

Dell EMC Ready Bundle for Red Hat OpenStack

**Technical Guide
Deploying CloudForms 4.2
Version 6.0.1**



Dell EMC Converged Platforms and Solutions

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Notes, Cautions, and Warnings



A **Note** indicates important information that helps you make better use of your system.



A **Caution** indicates potential damage to hardware or loss of data if instructions are not followed.



A **Warning** indicates a potential for property damage, personal injury, or death.

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Chapter 1

Executive Summary

Topics:

- [About Red Hat CloudForms](#)
- [Background](#)
- [About This Document](#)
- [Intended Audience](#)

CloudForms manages container, virtual, private, and public cloud infrastructures by providing a robust system of inventory, monitoring, automation, chargeback, and billing.

About Red Hat CloudForms

Red Hat CloudForms is the "Hybrid Cloud Management That Evolves." Managing a complex, hybrid IT environment can require multiple management tools, redundant policy implementations, and extra staff to handle the operations. Red Hat CloudForms simplifies this, providing unified management and operations in a hybrid environment. As your IT infrastructure progresses from traditional virtualization toward an Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) model, CloudForms evolves, protecting your investments and providing consistent user experience and functionality.

CloudForms provides comprehensive cloud management that accelerates service delivery and reduces operational costs. It has a self-service portal and catalog with automatic provisioning, workload life-cycle management, including reconfiguration and retirement. It also includes resource quota enforcement, cost allocation, and chargeback capabilities. CloudForms will help you improve operational visibility and control through continuous discovery, monitoring, and tracking of resource usage. It focuses on optimization, and capacity planning through entity relationship planning with timelines and events. CloudForms helps you ensure compliance and governance by providing automated policy enforcement and remediation. Its segmented user access with approval workflows make for easy configuration auditing, change tracking, and drift analysis.

Background

CloudForms is delivered as a VM designed specifically for OpenStack. It is initially configured via a simple command line interface. The running product is accessed through a web GUI. It will be loaded into Glance and launched by Nova to provide control features to OpenStack tenants. It can help manage the Undercloud and the Overcloud of your RHOSP deployment. It will also manage:

- Your OpenShift deployment
- Amazon EC2 and Azure clouds
- VMware ESX Server
- Microsoft HyperV

CloudForms requires access to the Nova API network (normally VLAN 190 in our solution). As an added bonus, access to the provisioning network will allow CloudForms to interrogate all of the Undercloud servers in depth. It will also need access to any private tenant network or floating IP networks that the customer intends to manage with CloudForms.

About This Document

This document contains code and configuration samples in monospace fonts. While it is tempting for the user to copy and paste those values from this document into their system, it is inadvisable and not supported. While we make every effort to ensure that the documentation is correct and complete, documents rendered via some client applications make unpredictable changes to the actual spacing of the data elements, and lose fidelity to what a proper code or configuration setting should actually be to work properly. We see very impactful changes, for example, between the Firefox PDF display and the Adobe Acrobat reader PDF display.

Copy and paste from this document only with full understanding of the necessary formatting changes that you'll have to make. We have made efforts to provide online verbatim copies of the essential data, as well as pointing the user to appropriate external documentation to achieve the proper formatting.

This integration document does not stand on its own as a complete solution. Rather, it is referenced in the two dependant technical guides:

- Technical Guide - Deploying OpenShift Container Platform 3.3 in the Dell EMC Ready Bundle for Red Hat OpenStack - Version 6.0.1
- Technical Guide – Deploying CloudForms 4.2 in the Dell EMC Ready Bundle for Red Hat OpenStack - Version 6.0.1

This guide is especially important with regard to configuring DNS and networking. Ensure that you refer to this document during OpenShift and CloudForms installation.

Intended Audience

This technical guide shows the administrator how to build and deploy CloudForms in their Dell EMC Ready Bundle for Red Hat OpenStack. It provides a simple system for an introduction and training of an CloudForms systems administrator. The end users (other cloud administrators, tenants and customers) are not directly addressed in this document.

Find out more about developing and managing CloudForms by accessing the Red Hat documentation here: <https://access.redhat.com/documentation/en/red-hat-cloudforms/>.

Chapter

2

CloudForms Deployment Planning

Topics:

- [CloudForms VM Requirements](#)
- [Database Sizing](#)
- [CloudForms Capacity Considerations](#)



Note: If you will also be installing OpenShift in this OpenStack deployment, deploy OpenShift first. OpenShift creates an Infrastructure node with DNS that will be useful to the CloudForms deployment.

