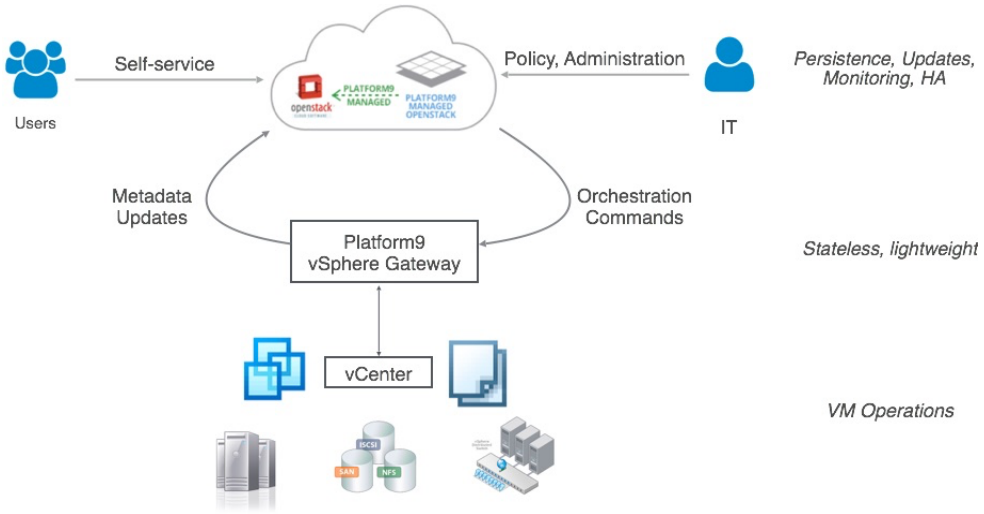
LISA 15 Platform9 OpenStack Lab

Introduction

OpenStack is an open source cloud computing platform for public and private clouds. A series of interrelated projects deliver a cloud infrastructure solution.

Platform9 is a cloud management-as-a-service SaaS solution, built on OpenStack. In a matter of minutes, Platform9 transforms a customer's existing KVM and vSphere environments into a self-service elastic cloud for their users.



How to use this guide

This lab guide shows cloud administrators and users how to create and manage resources in an OpenStack cloud using the Platform9 dashboard.

Typically, a customer requests a Platform9 account and an administrator downloads an agent, which is deployed on their existing infrastructure. The agent then discovers existing resources and makes them available through the Platform9 dashboard.

However, for the purpose of this lab, we will be using a VMware vSphere environment that has already been configured and integrated with Platform9.

Participants will be working through typical cloud administrator and user tasks through the Platform9 dashboard, which is modeled after the OpenStack Horizon dashboard.

Exercises

There are two sets of exercises included in this lab:

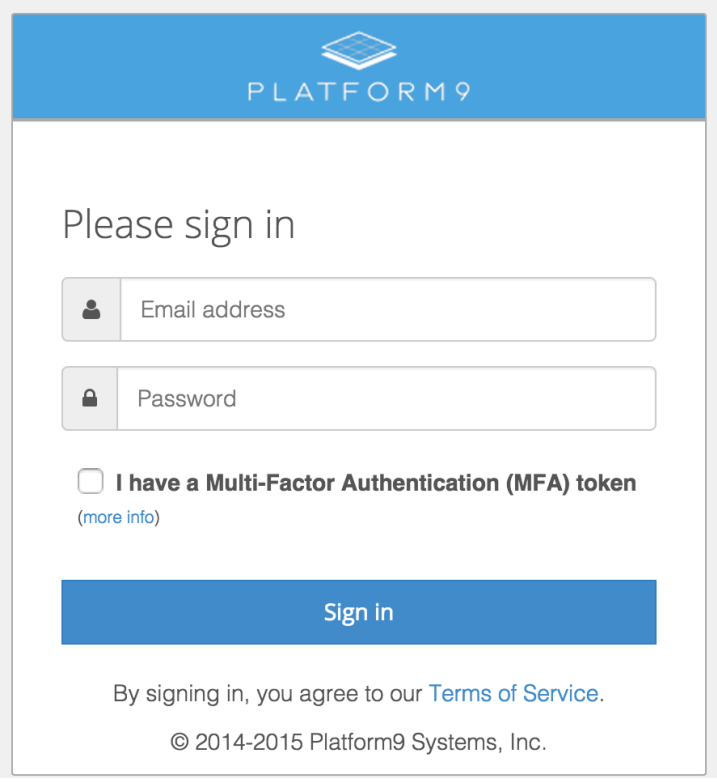
- **Administering a Platform9 OpenStack Cloud**
  - Log in to the dashboard as an administrator
  - Create and manage tenants
  - Create and manage users
  - Create and manage flavors
  - Create and manage Volumes

