

Cloud Computing Lab

Experiment-7

Find a procedure to launch virtual machine using trystack (Online Openstack Demo Version)

TryStack was once an OpenStack-powered online demo platform for testing OpenStack's features, such as launching virtual machines (VMs). However, TryStack has been discontinued. Today, the best way to try OpenStack without a full installation is to use either **devstack** (for local installation on a single machine) or public cloud providers that offer OpenStack-based services.

OpenStack is an open-source software cloud computing platform. OpenStack is primarily used for deploying an infrastructure as a service (IaaS) solution like Amazon Web Service (AWS).

TryStack is the easiest and free way to do it.

Minimum requirements for OpenStack is listed below:

4 GB Of Ram.

4 CPU Units.

30 GB Disk Space.

Step 1: Prepare the environment for installing OpenStack:

Run the following commands and you will be done with it to bring all your packages to the latest version and install git so that we can clone OpenStack to our Linux machine.

Commands :

```
sudo apt-get update  
sudo apt-get upgrade  
sudo apt-get dist-  
upgrade sudo apt-get  
install git -y sudo reboot
```

Step 2: Download and Install OpenStack!

Note: If you already have a “stack” user on your virtual machine or laptop (with sudo privileges), then you do not need to create an additional user.

After your virtual machine is done with a reboot, you are now ready to install OpenStack.

Normally OpenStack runs under non-root user with sudo privileges. We can easily create one to start with using:

Create the user named as “stack”

```
Sudo useradd -s /bin/bash -d /opt/stack -m stack
```

Now let us give this user sudo privileges using:

```
echo"stack ALL=(ALL) NOPASSWD: ALL "| sudotee/etc/sudoers.d/stack
```

We now have to log in as user “stack” to proceed with our installation as

```
sudosu--stack
```

Start with the installation of openstack by downloading the required material.

```
git clone https://git.openstack.org/openstack-dev/devstack
```

```
# cd to the cloned directory
```

```
cd devstack
```

Normally during installing it will ask you to set various passwords, you can automate this process by creating a file in your current directory named “local.conf”. Save and exit the following file, this will automate the installation process.

```
# create the file
```

```
$nanolocal.conf
```

```
# Now paste following contents in
```

```
the file [[local|localrc]]
```

```
ADMIN_PASSWORD=secret
```

```
DATABASE_PASSWORD=$ADMIN_PASSWORD
```

```
RABBIT_PASSWORD=$ADMIN_PASSWORD
```

```
SERVICE_PASSWORD=$ADMIN_PASSWORD
```

We are now ready to run the installation script. Installation script can be launched using the command:

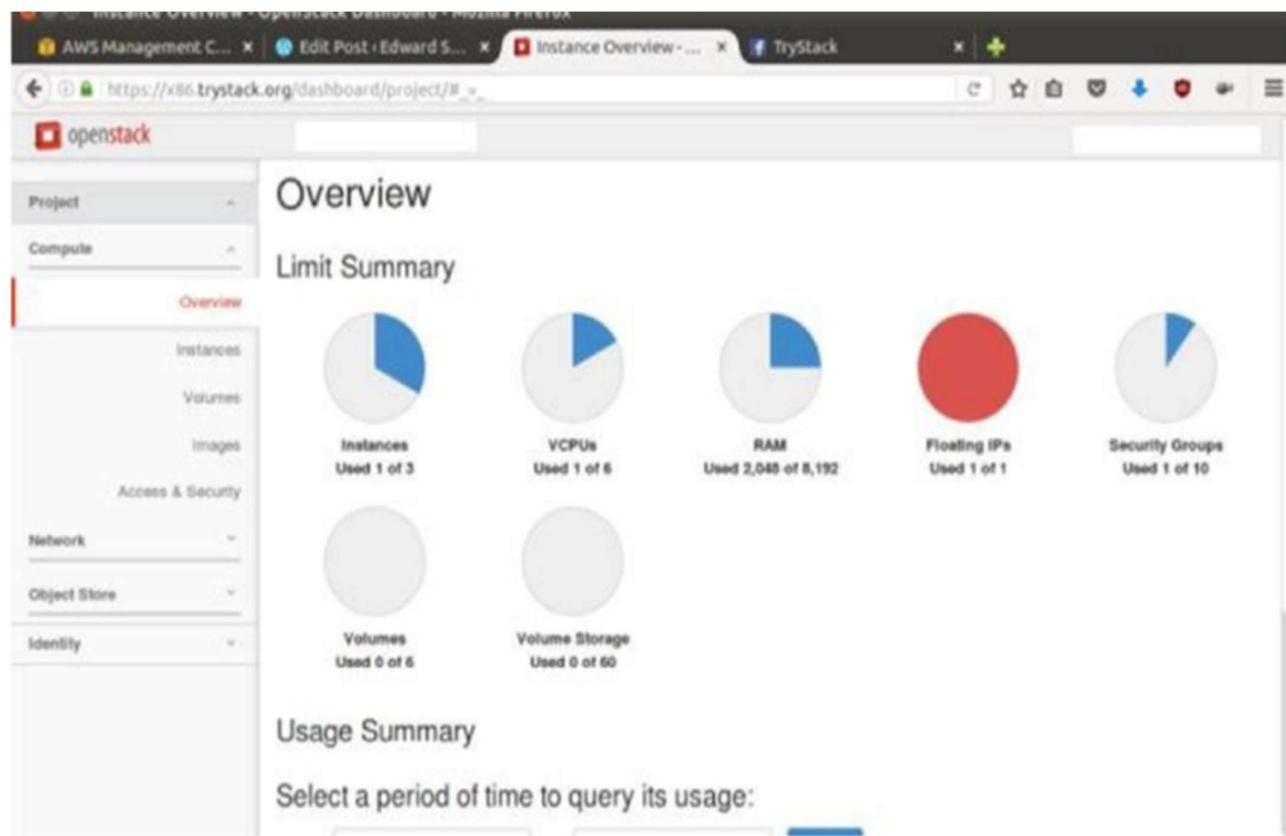
```
./stack.sh
```

Once installation is complete your screen should be :

```
This is your host IP address: [REDACTED]
This is your host IPv6 address: [REDACTED]
Horizon is now available at http://[REDACTED]/dashboard
Keystone is serving at http://[REDACTED]/identity/
The default users are: admin and demo
The password: secret
Services are running under systemd unit files.
For more information see:
https://docs.openstack.org/developer/devstack/systemd.html
2017-06-19 16:13:18.557 | WARNING:
2017-06-19 16:13:18.557 | Using lib/neutron-legacy is deprecated, and it will be removed in the future
2017-06-19 16:13:18.557 | stack.sh completed in 1933 seconds.
stack@devstack:~/devstack$
```

OpenStack dashboard can now be accessed at :

```
http://<IPAddress>/dashboard/
```



Step 3: Create Network!

Note: Please remember that without having a network, you can not launch an instance/virtual machine.

After you are logged into the OpenStack Dashboard it will look something like this:

Identity / Projects

Projects

Name	Description	Project ID	Domain Name	Enabled	Actions
al_demo		04fe75225674c009fa1a1fb87cd7e4	Default	Yes	Manage Members
demo		329acaa3fb3461bb7288071cf1d988	Default	Yes	Manage Members

We need to create a network that virtual machine can use. For now, it will just be a dummy network:

Steps:

1. Click the Project Drop Down.
2. Click the Network Drop Down.
3. From network Drop Down select Networks, and this window will open that you see on the right side.
4. Finally, click Create Network

The screenshot shows the 'Networks' section of a cloud provider's management console. On the left, there's a sidebar with 'Project' dropdown, 'API Access', 'Compute', 'Volumes', 'Network' (which is expanded to show 'Network Topology', 'Networks' (selected), 'Routers', 'Security Groups', 'Floating IPs', 'Admin', and 'Identity'). The main area has a breadcrumb 'Project / Network / Networks'. The 'Networks' table displays one item:

Name	Subnets Associated	Shared	External	Status	Admin State	Actions
public	IPv6-public-subnet 2001:db8::64 public-subnet 172.24.4.0/24	No	Yes	Active	UP	<button>Edit Network</button>

The screenshot shows the 'Create Network' wizard. The 'Network' tab is selected. The 'Network Name' field contains 'CyberPersons'. A descriptive text on the right says: 'Create a new network. In addition, a subnet associated with the network can be created in the following steps of this wizard.' Below the name field are three checkboxes: 'Enable Admin State' (checked), 'Shared' (unchecked), and 'Create Subnet' (checked). At the bottom are 'Cancel', 'Back', and 'Next >' buttons.