To enable easy upgrade of CloudForms, this solution uses a mix of ephemeral storage and persistent storage. It uses ephemeral storage for the CloudForms executables and underlying OS; and a separate, persistent Red Hat Ceph Storage volume for the database.

Before deploying CloudForms, planning the size and scale of the deployment is important. Depending upon the requirements of the OpenStack cluster, the CloudForms database must be appropriately sized. Additionally, numerous CloudForms instances may need to be deployed to support larger workloads.

CloudForms VM Requirements

Each instance of CloudForms requires at a minimum:

- 8 GB RAM
- 4 vCPUs
- 44 GB ephemeral storage

Database Sizing

The number of VMs in the cluster is the most important driver of database size over time. [Table 1: Database Sizing](#) on page 11 is a guideline for minimum sizing requirements for the database.

Table 1: Database Sizing

Virtual Machine Count	One Year Database Size (GB)	Two Year Database Size (GB)
100	3.5	5
500	17	25
5000	173	251

If Capacity & Utilization is enabled to gather metrics data required for chargeback reporting, the size must account for the additional data. With metrics data enabled, as a general guideline, plan for a growth rate of 2 MB/day/VM in the cluster. For example, a cluster with 500 VMs collecting metrics data would require 2 MB x 500 VMs = 1,000 MB per day.

The metrics data is kept for six months, so plan accordingly for six months worth of growth.

CloudForms Capacity Considerations

As a general rule, there should be one CloudForms instance for every 400 VMs deployed in the cluster. Multiple CloudForms instances may be attached to the same cluster and database. This helps balance the workload requirements across the different CloudForms instances, so as not to impact performance.

When another CloudForms instance is added to the system, the existing database may be imported during the initial configuration. Once installed, configuration options are available which set the various roles of that particular instance. Instances can have dedicated roles - such as those for database operations or metrics collection - or may encompass multiple roles.

Configuring multiple CloudForms instances is beyond the scope of this document, but for more information on the topic, see [High Availability with Red Hat CloudForms Using Multiple Appliances](#).

Chapter

3

Deploy CloudForms on the Solution Admin Host

Topics:

- [*Create a Ceph Block Device*](#)
- [*Deploy the CloudForms VM*](#)

This chapter describes the procedures required to install CloudForms on the SAH.

Create a Ceph Block Device

The CloudForms database will require a Ceph block device attached to the VM. This must be performed on the SAH node before the VM is created. The required steps include:

1. [Prepare the SAH Node with Ceph Utilities](#) on page 13
2. [Create a New Ceph Pool](#) on page 13
3. [Create a Ceph Block Device Image](#) on page 13

Prepare the SAH Node with Ceph Utilities

1. Log into the SAH node as the *root* user.
2. Install the required Ceph packages:

```
# yum install ceph-common
```

Create a New Ceph Pool

To create a new Ceph pool, and copy Ceph files from a Controller node:

1. After the installation is complete, log into the Director Node VM as the *admin* user.
2. Source the `overcloudrc` file:

```
$ source ~/overcloudrc
```

3. Connect via `ssh` to a Controller node:

```
$ ssh cntl0
```

4. Change to the *root* user:

```
$ sudo -i
```

5. Create a new Ceph pool for the CloudForms block device with `ceph osd pool create <pool_name> <placement_groups>`:

```
# ceph osd pool create cf_pool 256
```

- a. The output will appear similar to this example:

```
pool 'cf_pool' created
```



Note: The recommended minimum number of placement groups is 256, as seen in the example above. For more information on placement groups in Ceph pools, see [Placement Groups](#).

6. Copy the *admin* keyring and configuration files from the Controller node to the SAH node:

```
# scp /etc/ceph/ceph.client.admin.keyring root@<sah_ip_address>:/etc/ceph/
# scp /etc/ceph/ceph.conf root@<sah_ip_address>:/etc/ceph/
```

Create a Ceph Block Device Image

To create a Ceph block device image and map it on the SAH node:

1. Log into the SAH node as the *root* user.

2. Create a block device image, using the pool name created earlier with `rbd create <pool_name>/<image_name> --size <size_in_MB>:`

```
# rbd create cf_pool/cf_image --size 102400
```



Note: The size of the block device should be driven by the recommendations in [CloudForms Deployment Planning](#) on page 10.