- **Using a Platform9 OpenStack Cloud**
  - Log in to the dashboard as a tenant user
  - Launch and manage instances
  - Attach and detach volumes

Administering a Platform9 OpenStack Cloud

Log in to the dashboard as an administrator

Open a web browser and go to the dashboard page which can be found at https://lisa15.platform9.net.

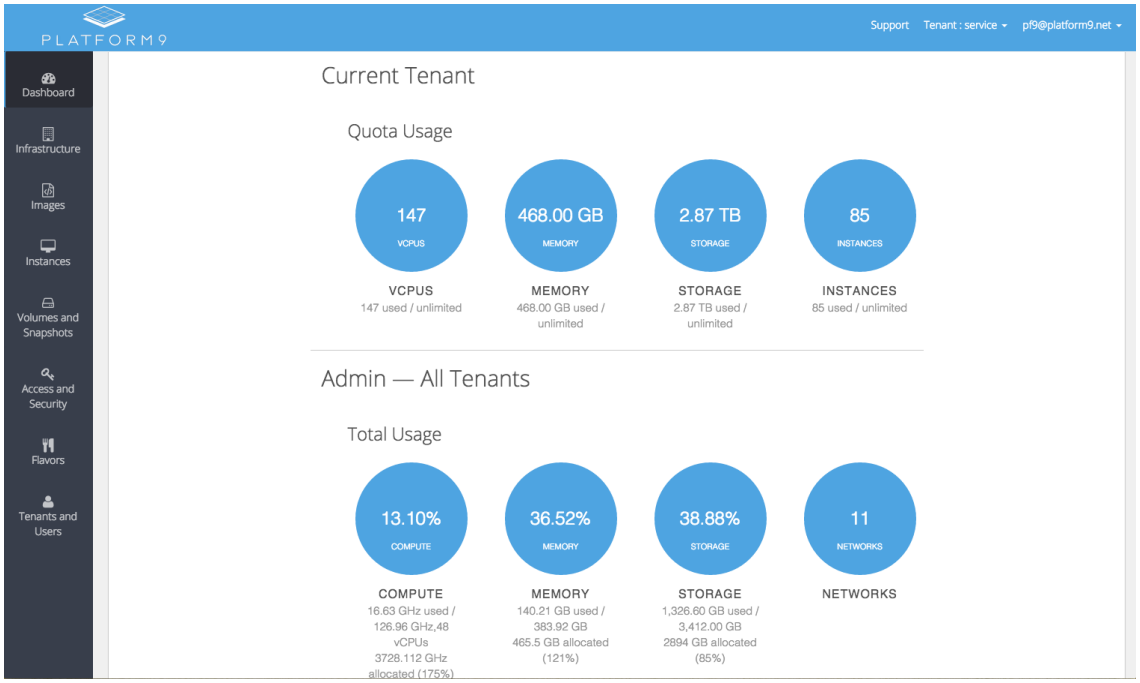


On the login page, enter the cloud administrator user name and password, and click Sign In.

User name: Admin
Password: Lisa15

OpenStack dashboard—Dashboard tab

From the dashboard tab, you can you can view the quota usage and total usage for all tenants or for a specific tenant. Tenants are organizational units in the cloud. Each user is a member of one or more tenants. Within a tenant, a user creates and manages instances. The default tenant for the administrator is “service” which has access to all cloud resources. You select a specific tenant from the Tenant dropdown list at the top right of the dashboard.



Along with the dashboard tab, you can explore the following tabs:

Infrastructure tab

- **Hosts:** View usage for all hypervisor nodes. Note that OpenStack does not report on individual ESXi hosts but aggregates the resources in a cluster as reported by vCenter. In the Platform9 dashboard, a vSphere cluster is displayed as a vCenter server backed by a VMware Cluster.