Create Network

Network Subnet Subnet Details

Subnet Name
CyberPersons

Network Address Source
Allocate Network Address from a pool

Address pool
shared-default-subnetpool (10.0.0.0/22)

Network Mask
26 (pool default)

IP Version
IPv4

Gateway IP (Optional)

Creates a subnet associated with the network. You need to enter a valid "Network Address" and "Gateway IP". If you did not enter the "Gateway IP", the first value of a network will be assigned by default. If you do not want gateway please check the "Disable Gateway" checkbox. Advanced configuration is available by clicking on the "Subnet Details" tab.

Cancel Back Next

Once all these things are done, click “Next”.

Now everything is optional in this below window if you are interested in filling something up, you can. Otherwise, leave everything as it is and click “Create”. You now have a network that you can use to launch a virtual machine.

Create Network

Network Subnet Subnet Details

Enable DHCP

Allocation Pools (Optional)

DNS Name Servers (Optional)

Host Routes (Optional)

Specify additional attributes for the subnet.

Cancel Back Create

Step 4: Create Virtual Machine/Instance

After the network is created, we are now ready to create our very first virtual machine.

Steps:

1. Click on “Project” drop down.
2. Inside project click “Compute” drop down.
3. Under compute you have four options, since we are interested in creating an instance, you have to click on “Instance”.
4. Finally, click “Launch Instance”.

The screenshot shows the OpenStack dashboard interface. At the top, there is a header with the OpenStack logo, the project name "alt_demo", and a user icon labeled "admin". Below the header, there is a navigation bar with dropdown menus for "Project", "API Access", "Compute", and "Instances". The "Compute" menu is expanded, showing "Instances" as the selected option. A red arrow labeled "1" points to the "Project" dropdown. A red arrow labeled "2" points to the "Instances" option in the "Compute" dropdown. A red arrow labeled "3" points to the "Instances" tab in the main content area. A red arrow labeled "4" points to the "Launch Instance" button at the bottom right of the content area. The main content area displays an "Overview" section with tabs for "Instances", "Images", "Key Pairs", "Volumes", and "Network". The "Instances" tab is selected, showing a table with columns: Instance Name, Image Name, IP Address, Flavor, Key Pair, Status, Availability Zone, Task, Power State, Time since created, and Actions. The table currently displays "No items to display".

The screenshot shows the "Launch Instance" dialog box. The left sidebar lists several tabs: "Details" (selected), "Source", "Flavor", "Networks", "Network Ports", "Security Groups", "Key Pair", "Configuration", "Server Groups", "Scheduler Hints", and "Metadata". The main content area has fields for "Instance Name" (set to "CyberPersons"), "Availability Zone" (set to "nova"), and "Count" (set to "1"). To the right of these fields is a circular progress bar labeled "Total Instances (10 Max)" with "10%" completed. A legend below the progress bar indicates "0 Current Usage", "1 Added", and "9 Remaining". At the bottom of the dialog box are buttons for "Cancel", "Back", "Next", and "Launch Instance".

Now, there are 11 tabs to create an instance, we will go through each tab one by one.

Details Tab :

This is a general information tab for creating an instance,
You will have to assign a name to your virtual machine on this tab.
Select zone to launch a virtual machine, and
Tell how many copies of virtual machine you want.

Launch Instance

Details

Please provide the initial hostname for the instance, the availability zone where it will be deployed, and the instance count. Increase the Count to create multiple instances with the same settings.

Instance Name * CyberPersons

Availability Zone nova

Total Instances (10 Max) 10%
0 Current Usage
1 Added
9 Remaining

Count * 1

Source *
Flavor *
Networks
Network Ports
Security Groups
Key Pair
Configuration
Server Groups
Scheduler Hints
Metadata

< Back Next > Launch Instance

Source Tab

Normally when we create a virtual machine on Proxmox or VMWare we need to insert CD-ROM

In OpenStack this is done by Source Tab, you can use various ways to launch a new virtual machine, OpenStack allows you to choose following as a source to create your instance.

Image
Snapshot of already created instance
Volume or a volume Snapshot

We are going to use “Cirros” image to create our instance.