3. Map the image to a block device with `rbd map <pool_name>/<image_name>:`

```
# rbd map cf_pool/cf_image
```

- a. The output will appear similar to this example:

```
/dev/rbd0
```

4. Confirm the block device is properly mapped:

```
# rbd showmapped
```

- a. The output will appear similar to this example:

```
id pool image snap device
0 cf_pool cf_image - /dev/rbd0
```

The device `/dev/rbd0` is now ready to be attached during the creation of the CloudForms VM.

5. Edit the `rdmap` configuration file to have the block device mapped every time the SAH reboots:

```
# cat /etc/ceph/rdmap
```

- a. Add a line in `/etc/ceph/rdmap` that is formatted as `<pool_name>/<image_name>:`

```
# RbdDevice Parameters
#poolname/imagename id=client,keyring=/etc/ceph/ceph.client.keyring
cf_pool/cf_image
```

6. Enable the `rdmap` service to make sure the mapping happens on the SAH boot:

```
# systemctl enable rbdmap.service
```

Deploy the CloudForms VM

To deploy the CloudForms VM:

1. Log onto the SAH node as the `root` user.
2. Download the **CFME OpenStack Virtual Appliance** `qcow2` image from https://access.redhat.com/downloads/content/167/ver=cf-me---4.2/4.2/x86_64/product-software.



Note: The image version validated and recommended by Dell EMC is **5.7.1.2**.

3. Place the downloaded image in `/var/lib/libvirt/images`.
4. Create the CloudForms VM by executing the following command:

```
# virt-install --name <vm_name> --ram 8192 --vcpus 4 --os-type linux --os-variant rhel7 \
--disk path=/var/lib/libvirt/images/<cloudforms_image_name> \
--disk path=/dev/rbd0 \
--autostart --noautoconsole --graphics spice --import \
```

```
--network bridge=br-extern --network bridge=br-prov --network bridge=br-
pub-api
```

a. For example:

```
# virt-install --name cloudforms --ram 8192 --vcpus 4 --os-type linux --
os-variant rhel7 \
--disk path=/var/lib/libvirt/images/cfme-rhos-5.7.1.2-1.x86_64.qcow2 \
--disk path=/dev/rbd0 \
--autostart --noautoconsole --graphics spice --import \
--network bridge=br-extern --network bridge=br-prov --network bridge=br-
pub-api
```

b. The output will appear similar to this example:

```
Starting install...
Creating domain... | 0 B 00:00:00
Domain creation completed.
```



Note: The `/dev/rbd0` Ceph block device referenced in the command was created in [Create a Ceph Block Device Image](#) on page 13. This will attach the device to the VM during its creation.

5. Log into the CloudForms VM with `virsh console <vm_name>`. Credentials are:

- User: `root`
- Password: `smartvm`

6. Edit `/etc/sysconfig/network` with the default gateway for external access:

```
# cat /etc/sysconfig/network

# Created by anaconda
GATEWAY=10.148.44.254
```

7. Set an appropriate name server in `/etc/resolv.conf`:

```
# cat /etc/resolv.conf

# Generated by NetworkManager
nameserver 10.148.44.11
```

8. Change to the network scripts directory to configure network interfaces for the three networks:

- External
- Provisioning
- Public API

```
# cd /etc/sysconfig/network-scripts
```

9. Edit the `ifcfg-eth0` file and assign an IP address on the external network.

10. Edit the `ifcfg-eth1` and `ifcfg-eth2` files to assign IP addresses on the provisioning and public API networks, respectively.



Note: The `ifcfg-eth0`, `ifcfg-eth1`, and `ifcfg-eth2` files may need to be created if they do not exist.

Here is an example configuration for the `ifcfg-eth1` file:

```
NAME="eth1"
ONBOOT="yes"
NETBOOT="yes"
IPV6INIT="no"
BOOTPROTO="static"
```

```
IPADDR=192.168.120.74
TYPE="Ethernet"
DEFROUTE="yes"
PEERDNS="yes"
PEERROUTES="yes"
IPV4_FAILURE_FATAL="no"
DEVICE=eth1
```



Note: See [Example Network Configuration Files](#) on page 27 for a full example of network configuration files.