- **Networks:** View all discovered networks. With vSphere, there are networks created using a Standard vSwitch or a Distributed vSwitch.

Images

- View custom OS images.

Instances

- View, launch, create a snapshot from, start, stop, pause, reboot, or delete instances.

Volumes

- Use the following tabs to complete these tasks:

  - Volumes: View, create, manage, and delete volumes.
  - Volume Snapshots: View, manage, and delete volume snapshots.

Access and Security

- Use the following tabs to complete these tasks:

  - Key Pairs: View, create, edit, import, and delete key pairs.
  - API Access: View API endpoints.

Flavors

- View, create, and delete Flavors

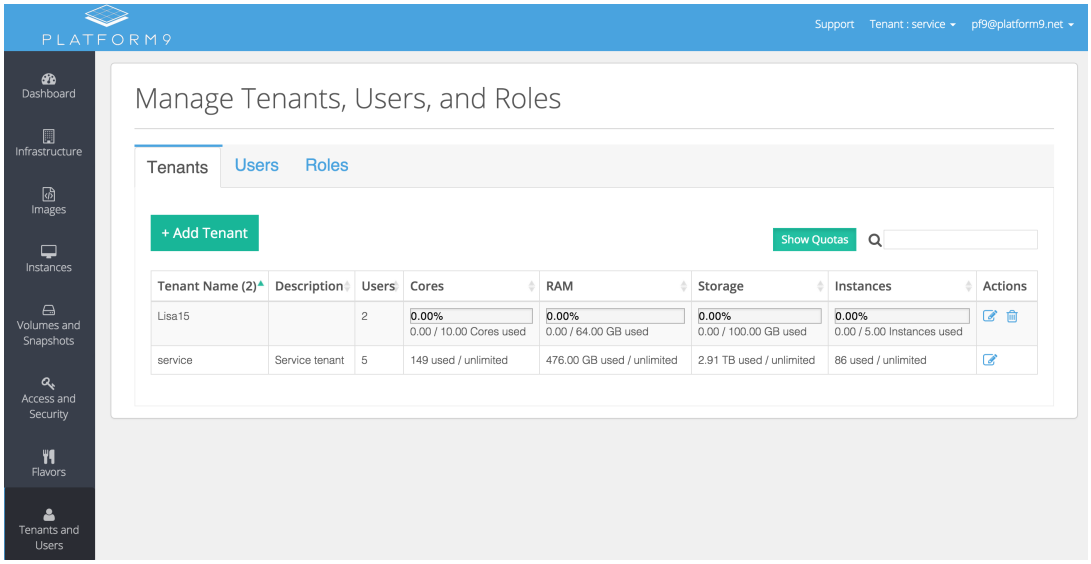
Tenants and Users

- Use the following tabs to complete these tasks:

  - Tenants: View, create, manage, and delete tenants.
  - Users: View, create, manage, and delete users.
  - Roles: Describes the two types of Platform9 users.