Launch Instance

Source *	Select Boot Source	Create New Volume			
Flavor *	Image	Yes No			
Networks:	Volume Size (GB) *	Delete Volume on Instance Delete			
Network Ports	1	Yes No			
Security Groups	Allocated				
	Name	Updated	Size	Type	Visibility
	Select an item from Available items below				
	Available				
	Q Click here for filters.				
	Name	Updated	Size	Type	Visibility
	ubuntu	6/22/17 3:17 AM	829.00 MB	iso	Public 1
	cirros-0.3.5-x86_64-disk	6/22/17 2:14 AM	12.65 MB	qcow2	Public 2
	Select one				
Key Pair					
Configuration					
Server Groups					
Scheduler Hints					
Metadata					
<input type="button" value="Cancel"/> <input type="button" value="Back"/> <input type="button" value="Next >"/> <input type="button" value="Launch Instance"/>					

1. Click on the icon where the first arrow is pointing, so that we can use “Cirros” to launch our virtual machine.
2. After the image is selected, just click “Next” so that we can move to “Flavor” tab.

Flavor Tab

Flavor tab will allow you to allocate resource to your instance. Like:

Ram.
CPU.
Disk Space.

It is similar to giving virtual resources to the virtual machine, but OpenStack gives fancy names to everything

Launch Instance

Details	Flavors manage the sizing for the compute, memory and storage capacity of the instance.						
Source	Allocated						
Flavor	Name	VCPUS	RAM	Total Disk	Root Disk	Ephemeral Disk	Public
	m1.tiny	1	512 MB	1 GB	1 GB	0 GB	Yes
Networks	Available						
Network Ports	Select one						
Security Groups	Available						
Key Pair							
Configuration							
Server Groups							
Scheduler Hints							
Metadata							
<input type="button" value="Cancel"/> <input type="button" value="Back"/> <input type="button" value="Next >"/> <input type="button" value="Launch Instance"/>							

You can see that there are 11 available pre-configured templates to choose from. The one I

choose gave following resources to the instance:

1 virtual CPU.

512 MB Ram.

1 GB Disk.

After flavor is selected, just press “Next”.

Network Tab

Network tab allows us to define a network for our virtual machine, you might have remembered that we've created a network above for this purpose.

Now by default, the network you have created above will be selected for this machine,

as seen in the image below:

The screenshot shows the 'Launch Instance' wizard with the 'Networks' tab selected. The 'Allocated' section shows one network named 'CyberPersons' associated with 'CyberPersons' subnets, marked as 'No' for shared status, 'Up' for admin state, and 'Active' for status. The 'Available' section is empty, with a note to select at least one network. Other tabs like 'Details', 'Source', 'Flavor', 'Network Ports', 'Security Groups', 'Key Pair', and 'Configuration' are visible but not selected.

Don't change anything just click “Next”.

Network Ports Tab

For now, just leave the default settings on “Network Ports” tab and click next.

Security Groups Tab

Security groups define how a specific virtual machine is allowed to talk with the outer world. As for now, we are just trying to create our first virtual machine, you can leave all the defaults.

Key-Pair Tab

Leave defaults and click Next.

Configuration Tab

Leave defaults and click Next.

Server Groups Tab

Leave defaults and click Next.

Scheduler Hints Tab

Leave defaults and click Next.

Metadata Tab

Leave defaults and click Next.

Launch Instance

After going through all the tabs, you are now ready to press that magic “Launch Instance” button.

Once you click “Launch Instance” button, OpenStack will start creating our virtual machine, and it is going to look something like this:

Displaying 1 item											Actions
	Instance Name	Image Name	IP Address	Flavor	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions
<input type="checkbox"/>	CyberPersons	-	10.0.0.75	m1.tiny	-	Build	■ nova	Block Device Mapping	No State	0 minutes	<button>Associate Floating IP</button> ▾

Displaying 1 item

Step 5: Access Virtual Machine Console!