11. Once the files are configured, restart the network service:

```
# systemctl restart network
```

12. Verify the network interfaces are properly configured:

```
# ip a
```

a. The output will appear similar to this example:

```
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen
1
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
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
state UP qlen 1000
link/ether 52:54:00:e3:55:12 brd ff:ff:ff:ff:ff:ff
inet 10.148.44.85/8 brd 10.255.255.255 scope global eth0
valid_lft forever preferred_lft forever
inet6 fe80::5054:ff:fee3:5512/64 scope link
valid_lft forever preferred_lft forever
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
state UP qlen 1000
link/ether 52:54:00:36:19:f7 brd ff:ff:ff:ff:ff:ff
inet 192.168.120.74/24 brd 192.168.120.255 scope global eth1
valid_lft forever preferred_lft forever
inet6 fe80::5054:ff:fe36:19f7/64 scope link
valid_lft forever preferred_lft forever
4: eth2: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
state UP qlen 1000
link/ether 52:54:00:65:76:b6 brd ff:ff:ff:ff:ff:ff
inet 192.168.190.74/24 brd 192.168.190.255 scope global eth2
valid_lft forever preferred_lft forever
inet6 fe80::5054:ff:fe65:76b6/64 scope link
valid_lft forever preferred_lft forever
```

13. Change directory to the CloudForms config directory:

```
# cd /var/www/miq/vmdb/config
```

14. Change the `ems_metrics_openstack_default_service` parameter to **"ceilometer"** in the `settings.yml` file:

```
# grep ems_metrics_openstack_default_service settings.yml
:ems_metrics_openstack_default_service: "ceilometer"
```

The VM is now ready to proceed to [Install and Configure CloudForms](#) on page 17.

Chapter

4

Install and Configure CloudForms

Topics:

- [*Set the CloudForms VM Hostname*](#)
- [*Deploy DNS \(Optional\)*](#)
- [*Complete the Installation*](#)
- [*Enter Red Hat Subscription Information \(Optional\)*](#)
- [*Update the Platform*](#)

This chapter describes the procedures to configure CloudForms in the Dell EMC Ready Bundle for Red Hat OpenStack.

Set the CloudForms VM Hostname

To set the CloudForms VM's hostname:

1. On the CloudForms VM, execute the following command:

```
# hostnamectl set-hostname cloudforms
```

2. Log out and log back in, to ensure that the hostname was set properly. It should appear on your command prompt, instead of the IP address as in Step 1 above.

```
# logout
Connection to 192.168.75.53 closed.
# ssh root@192.168.75.53
root@192.168.75.53's password:
Last login: Wed Feb 8 14:29:14 2017 from 192.168.75.50
Welcome to the Appliance Console

For a menu, please type: appliance_console
#
```

Deploy DNS (Optional)

CloudForms can be configured with DNS. This solution requires some specific DNS entries. Please see the following notes to ensure that DNS is configured correctly for this solution.

Some important points about deploying DNS:

- If you **plan to install** OpenShift, then you should do so now before proceeding further in this document.
- If OpenShift is **already deployed**, see *DNS Configuration* in *Integrating CloudForms 4.2 and OpenShift 3.3 in the Dell EMC Ready Bundle for Red Hat OpenStack - Version 6.0.1*.
 - Execute those commands for setting up the DNS properly.
 - Skip [Configure dnsmasq](#) on page 18 in this document; return at [Set the CloudForms VM Hostname](#) on page 18, and proceed from there.
- If you have installed DNS as a Service in OpenStack (codename Designate,) please configure it appropriately based on the DNS record settings detailed below for dnsmasq.
- If you **do not** plan to install OpenShift, proceed to [Configure dnsmasq](#) on page 18 .

Configure dnsmasq

The CloudForms VM requires DNS resolution to manage assets.

To configure dnsmasq network services:

1. Gather some information about your systems, from the Director Node:
 - a. Get the Undercloud OpenStack AUTH URL from the `/root/stackrc` file.
 - b. Get the Overcloud OpenStack AUTH_URL from the `/home/osp_admin/overcloudrc` file.
2. Create a file called `/etc/dnsmasq.d/00-example.conf`.
 - a. Use the settings below.
 - b. Be sure to add the floating IP address for this node, that you associated to it in TBD.

```
strict-order
domain-needed
```

```
local=/example.com/
bind-dynamic
resolv-file=/etc/resolv.conf.upstream
address=/cloudforms.example.com/<cloudforms Floating IP>
address=/undercloud.example.com/<IP address of the UnderCloud OpenStack AUTH URL>
address=/overcloud.example.com/<IP address of the OverCloud OpenStack AUTH URL>
log-queries
```