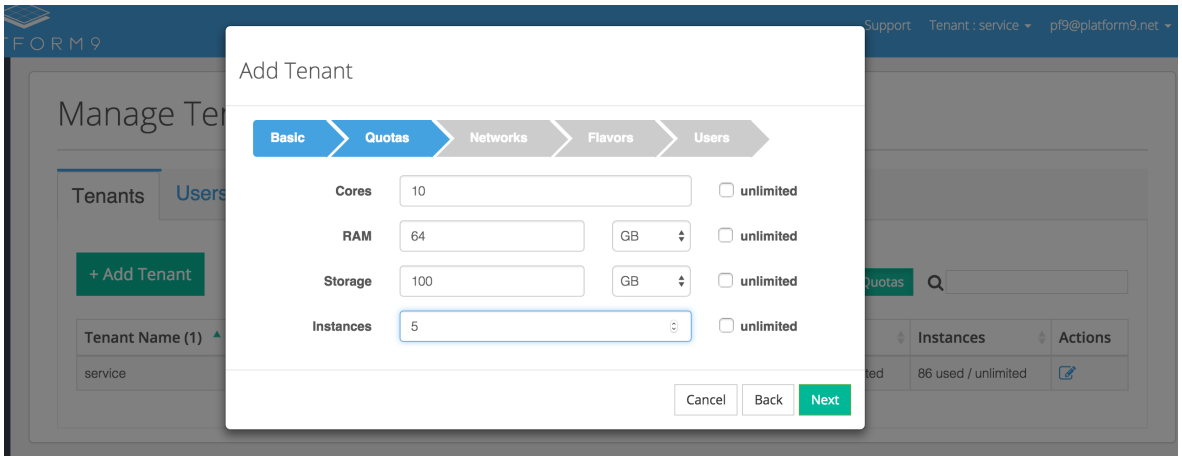
Create and manage tenants

Tenants are organizational units in the cloud. Each user is a member of one or more tenants. Within a tenant, a user creates and manages instances. To prevent system capacities from being exhausted without notification, you can set up quotas for each tenant. Quotas are operational limits. For example, the amount of RAM allowed for each tenant can be controlled so that cloud resources are optimized.



Create a Tenant

1. In the Dashboard, click on the Tenants and Users tab.
2. In the Tenants tab, click the Add Tenant button.
3. In the Add Tenant window, enter a name of your choosing for the tenant.
4. Click next to continue to the Quotas window.
5. Change the quota limits to the following and click next to continue to the networks window.



6. You should see one or more discovered networks. Choose a network for your VM and click next to continue.
7. The Flavors window will be empty since we have not created any private flavors for this tenant. Click next to continue.
8. In the Users window, leave the Admin user checked.
9. Click the Add button to confirm your changes.

Repeat steps above and create a second tenant.

Edit a Tenant

1. Choose a tenant click the Edit button in the actions column next to that tenant.
2. In the Edit Tenant window, enter a new name for the Tenant.
3. Click the Save button to confirm your changes.

Delete a Tenant

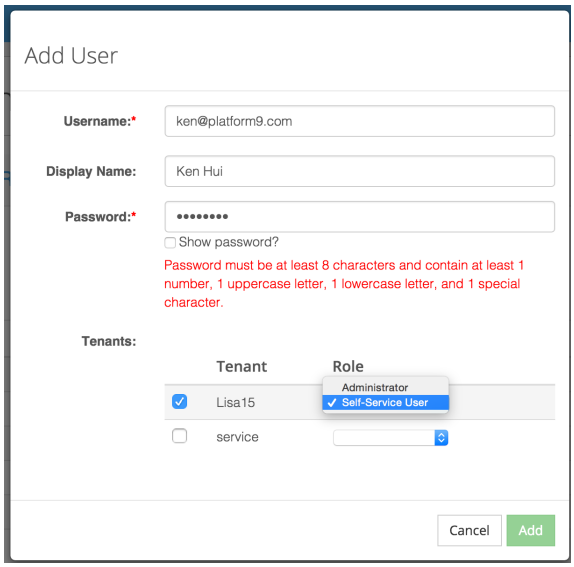
1. Select the tenant you want to delete and click the Delete button next to its name.
2. In the Delete Tenant window, click Delete Tenant to confirm the deletion.

Create and manage Users

A user is an account that can be authenticated to have access to a tenant or set of tenants. A user assumes a role which authorizes them to perform a set of operations. A role is a personality that includes a set of rights and privileges. A user assumes that role inherits those rights and privileges.

Create a User

1. Choose to mange the new tenant you created using the dropdown menu on the upper right of the dashboard.
2. In the Dashboard, click on the Tenants and Users tab.
3. In the Users tab, click the Add User button.
4. In the Add User window, enter an e-mail address and password for the user you are creating.
5. Check off the box next to the tenant you created and using the dropdown box, assign your new user the Self-Service User role.
6. Click the Add User button to confirm your changes.



Repeat steps above and create a second user.

