



# Red Hat OpenStack Platform 13

## Deploy Fernet on the Overcloud

Deploy Fernet on the Red Hat OpenStack Platform director overcloud



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## Abstract

Deploy Fernet on the Red Hat OpenStack Platform director overcloud.

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# CHAPTER 1. USING FERNET TOKENS IN THE OVERCLOUD

Fernet is now the default token provider, replacing **uuid**. This guide describes how to review your Fernet deployment, and how to rotate the Fernet keys.

## 1.1. REVIEW THE FERNET DEPLOYMENT

This procedure reviews your configuration to confirm that Fernet tokens are working correctly.

1. Retrieve the IP address of the controller node.

```
[stack@director ~]$ source ~/stackrc
[stack@director ~]$ openstack server list
```

ID	Name	Status	Networks
756bd73-e47b-46e6-959c-e24d7fb71328	overcloud-controller-0	ACTIVE	ctlplane=192.0.2.16
62b869df-1203-4d58-8e45-fac6cd4cfbee	overcloud-novacompute-0	ACTIVE	ctlplane=192.0.2.8

2. SSH to the controller.

```
[heat-admin@overcloud-controller-0 ~]$ ssh heat-admin@192.0.2.16
```

3. Retrieve the values of the token driver and provider settings.

```
[heat-admin@overcloud-controller-0 ~]$ sudo crudini --get /var/lib/config-data/puppet-generated/keystone/etc/keystone/keystone.conf token driver
sql
[heat-admin@overcloud-controller-0 ~]$ sudo crudini --get /var/lib/config-data/puppet-generated/keystone/etc/keystone/keystone.conf token provider
fernet
```

4. Test the Fernet provider.

```
[heat-admin@overcloud-controller-0 ~]$ exit
[stack@director ~]$ source ~/overcloudrc
[stack@director ~]$ openstack token issue
```

Field	Value
expires	2016-09-20 05:26:17+00:00
id	gAAAAABX4LppE8vaiFZ992eah2i3edpO1aDFxIKZq6a_RJzxUx56QVKORrmW0-oZK3-Xuu2wcnpYq_eek2SGLz250eLpZOzxKBR0GsoMfxJU8mEFF8NzfLNcbuS-iz7SV-N1re3XEywSDG90JcgwjQfXW-8jtCm-n3LL5laZexAYlw059T_-cd8
project_id	26156621d0d54fc39bf3adb98e63b63d
user_id	397daf32cadd490a8f3ac23a626ac06c

The result should include the long Fernet token.

## 1.2. ROTATE THE FERNET KEYS

Red Hat recommends erring on the side of security when considering the length of rotation cycles, as the rotation process can be performed with relative ease. If you don't have any guidance from your security posture, a monthly rotation cycle is a good starting point.

Fernet uses three types of keys, which are stored in `/var/lib/config-data/puppet-generated/keystone/etc/keystone/fernet-keys`. The highest-numbered directory contains the primary key, which is used to generate new tokens and decrypt existing ones.

During the key rotation process, the primary key is relegated to secondary key status, and a new primary key is issued, thereby reducing the value of a compromised primary key. Secondary keys can only be used to decrypt tokens that were created with previous primary keys, and cannot issue new ones.



### NOTE

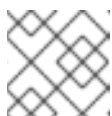
Confirm that all overcloud nodes are online before you perform the Fernet key rotation. Otherwise, the process will fail at the `deploy_ssh_key` task.

### 1.2.1. Rotate the Fernet Keys Using Mistral

By default, director is configured to manage the overcloud's Fernet keys; this setting is managed in the environment file using `ManageKeystoneFernetKeys`. As a result, the Fernet keys are stored in Mistral (under `KeystoneFernetKeys`). This approach means that you can rotate the Fernet keys with Mistral, and they will still persist after stack updates.

1. Review the existing Fernet keys.
  - a. Identify the Fernet key location.

```
# SSH back to the controller
[heat-admin@overcloud-controller-0 ~]$ sudo crudini --get /var/lib/config-data/puppet-generated/keystone/etc/keystone/keystone.conf fernet_tokens key_repository /etc/keystone/fernet-keys
```



### NOTE

The `/etc/keystone/` directory refers to the container file system path.

- b. Review the current Fernet key directories.

```
[heat-admin@overcloud-controller-0 ~]$ sudo ls /var/lib/config-data/puppet-generated/keystone/etc/keystone/fernet-keys
0 1 2
```

- **0** - Contains the *staged* key, (which becomes the next primary key) and will always be numbered **0**.
- **1** - Contains the *secondary* key.
- **2** - Contains the *primary* key. This number will increment each time the keys are rotated, with the highest number always serving as the primary key.



**NOTE**

- The maximum number of keys is determined by the `max_active_keys` property, by default 5 keys.
- The keys are propagated across all controllers.

2. Rotate the Fernet keys using the Mistral workflow.

```
[stack@director ~]$ source ~/stackrc
[stack@director ~]$ openstack workflow execution create
tripleo.fernet_keys.v1.rotate_fernet_keys '{"container": "overcloud"}'
```

Field	Value
ID	58c9c664-b966-4f82-b368-af5ed8de5b47
Workflow ID	78f0990a-3d34-4bf2-a127-10c149bb275c
Workflow name	tripleo.fernet_keys.v1.rotate_fernet_keys
Description	
Task Execution ID	<none>
State	RUNNING
State info	None
Created at	2017-12-20 11:13:50
Updated at	2017-12-20 11:13:50

3. Get the ID and ensure that the workflow was executed successfully.

```
[stack@director ~]$ openstack workflow execution show 58c9c664-b966-4f82-b368-af5ed8de5b47
```

Field	Value
ID	58c9c664-b966-4f82-b368-af5ed8de5b47
Workflow ID	78f0990a-3d34-4bf2-a127-10c149bb275c
Workflow name	tripleo.fernet_keys.v1.rotate_fernet_keys
Description	
Task Execution ID	<none>
State	SUCCESS
State info	None
Created at	2017-12-20 11:13:50
Updated at	2017-12-20 11:15:00

4. On the controller, review the number of Fernet keys, and compare with the previous result.

```
[heat-admin@overcloud-controller-0 ~]$ sudo ls /var/lib/config-data/puppet-generated/keystone/etc/keystone/fernet-keys
0 1 2 3
```

- **0** - Contains the *staged* key, and will always be numbered **0**. This key will be promoted to a primary key during the next rotation.
- **1 & 2** - Contain the *secondary* keys.

- **3** - Contains the *primary* key. This number will increment each time the keys are rotated, with the highest number always serving as the primary key.



#### NOTE

- The maximum number of keys is determined by the `max_active_keys` property, by default 5 keys.
- The keys are propagated across all controllers.