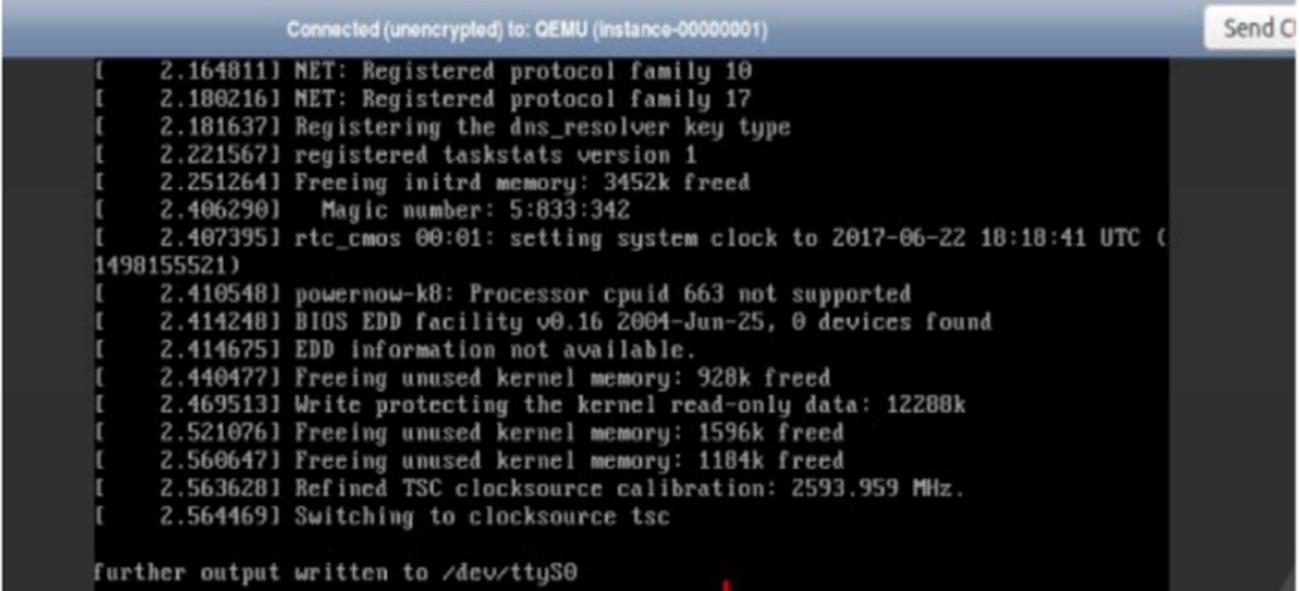
Once you click “Launch Instance” it will take OpenStack few seconds to create your virtual machine. Once ready you can access the console to see how the command line of your first virtual machine looks like.

Displaying 1 item											Actions
	Instance Name	Image Name	IP Address	Flavor	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions
<input type="checkbox"/>	CyberPersons	-	172.24.4.11 2001:db8::6	m1.tiny	-	Active	■ nova	None	Running	3 minutes	<button>Create Snapshot</button> ▾

Displaying 1 item

- Associate Floating IP
- Attach Interface
- Detach Interface
- Edit Instance
- Attach Volume
- Detach Volume
- Update Metadata
- Edit Security Groups
- Console →
- View Log
- Pause Instance
- Suspend Instance
- Shelve Instance
- Resize Instance
- Lock Instance
- Soft Reboot Instance
- Hard Reboot Instance
- Shut Off Instance

Click on “Console” and OpenStack will take you to the console of the virtual machine. The console will look something like this:



The screenshot shows a terminal window titled "Connected (unencrypted) to: QEMU (Instance-00000001)". The window contains a large amount of text representing the kernel boot process. The text is mostly in black on a white background, with some red text at the bottom. The red text reads "further output written to /dev/ttys0". The terminal has a dark grey header bar with the title and a "Send C" button. The main body of the terminal is white with black text.

```
Connected (unencrypted) to: QEMU (Instance-00000001)
[    2.164811] NET: Registered protocol family 10
[    2.180216] NET: Registered protocol family 17
[    2.181637] Registering the dns_resolver key type
[    2.221567] registered taskstats version 1
[    2.251264] Freeing initrd memory: 3452k freed
[    2.406290] Magic number: 5:833:342
[    2.407395] rtc_cmos 00:01: setting system clock to 2017-06-22 18:18:41 UTC (1498155521)
[    2.410548] powernow-k8: Processor cpuid 663 not supported
[    2.414240] BIOS EDD facility v0.16 2004-Jun-25, 0 devices found
[    2.414675] EDD information not available.
[    2.440477] Freeing unused kernel memory: 928k freed
[    2.469513] Write protecting the kernel read-only data: 12288k
[    2.521076] Freeing unused kernel memory: 1596k freed
[    2.560647] Freeing unused kernel memory: 1184k freed
[    2.563628] Refined TSC clocksource calibration: 2593.959 MHz.
[    2.564469] Switching to clocksource tsc

further output written to /dev/ttys0
```

RESULT:

The procedure for finding a procedure to launch virtual machine using trystack(online openstack demo version) was learned and verified successfully