Edit a User

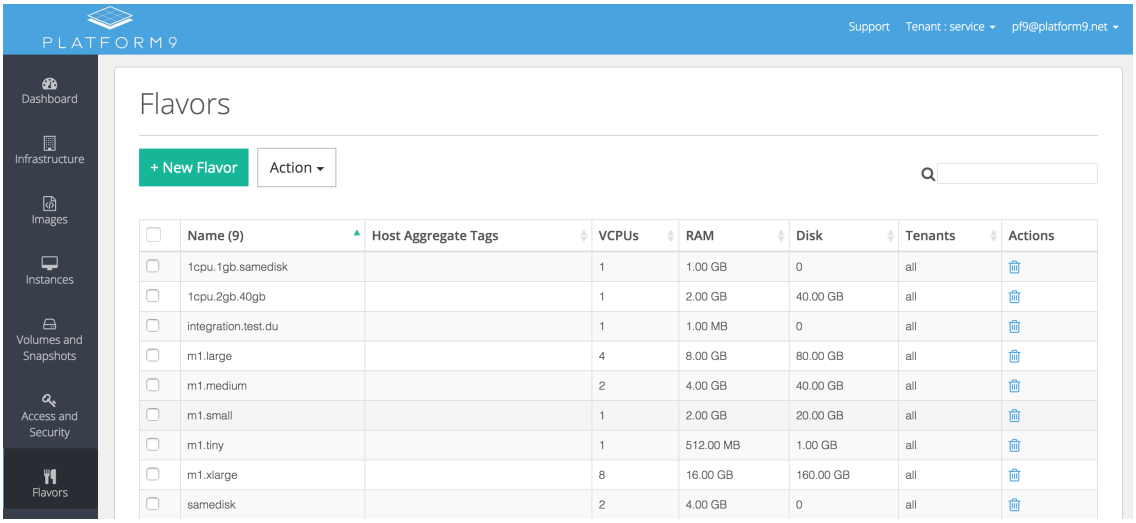
1. Choose a user click the Edit button in the actions column next to that tenant.
2. In the Edit User window, enter a new display name for the user.
3. Click the Save button to confirm your changes.

Delete a User

1. Select the user you want to delete and click the Delete button next to their name.
2. In the Delete User window, click Delete User to confirm the deletion.

Create and manage Flavors

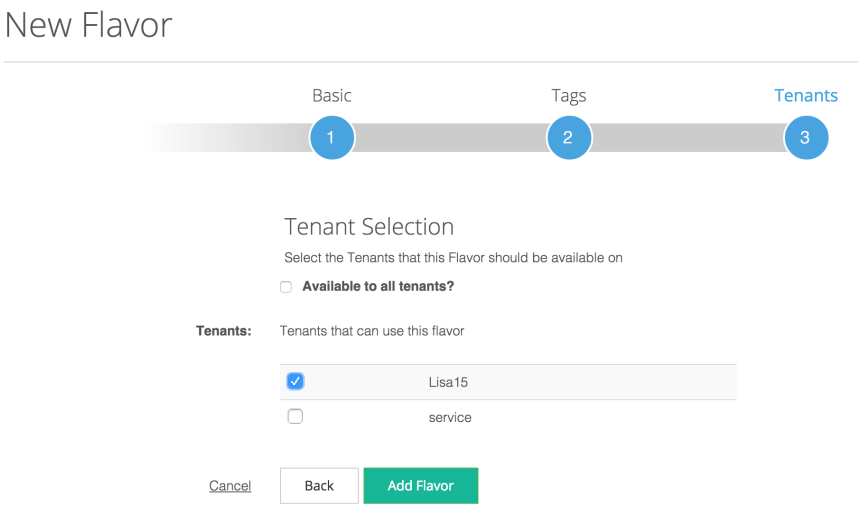
In OpenStack, a flavor defines the compute, memory, and storage capacity of a virtual server, also known as an instance. When you first log in you will see some default flavors with m1.x designations already pre-populated. As an administrative user, you can create and delete flavors.



Create a Flavor

1. In the Dashboard, click on the Flavors tab.
2. Click the New Flavor button.
3. In the New Flavor window, enter a name of your choosing for the flavor. You can edit the configuration or choose to make modification.
4. Click next to continue to the Flavor Tags window. We won't be using tags for this exercise; so go ahead and click next to continue to Tenant Selection.

5. By default, all flavors, including the m1 default flavors, are available to all tenants as public flavors. Uncheck box next to Available to all tenants? and choose the tenant you created.



6. Click the Add Flavor button to confirm your changes.

Repeat steps above and create a second Private Flavor.

Delete a Flavor

1. Select the flavor you want to delete and click the Delete button next to its name.
2. In the Delete Flavor window, click Delete Flavor to confirm the deletion.

