

HandsOn - Iaas on a Box

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Overview

For this HandsOn Openstack is used for the IaaS Implementation.

Openstack is a cloud operating system, which makes it easy to control different compute, storage and network nodes throughout a datacenter. It is all managed through a web interface.

For testing Openstack on a single machine, the Devstack opensource project will be used.

All nodes will be simulated on a single VM or single machine. You can download Devstack from the [Github repository](#).

The host operating system for Openstack will be Ubuntu 14.04.1 Desktop.

The Desktop image will be sufficient for testing. The GUI will be easier to use for none command line users.

For the latest Ubuntu Desktop image, visit [Download page](#).

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Installation

Devstack is used for single machine implementation of Openstack.

The [Installation guide](#) helps you with the setup.

After installation of devstack and before executing **stack.sh**, it is recommended to edit the local.conf file in the root folder of devstack. This file will be used for configuration purpose. An example on how the file should look like can be found in **<devstack_root_folder>/samples/local.conf**. The easiest way, is to copy the **local.conf** file into the root folder of devstack.

After some try and error, the only thing you have to add or uncomment in the **local.conf** file is the following line:

```
#HOST_IP=w.x.y.z
```

Replace the w,x,y and z with your IP address on your host system and remove the **#** in front of the code snippet. Otherwise **HOST_IP** will not be recognized from the shell script.

Now you can execute the **stack.sh** shell script, and devstack will be installed and executed.

If you want to launch the dashboard, you only have to open your internet browser and enter the **HOST_IP** with a **http://** prefix.

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GUI

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Overview

Here you can see the Dashboard of Openstack.

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Project

Under the Project Tab you will see two new tabs, Compute and Orchestration.

Compute:

Compute gives an overview over your VM images, Volumes and Instances. The Access & Security tab is important for the remote access over the API. In this tab you can see the tenant IDs, which identifies a user and the API Endpoints for the modules.

<input type="checkbox"/>	Image Name	Type	Status	Public	Protected	Format	Size	Actions
<input type="checkbox"/>	Fedora-x86_64-20-20140618-sda	Image	Active	Yes	No	QCOW2	199.9 MB	Launch ▼
<input type="checkbox"/>	cirros-0.3.2-x86_64-uec	Image	Active	Yes	No	AMI	24.0 MB	Launch ▼
<input type="checkbox"/>	cirros-0.3.2-x86_64-uec-ramdisk	Image	Active	Yes	No	ARI	3.6 MB	
<input type="checkbox"/>	cirros-0.3.2-x86_64-uec-kernel	Image	Active	Yes	No	AKI	4.7 MB	

Displaying 4 items

Orchestration:

Orchestration shows the applied stacks. Stacks lets you auto generate a few instances at once.

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Admin

The Admin section will be visible if you are logged in as admin. Here you can configure the system and add new VMs.

Images

Image Name = Filter Filter + Create Image x Delete Images

<input type="checkbox"/>	Image Name	Type	Status	Public	Protected	Format	Size	Actions
<input type="checkbox"/>	Fedora-x86_64-20-20140618-sda	Image	Active	Yes	No	QCOW2	199.9 MB	Edit ▾
<input type="checkbox"/>	cirros-0.3.2-x86_64-uec	Image	Active	Yes	No	AMI	24.0 MB	Edit ▾
<input type="checkbox"/>	cirros-0.3.2-x86_64-uec-ramdisk	Image	Active	Yes	No	ARI	3.6 MB	Edit ▾
<input type="checkbox"/>	cirros-0.3.2-x86_64-uec-kernel	Image	Active	Yes	No	AKI	4.7 MB	Edit ▾

Displaying 4 items

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Identity

In the identity section you can administer the users and projects. Users will be only visible for the admin account. If you are a user on the cloud service, only your Projects will be displayed.

