:22:40: INFO: Executing: swift list sanity\_container\_1 | |
| test\_file |  |  |
| 2017-10-13 | 14:22:41: INFO: #####VALIDATION SUCCESS##### | |
| 2017-10-13 | 14:22:41: INFO: ##### Done ##### |  |
|  |  |  |

**101** | Post Deployment Features



**NOT VALIDATED BY PS**

**Appendix**

**J**

**Post Deployment Features**



|  |  |  |  |
| --- | --- | --- | --- |
| **Topics:** | |  | This appendix provides information about the post deployment |
|  |
| • | [*Ease of Use*](#page147) |  | Features for the Dell EMC NFV Ready Bundle for Red Hat. |
|  |  |
| • | [*SR-IOV*](#page147) |  |  |

Post Deployment Features | **102**

**Ease of Use**

Ease of Use is used for the post-deployment customization of Dell EMC NFV Ready Bundle for Red Hat for various use cases of NFV. Multiple projects, networks and Security Groups can be created and deleted with great ease by running the Ease of Use playbooks. The Cloud administrator has the flexibility to provide VNF related information in an Excel spreadsheet, which will then be used by the Ansible playbooks to deploy the virtual network functions. The following resources can be created/deleted automatically using this feature:

* Projects
* Users
* Networks
* Subnets
* Routers
* Security Groups

The feature contains creation and deletion playbooks which take input from the Excel spreadsheet. As the name suggests, the creation playbook is used to create the OpenStack resources. Multiple resources can be created using a single command. Similarly, the deletion playbook is to be used for deleting the created projects. The user can delete one project at a time by providing its name in the deletion command. Deleting a project also deletes all associated virtual resources.

Using this Excel spreadsheet, the Ease of Use feature can create up to 500 projects. Each project can have up to one router; 3 networks along with one subnet for each; one user and up to 9 security groups.

**Note:** See the documentDell EMC NFV Ready Bundle for Red Hat Ease of Use Feature UserGuide 13 for further information on the Ease of Use feature.

**SR-IOV**

SR-IOV feature is enabled in Dell EMC NFV Ready Bundle for Red Hat to enable external network access to the instances through the lowest latency path.

Single root I/O virtualization (SR-IOV) is an extension to the PCI Express (PCIe) specification. SR-IOV enables a single PCIe device to appear as multiple, separate devices. Traditionally in a virtualized environment, a packet has to go through an extra layer of hypervisor, resulting in multiple CPU interrupts per packet. These extra interrupts can result in a bottleneck in high traffic environments. SR-IOV enabled devices have the ability to dedicate isolated access to its resources among various PCIe hardware functions.

SR-IOV enablement script is sub divided into two parts, Cnode Pass and Instance Pass scripts. Each script makes use of a different Settings INI file. The Settings file requires the user to input the parameters required for executing the individual scripts.

Cnode pass is the first of the two scripts that should be run. Cnode pass enables SR-IOV on a single compute node in Dell EMC NFV Ready Bundle for Red Hat. It has two modes: ephemeral and persistent. The ephemeral mode of Cnode pass is the non-persistent setup of SR-IOV. It creates the supported number of Virtual Functions for the desired Physical Functions on a compute node. All the created VFs will be removed after the compute node is rebooted. The persistent mode of Cnode pass creates the SR-IOV environment that is persistent across multiple reboots of a compute node.

Instance pass is the final step in enabling the SR-IOV feature. This script attaches two VFs to the desired instance and creates a supported bond over the attached VFs. Connectivity to the external network is enabled using this bond for the desired instance overriding the OpenStack tenant network default route.

Enhance the SR-IOV feature by enabling the NIC Alignment where the vCPUs instance and physical NIC align with the same CPU socket.

**103** | Post Deployment Features

**Note:** See the documentDell EMC NFV Ready Bundle for Red Hat SR-IOV User Guide 13forfurther information on the SR-IOV feature.

References | **104**

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**Appendix**

**K**

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**References**

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**Topics:**

* [*To learn more*](#page150)

Additional information found at [*http://www.dell.com/en-us/work/learn/*](http://www.dell.com/en-us/work/learn/openstack-cloud) [*openstack-cloud*](http://www.dell.com/en-us/work/learn/openstack-cloud) orby e-mailing[*openstack@dell.com*](mailto:openstack@dell.com).

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

**105** | References

**To learn more**

For more information on the Dell EMC Ready Architecture for Red Hat OpenStack Platform v13.0 visit [*https://www.dellemc.com/en-us/solutions/cloud/openstack/ready-bundle-for-openstack.htm*](https://www.dellemc.com/en-us/solutions/cloud/openstack/ready-bundle-for-openstack.htm).

This document and all other related architecture and technical guides can be found in the Dell EMC TechCenter community at [*http://en.community.dell.com/techcenter/cloud/w/wiki/12047.dell-emc-red-hat-openstack-cloud-solutions*](http://en.community.dell.com/techcenter/cloud/w/wiki/12047.dell-emc-red-hat-openstack-cloud-solutions)

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