Create and manage Volumes

Volumes are the Block Storage devices that you attach to instances to enable persistent storage. Users can attach a volume to a running instance or detach a volume and attach it to another instance at any time.

As an administrative user, you can manage volumes for users in various tenants. You can create and delete volumes.

Create a Volume

1. In the Dashboard, click on the Volumes and Snapshots tab.
2. In the Volumes tab, click the Create New Volume button.
3. In the Volume Source window, leave the Create from field to none and click next to continue to Basic Configuration window.
4. Enter a name for the volume and make it 5 GB.

5. Click next to continue to the Tags window. We won't be using tags for this exercise; so go ahead and click the Add Volume button to confirm your changes.

Repeat steps above and create a second Volume.

Edit a Volume

1. Choose a volume and click the Edit button in the actions column next to that volume.
2. In the Edit Tenant window, enter a description for the volume.
3. Click the Update Volume button to confirm your changes.

Extend a Volume

1. Choose a volume and click the Edit button in the actions column next to that volume.
2. Go to the Extend Volume tab and extend the volume to 10 GB.
3. Click the Extend Volume button to confirm your changes.

Create a Volume Snapshot

1. Choose a volume and click the snapshot/camera button in the actions column next to that volume.
2. In the Snapshot Volume window, enter a Snapshot name.
3. Click the Take Snapshot button to confirm your changes.
4. Click on the Volume Snapshots tab to see the new snapshot.

This snapshot can now be used as the base for a new volume.

Delete a Volume Snaphot

1. Click on the Volume Snapshots tab.
2. Select the Volume Snaphshot you want to delete and click the Delete button next to its name.
3. In the Delete Volume Snapshot window, click Delete Volume Snapshot to confirm the deletion.

Delete a Volume

1. Select the Volume you want to delete and click the Delete button next to its name.
2. In the Delete Volume window, click Delete Volume to confirm the deletion.

Using a Platform9 OpenStack Cloud

For the next set of exercises, you will log out from the Admin account and log in as a tenant user.

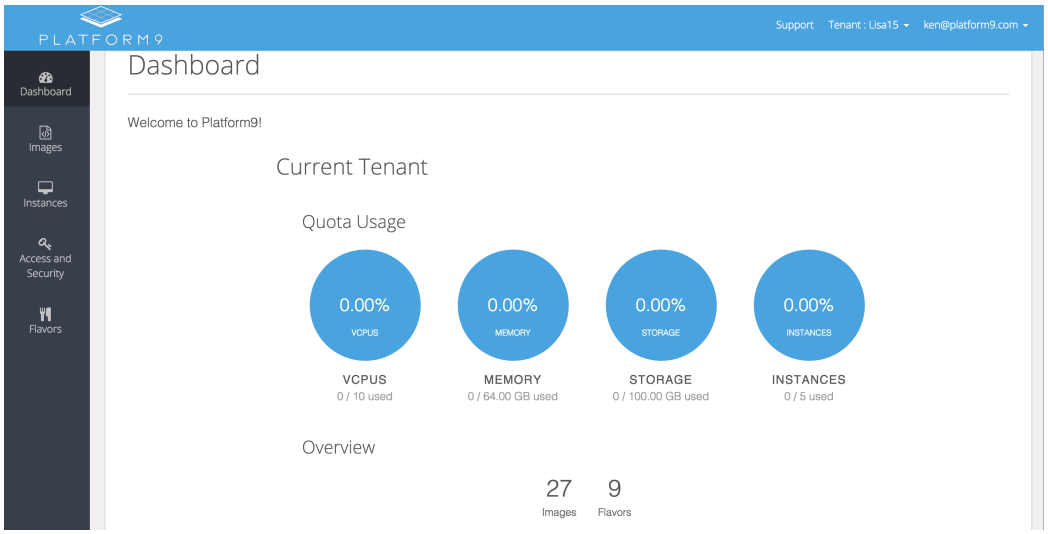
Log in to the dashboard as a tenant user

Log out as Administrator by using the dropdown menu next to the Admin account name on the upper right of the dashboard.

On the Log In page, enter the tenant user name and password, and click Sign In.