3. Enable the `dnsmasq` service:

```
# systemctl enable dnsmasq
Created symlink from /etc/systemd/system/multi-user.target.wants/
dnsmasq.service to /usr/lib/systemd/system/dnsmasq.service.
# ^enable^start^
# systemctl start dnsmasq
```

4. Set `/etc/hosts` to reflect the known hosts, the `resolv.conf`, and `resolve.conf.upstream`:

```
# cp /etc/resolv.conf /etc/resolve.conf.upstream
```

5. Edit the `/etc/resolv.conf` file to prefer localhost's `dnsmasq`, by replacing the file's contents with this:

```
search example.com
nameserver 127.0.0.1
```

6. Write-protect the `/etc/resolv.conf` file from DHCP client overwrites:

```
# chattr +i /etc/resolv.conf
```

Complete the Installation

To complete the CloudForms installation:

1. From the CloudForms VM, execute the following command:

```
# appliance_console
```

2. Select "8) Configure Database".

3. Select "1) Create Internal Database".

4. Select the proper mount point (i.e., `/dev/vdb`).

5. Select `N` for "Configure this server as a dedicated database instance?".



Note: In configurations with multiple CloudForms instances, Dell EMC recommends creating a dedicated database instance. However, that is beyond the scope of this document.

6. Enter `1` for region number.

7. Enter the database password.

8. Once configuration is complete, Select "19) Start EVM Server Processes" to start the service from the main menu.

CloudForms is now configured, and is ready for web access on its external IP address, using these credentials:

- Username - `admin`
- Password - `smartvm`



Note: If creating a database for the first time, there may be a prompt to create or fetch an encryption key. Select **1) Create Key** to create a key.

Enter Red Hat Subscription Information (Optional)

If you need to configure your platform to receive updates from Red Hat, use the procedure below.



Note: The CloudForms version referenced in this document was validated by Dell EMC. Applying updates is beyond the scope of that validation.

To enter your Red Hat subscription information:

1. From the CloudForms web interface, click on **Administrator** in the top right, and then click on **Configuration**.
2. Select **Settings** -> **CFME Region: Region 1** -> **Red Hat Updates**.
3. Select **Edit Registration**.
4. At the bottom of the page, enter your **Red Hat Network's username and password** to log into the Red Hat Subscription Management service.
 - a. If the response is `Customer Information Successfully Saved`, then you can proceed to the next step.
 - b. If the response is `Error 70`, then do you do not have a subscription for CloudForms. Contact Red Hat to obtain that subscription, then try again.
5. On the page that next displays, select the check box next to the **EVM Appliance**, and then click on **Register**.

Update the Platform

Now that your Red Hat subscription information has been successfully entered you can update the platform with the latest Red Hat updates:

1. Wait for a few minutes for the registration to complete.
2. Refresh the display.
3. When you see a `Platform Update Available` message, update the platform as instructed.

You can now proceed to [Configure CloudForms to Manage Providers](#) on page 21.

Chapter

5

Configure CloudForms to Manage Providers

Topics:

- [*Configure the Infrastructure Provider Undercloud*](#)
- [*Configure the Cloud Provider Overcloud*](#)

This chapter describes the procedure you can use to configure CloudForms to manage infrastructure and cloud providers.

Configure the Infrastructure Provider Undercloud

To configure the Undercloud as an infrastructure provider, follow this procedure:

1. [Add the Undercloud as an Infrastructure Provider](#) on page 22

Add the Undercloud as an Infrastructure Provider

To add the Undercloud as an infrastructure provider:

1. Open the CloudForms web GUI.
2. Navigate to **Compute > Infrastructure > Providers > Configuration > Add New Infrastructure Provider**.
3. Select **OpenStack Platform Director**, and enter the required information:
 - **Name** — UnderCloudDelIOSS
 - **Type** — OpenStack Platform Director
 - **API Version** — Keystone v2
 - **Zone** — Default
4. Go through the tabs in turn, entering the appropriate information, and clicking on **Validate** before moving to the next:
 - **Default Tab** — UnderCloud
 - **Hostname** — undercloud.example.com, or IP address
 - **API Port** — 5000
 - **Security Protocol** — Non-SSL
 - **Username** — Undercloud username from `stackrc` on the Director Node.
 - **Password** — Undercloud password from `stackrc` on the Director Node. Execute the `sudo hiera admin_password` command, if it is found in the file, to obtain the proper password.
 - **Confirm Password** — Undercloud password from `stackrc` on the Director Node.
 - Click on **Add**. The data for the Undercloud may take 5-10 minutes to propagate to the CloudForms web interface.
 - **Events Tab**
 - Select **AMPQ**
 - **Hostname** — undercloud.example.com, or IP address
 - **API Port** — 5672
 - **Security Protocol** — Non-SSL
 - **Username** — Generated for Rabbit by automation, and found on the Director Node in `/etc/rabbitmq/rabbitmq.config`.
 - **Password** — Generated for Rabbit by automation, and found on the Director Node in `/etc/rabbitmq/rabbitmq.config`.
 - **RSA Key Pair Tab**
 - The `heat-admin` user's `ssh` keys.
 1. Copy, via `scp`, from the Director Node's `/home/osp_admin/.ssh/id_rsa` file, to your bastion host.
 2. Upload it through the CloudForms web GUI.
 3. Click on **Add**.

Configure the Cloud Provider Overcloud

To configure the Overcloud as a cloud provider, follow these procedures:

1. [Open RabbitMQ Ports](#) on page 23
2. [Add the Overcloud as a Cloud Provider](#) on page 24

Open RabbitMQ Ports

CloudForms works with the OpenStack message queue to help interrogate systems. In our default configuration, RabbitMQ is not accessible by CloudForms.

To change RabbitMQ to listen on all Controller node interfaces:

1. On the Director Node, execute the following command:



Note: Your IP addresses will vary from the examples given.

```
$ for x in cntl0 cntl1 cntl2; do echo $x; ssh $x grep \
NODE_IP_ADDRESS /etc/rabbitmq/rabbitmq-env.conf; done

cntl0
NODE_IP_ADDRESS=192.168.140.106
cntl1
NODE_IP_ADDRESS=192.168.140.108
cntl2
NODE_IP_ADDRESS=192.168.140.107
```

2. To change those settings, execute the following command:

```
$ for x in cntl0 cntl1 cntl2; do echo $x; ssh $x \
sudo sed -i '/^NODE_IP_ADDRESS/cNODE_IP_ADDRESS=0.0.0.0' \
/etc/rabbitmq/rabbitmq-env.conf; done

cntl0
cntl1
cntl2
```

3. Ensure that the changes are correct by executing the following command:

```
$ for x in cntl0 cntl1 cntl2; do echo $x; ssh $x grep \
NODE_IP_ADDRESS /etc/rabbitmq/rabbitmq-env.conf; done
```



Note: The output will look exactly the same as the following example.

```
cntl0
NODE_IP_ADDRESS=0.0.0.0
cntl1
NODE_IP_ADDRESS=0.0.0.0
cntl2
NODE_IP_ADDRESS=0.0.0.0
```

4. Connect via `ssh` to the first Controller node, and use Pacemaker Corosync System to restart the clustered RabbitMQ processes:

```
$ ssh cntl0

Last login: Thu May 26 15:05:59 2016 from 192.168.120.61
[heat-admin@tan-controller-0 ~]$ sudo -i
[root@tan-controller-0 ~]# pcs resource restart rabbitmq
```

```
Warning: using rabbitmq-clone... (if a resource is a clone or master/slave
you must use the clone or master/slave name)
```

It may take some time for `pcs` to restart RabbitMQ completely.

5. Ensure that RabbitMQ is listening on all interfaces (*) by executing the following command:



Note: The output should indicate `*:5672`, and not a particular IP address.

```
$ for x in cntl0 cntl1 cntl2; do echo $x; ssh $x sudo ss -lntp | grep
5672; done

cntl0
LISTEN  0      128      *:5672      *:~  users:(("beam.smp",pid=8319,fd=19))
LISTEN  0      128      *:35672     *:~  users:(("beam.smp",pid=8319,fd=8))
cntl1
LISTEN  0      128      *:5672      *:~  users:(("beam.smp",pid=7929,fd=17))
LISTEN  0      128      *:35672     *:~  users:(("beam.smp",pid=7929,fd=8))
cntl2
LISTEN  0      128      *:5672      *:~  users:(("beam.smp",pid=8045,fd=20))
LISTEN  0      128      *:35672     *:~  users:(("beam.smp",pid=8045,fd=8))
```