Users

<input type="checkbox"/>	User Name	Email	User ID	Enabled	Actions
<input type="checkbox"/>	admin		0a85f954eb644a0c8c0e8e757143db4f	True	Edit
<input type="checkbox"/>	demo	demo@example.com	0e22683841614d2e8a17031847783b3c	True	Edit
<input type="checkbox"/>	alt_demo	alt_demo@example.com	1286827ce8bb4a94877e72a99fb18899	True	Edit
<input type="checkbox"/>	heat		2fd974fbef264d559b7a8017b70b24d	True	Edit
<input type="checkbox"/>	glance		63500203681a43e1a15ce468f7fff147	True	Edit
<input type="checkbox"/>	nova		b2b69f2d75be4b6d8b32334161147003	True	Edit
<input type="checkbox"/>	cinder		d088d306476042d087941bae2ada2d6f	True	Edit

Displaying 7 items

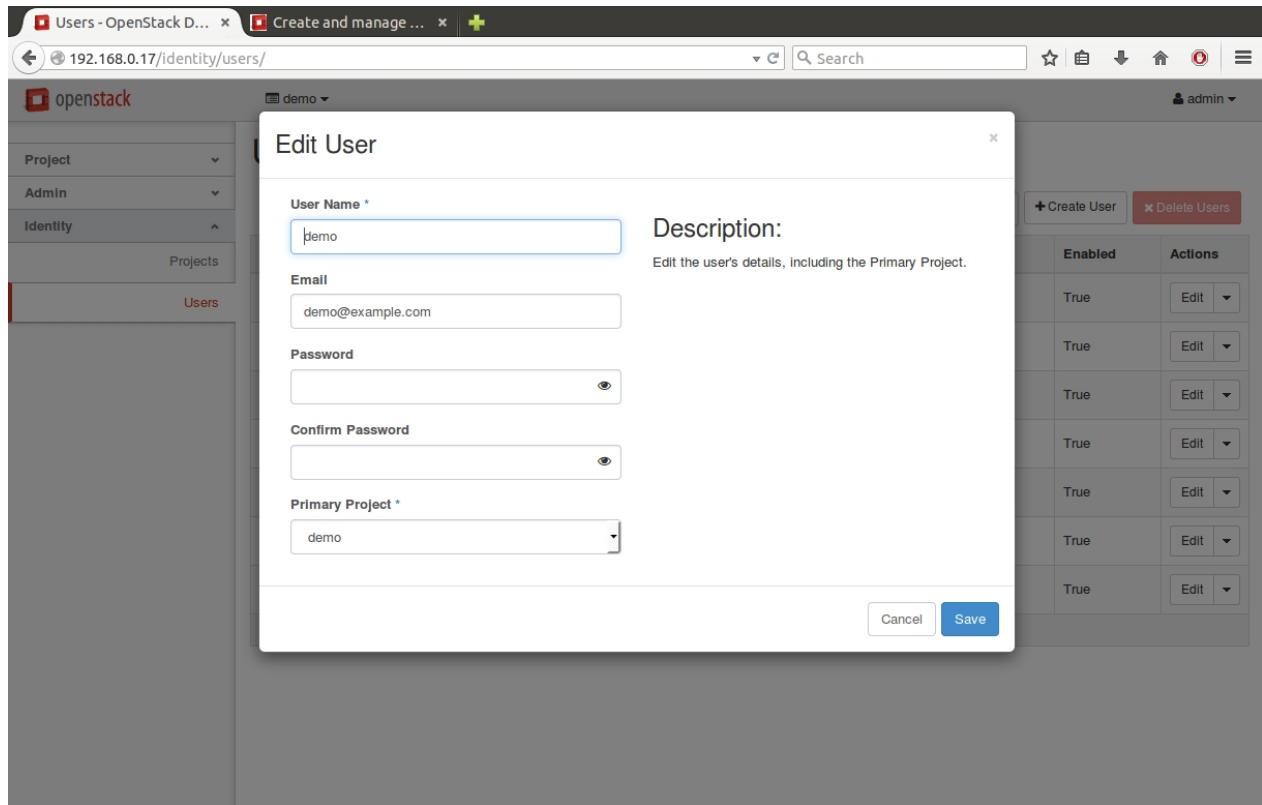
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Manage Users

You have to be logged in as admin to add or update a user.