OpenStack dashboard—Dashboard tab¶

From the Dashboard tab, you can you can view the quota usage for the tenants that you have access to as this user. You select a specific tenant from the Tenant dropdown list at the top right of the dashboard.



Along with the Dashboard tab, you can explore the following tabs:

Images

- View custom OS images.

Instances

- View, launch, create a snapshot from, start, stop, pause, reboot, or delete instances.

Access and Security

- Use the following tabs to complete these tasks:

  - Key Pairs: View, create, edit, import, and delete key pairs.
  - API Access: View API endpoints.

Flavors

- View Flavors

Launch and manage Instances

Instances are virtual machines that run inside the cloud. You can launch an instance from the following sources:

- Images uploaded to the OpenStack Image service.
- Image that you have copied to a persistent volume. The instance launches from the volume, which is provided by the cinder-volume API through iSCSI.

Launch an Instance

1. In the Dashboard, click on the Instances tab. This will provide you a view on any instances that have been created in that specific tenant.
2. Click the New VM Instance button.
3. In the New VM Instance window, select Image as the VM source type.
4. Select one of the pre-populated OS images and click next to continue to the Flavor Selection window.
5. Select the flavor you created as the administrator or one of the default m1.x flavors and click next.
6. In the Network Selection window, select the networks that have been pre-populated for this lab and click next.
7. In the Basic Configuration window, enter an Instance Name and leave SSH Key field to None, and click next.
8. In the Customize window, uncheck Use cloud-init and click next or finish.
9. In the New VM Instance window, click the Create Instance button to confirm your changes.
10. In the Cloud-int Passwords window, save the password somewhere, acknowledge you have saved it, and click okay.

Launch Multiple Instances¶

1. In the Dashboard, click on the Instances tab. This will provide you a view on any instances that have been created in that specific tenant.
2. Click the New VM Instance button.

3. In the New VM Instance window, select Image as the VM source type.
4. Select one of the pre-populated OS images and click next to continue to the Flavor Selection window.
5. Select the flavor you created as the administrator or one of the default m1.x flavors and click next.
6. In the Network Selection window, select the networks that have been pre-populated for this lab and click next.
7. In the Basic Configuration window, enter an Instance Name and leave SSH Key field to None.
8. Check the box next to Create multiple instances.
9. Choose to create 5 instances and leave the default instance names.
10. Click next to continue to Customize window.
11. In the Customize window, uncheck Use cloud-init and click next or finish.
12. In the New VM Instance window, click the Create Instance button to confirm your changes.

Manage an Instance

1. In the Dashboard, click on the Instances tab.
2. Select one of the instances you created and click on the Action button.
3. Depending on the current state of the instance, you can start, stop, suspend, resume, reboot, snapshot, or delete the instance.

Attach a Volume

1. In the Dashboard, click on the Instances tab.
2. Select one the instance you created and click on the Manage Volume button in the actions column next to that instance.
3. In the Manage Volumes window, click the Command button next to the volume you created to change it from DETACHED to ATTACHED.
4. Click the Update Volumes button to confirm your changes.
5. You should see the volume listed under the Attached Volumes column.

Detach a Volume

1. In the Dashboard, click on the Instances tab.
2. Select the instance with the attached volume and click on the Manage Volume button in the actions column next to that instance.
3. In the Manage Volumes window, click the Command button next to the volume you created to change it from ATTACHED to DETACHED.
4. Click the Update Volumes button to confirm your changes.

Cleaning up

Delete Instances in your tenant

1. In the Dashboard, click on the Instances tab.
2. Check the boxes next to any instances you have created.
3. From the Action dropdown menu, choose delete.
4. In the Confirm Action window, click Confirm to confirm the deletion.

Clean up Tenant

1. Log out and log back in as Admin.
2. Delete any volume snapshots and volumes you created.
3. Delete any private flavors you created.
4. Delete any users you created.
5. Delete any tenants you created.

Thank you!

Thanks for your interest in Platform9 OpenStack Cloud. We hope you enjoyed the lab.

- If you are interested in learning more about the OpenStack project, go to https://www.openstack.org/.
- If you are interested in learning more about Platform9, go to http://platform9.com/.
- To learn more about how VMware vSphere integrates with OpenStack and with Platform9, read the blogs posts at http://blog.platform9.com/.