Add the Overcloud as a Cloud Provider

To add the Overcloud as a cloud provider:

1. Open the CloudForms web GUI.
2. Navigate to **Compute > Clouds > Providers > Configuration > Add New Cloud Provider**.
3. Select **OpenStack**, and enter the required information:
 - **Name** — OverCloudDelIOSS
 - **Type** — OpenStack
 - **API Version** — Keystone v2
 - **Region** — (Leave blank)
 - **OpenStack Infra Provider** — UnderCloudDelIOSS
 - **Zone** — Default
4. Go through the tabs in turn, entering the appropriate information, and clicking on **Validate** before moving to the next:
 - **Default Tab** — You can get all of these settings from the `overcloudrc` file on the Director Node.
 - **Hostname** — `overcloud.example.com`, or IP address
 - **API Port** — 5000
 - **Security Protocol** — Non-SSL
 - **Username** — `OS_USERNAME` from `overcloudrc` on the Director Node
 - **Password** — `OS_PASSWORD` from `overcloudrc` on the Director Node
 - **Confirm Password** — `OS_PASSWORD` from `overcloudrc` on the Director Node
 - **Events Tab**
 - Select **AMPQ**
 - **Hostname** — `overcloud.example.com`, or IP address
 - **API Port** — 5672
 - **Security Protocol** — Non-SSL
 - **Username** — `default_user=guest` from `/etc/rabbitmq/rabbitmq.config` on `cntl0`
 - **Password** — `default_pass` value from `/etc/rabbitmq/rabbitmq.config` on `cntl0`
 - **Confirm Password** — `default_pass` value from `/etc/rabbitmq/rabbitmq.config` on `cntl0`
5. **Validate** these credentials:
 - *Admin* (Overcloud OpenStack admin user and password)

- *AMPQ* (guest user and password)

6. Click on **Add**.

Red Hat CloudForms is now deployed in the Dell EMC Ready Bundle for Red Hat OpenStack.

Chapter

6

Next Steps

Now that CloudForms is deployed in the Dell EMC Ready Bundle for Red Hat OpenStack, follow the instructions in the guide listed below to further integrate CloudForms with OpenShift:

- [Integrating CloudForms 4.2 and OpenShift 3.3 in the Dell EMC Ready Bundle for Red Hat OpenStack - Version 6.0.1](#)

Appendix

A

Example Network Configuration Files

Topics:

- [Example ifcfg-eth0 File](#)
- [Example ifcfg-eth1 File](#)
- [Example ifcfg-eth2 File](#)

This appendix provides the following examples of network configuration files required for this solution.

Example ifcfg-eth0 File

```
TYPE=Ethernet
BOOTPROTO=none
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=no
NAME=eth0
UUID=912b7194-7264-43dc-af9c-d4a614aee9e5
DEVICE=eth0
ONBOOT=yes
IPADDR=10.148.44.85
PREFIX=24
```

Example ifcfg-eth1 File

```
NAME="eth1"
ONBOOT="yes"
NETBOOT="yes"
IPV6INIT="no"
BOOTPROTO="static"
IPADDR=192.168.120.74
TYPE="Ethernet"
DEFROUTE="yes"
PEERDNS="yes"
PEERROUTES="yes"
IPV4_FAILURE_FATAL="no"
DEVICE=eth1
```

Example ifcfg-eth2 File

```
NAME="eth2"
ONBOOT="yes"
NETBOOT="yes"
IPV6INIT="no"
BOOTPROTO="static"
IPADDR=192.168.190.74
TYPE="Ethernet"
DEFROUTE="yes"
PEERDNS="yes"
PEERROUTES="yes"
IPV4_FAILURE_FATAL="no"
DEVICE=eth2
```

Appendix

B

Getting Help

Topics:

- [Contacting Dell EMC](#)
- [References](#)

This appendix details contact and reference information for the Dell EMC Ready Bundle for Red Hat OpenStack.

Contacting Dell EMC

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



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

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

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

References

Additional information can be obtained at <http://www.dell.com/en-us/work/learn/openstack-cloud> or by e-mailing openstack@dell.com.

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

To Learn More

For more information on the Dell EMC Ready Bundle for Red Hat OpenStack visit <http://www.dell.com/learn/us/en/04/solutions/red-hat-openstack>.

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