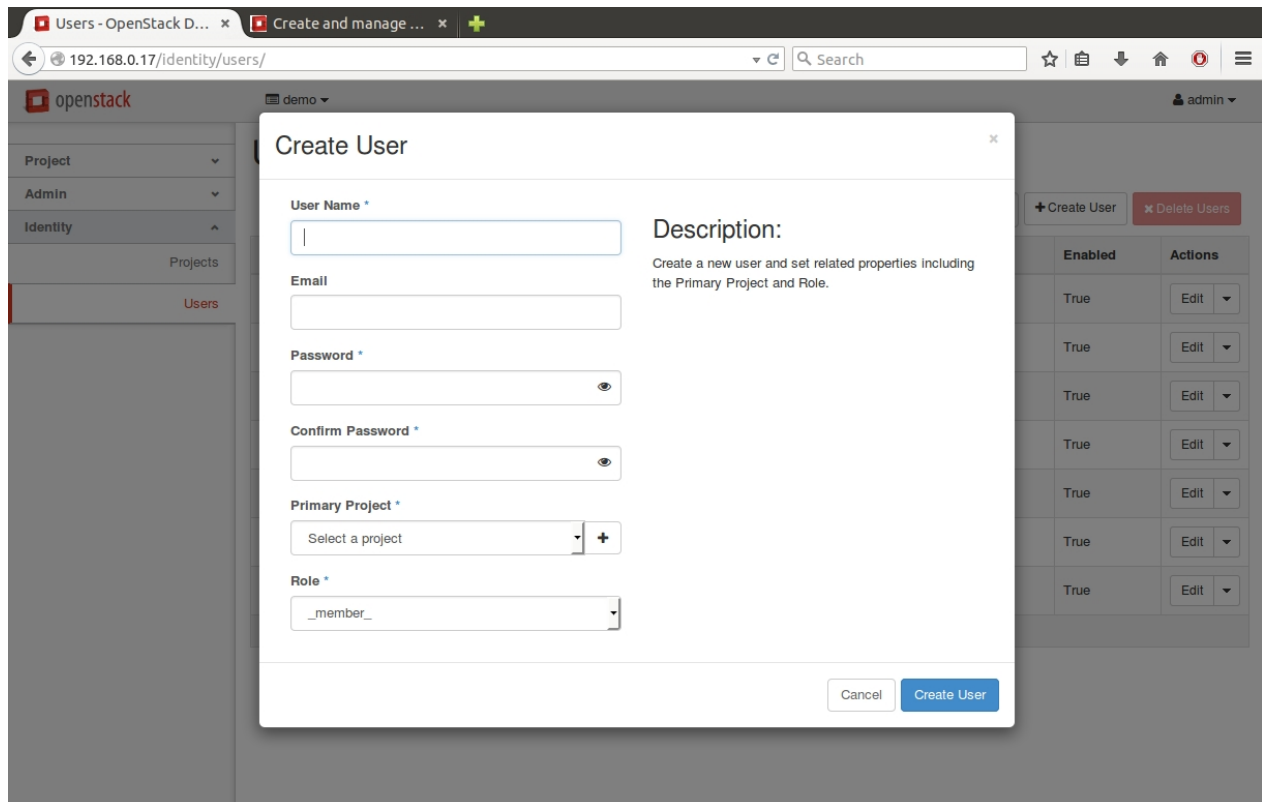
Edit User:

For updating a user you have to click on the Edit button. Here you can change the name, password, email address and his primary project.



Create User:

Here you can create a user and define his role on the cloud system.



Delete User:

You can select a user and press the delete button to delete a user.

Manage Images

For editing images you have to be logged in as admin. Only starting a new instance, which is defined in the users project, is allowed by normal users.

Under the Admin tab you will find the System tab, where you can find the Images.

Create Image:

You can create an Image by clicking the create image button.

Create An Image

Name *

Description

Image Source

Image Location

Image Location ⓘ

http://example.com/image.iso

Format *

Select format

Architecture

Minimum Disk (GB) ⓘ

Minimum RAM (MB) ⓘ

☐ Public

☐ Protected

Description:

Specify an image to upload to the Image Service.

Currently only images available via an HTTP URL are supported. The image location must be accessible to the Image Service. Compressed image binaries are supported (.zip and .tar.gz.)

Please note: The Image Location field MUST be a valid and direct URL to the image binary. URLs that redirect or serve error pages will result in unusable images.

Size	Actions
199.9 MB	Edit
24.0 MB	Edit
3.6 MB	Edit
4.7 MB	Edit

Here you can define the name of an image, and the location, where the cloud service will upload the image file. You have to select a proper Format for the image. On the bottom of the configuration menu, you will see checkboxes. Public means that everybody can see your image and use it. Protected means that only users with permission can delete the image.

Start/stop image:

For starting an image you have to choose the Project tab. In the Project tab select the Compute tab. In here you will see your images.

The screenshot shows the OpenStack Images dashboard. The left sidebar contains navigation links: Project, Compute, Overview, Instances, Volumes, Images (selected), Access & Security, Orchestration, Admin, and Identity. The main content area is titled 'Images' and displays a table of images. The table has columns: Image Name, Type, Status, Public, Protected, Format, Size, and Actions. There are four images listed, all of type 'Image' and status 'Active'. The 'Actions' column for each image has a 'Launch' button. Above the table, there are filters for 'Project (0)', 'Shared with Me (0)', and 'Public (4)', along with buttons for '+ Create Image' and 'x Delete Images'.

Image Name	Type	Status	Public	Protected	Format	Size	Actions
Fedora-x86_64-20-20140618-sda	Image	Active	Yes	No	QCOW2	199.9 MB	Launch
cirros-0.3.2-x86_64-uec	Image	Active	Yes	No	AMI	24.0 MB	Launch
cirros-0.3.2-x86_64-uec-ramdisk	Image	Active	Yes	No	ARI	3.6 MB	
cirros-0.3.2-x86_64-uec-kernel	Image	Active	Yes	No	AKI	4.7 MB	

Displaying 4 items

To launch an image you have to click on the Launch button on the right side of the image. If you start an Image, an Instance will be generated from this Image. A configuration menu will appear, where you can define the Instance name and your Flavor. Flavor defines the size of the instance and how many resources from the host system should be used. You can define a boot source, from which the Instance should be booted.

The screenshot shows the 'Launch Instance' dialog box. It has tabs for 'Details *', 'Access & Security *', 'Post-Creation', and 'Advanced Options'. The 'Details' tab is active. It contains fields for 'Availability Zone' (set to 'nova'), 'Instance Name *', 'Flavor *' (set to 'm1.nano'), 'Instance Count *' (set to '1'), and 'Instance Boot Source *' (set to 'Boot from image'). There is also a dropdown for 'Image Name' showing 'cirros-0.3.2-x86_64-uec (24.0 MB)'. To the right, there is a section 'Specify the details for launching an instance.' with a note about quotas. Below that is a 'Flavor Details' table showing resources for 'm1.nano': 1 VCPU, 0 GB Root Disk, 0 GB Ephemeral Disk, 0 GB Total Disk, and 64 MB RAM. At the bottom right, there is a 'Project Limits' section with progress bars for 'Number of Instances' (0 of 10 Used), 'Number of VCPUs' (0 of 20 Used), and 'Total RAM' (0 of 51,200 MB Used). At the bottom of the dialog are 'Cancel' and 'Launch' buttons.

Name	m1.nano
VCPUs	1
Root Disk	0 GB
Ephemeral Disk	0 GB
Total Disk	0 GB
RAM	64 MB

After clicking the Launch button you will be forwarded to the Instance tab, where you can see the status of

your instance. In this tab you can shut down your instance, by clicking the arrow button beside the Create Snapshot button and choosing Shut Off Instance.

The screenshot shows the OpenStack web interface. The left sidebar contains navigation links: Project, Compute, Overview, Instances (highlighted), Volumes, Images, Access & Security, Orchestration, Admin, and Identity. The main content area is titled 'Instances' and features a table with the following columns: Instance Name, Image Name, IP Address, Size, Key Pair, Status, Availability Zone, Task, Power State, Time since created, and Actions. A single instance named 'Cirros' is listed with IP address 10.0.0.2 and status 'Active'. The 'Actions' dropdown menu is open, showing options such as 'Associate Floating IP', 'Disassociate Floating IP', 'Edit Instance', 'Edit Security Groups', 'Console', 'View Log', 'Pause Instance', 'Suspend Instance', 'Resize Instance', 'Lock Instance', 'Unlock Instance', 'Soft Reboot Instance', 'Hard Reboot Instance', 'Shut Off Instance', 'Rebuild Instance', and 'Terminate Instance'.

Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions
<input type="checkbox"/>	Cirros	10.0.0.2	m1.micro	-	Active	nova	None	Running	0 minutes	Create Snapshot Associate Floating IP Disassociate Floating IP Edit Instance Edit Security Groups Console View Log Pause Instance Suspend Instance Resize Instance Lock Instance Unlock Instance Soft Reboot Instance Hard Reboot Instance Shut Off Instance Rebuild Instance Terminate Instance

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SSH to VM

For establishing a secure connection to your VM, you have to now the internal IP address and the user name from your instance.
Most of the time the user name will be displayed in the Console Log of your instance.

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