

IST198

Administration

Version 6: 2017-08-15

These exercises will guide the student through the concepts and topics learned in chapter 4, launch a Linux instance in Mitaka installed on CentOS 7.

Create a Key Pair and Launch a CentOS 7 Instance.



This material is based upon work supported by the National Science Foundation under Grant No. (NSF 1601166). This work was created by Ron Sharman of Trident Technical College and is licensed under the Creative Commons Attribution 4.0 Unported License. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/> or send a letter to Creative Commons, 444 Castro Street, Suite 900, Mountain View, California, 94041, USA.

Attributions:



This material is based upon work supported by the National Science Foundation under Grant No. (NSF 1601166).

 **openstack**® Portions of this document, in whole or part, were sourced from the website at <https://www.openstack.org>



Contents

Attributes	1
Contents	2
Introduction	3
Lab Objectives	4
Prepare the OpenStack virtual machines	5
Lab Scenario and Settings	7
Run the lab setup script	8
Access the OpenStack Dashboard	12
Lab 9: Create an OpenStack Key Pair	15
Lab 10: Launch a CentOS 7 Instance	21
Run the grade script	44
Conclusion	48



Introduction

You have been hired as an intern with CLOUDTech Inc. CLOUDTech is a Cloud Computing consulting firm and Cloud Provider supporting thousands of clients in the region. The company provides a wide range of services to support migrating client Information Technology infrastructure to a Private, Hybrid or Public Cloud environment. You learned that the company has multiple departments and you will start your internship working with the Cloud hosting department customer support team.

The Cloud hosting department provides multiple platform and vendor Cloud hosting services for Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS) and many other as a service offerings. The support team is responsible for helping customers with any issues related to their Cloud infrastructure hosted at and provided by CLOUDTech.

You will perform hands-on exercises to learn about the Cloud implementation CLOUDTech uses to host customer Cloud environments.



Lab Objectives

Learner will be able to:

- Create a Key Pair and Launch a CentOS 7 Instance from the Dashboard

Labs 9-10

These labs will guide the student through creating a Key Pair and launching a CentOS 7 Instance using the Dashboard.

(Note: This lab is designed to be completed on an NDG NETLAB System with the IST198__HXXX POD installed. The labs can also be completed on a physical machine with the appropriate software packages installed, or a PC that has VMware Workstation installed with the appropriate virtual machines configured).



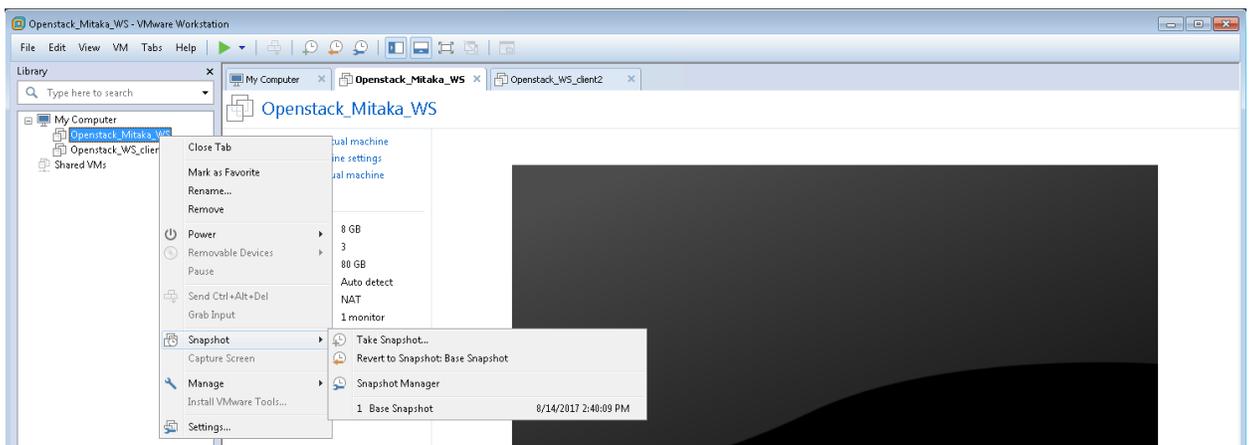
Prepare the OpenStack Virtual Machines



1. **Launch the VMware Workstation Pro application**



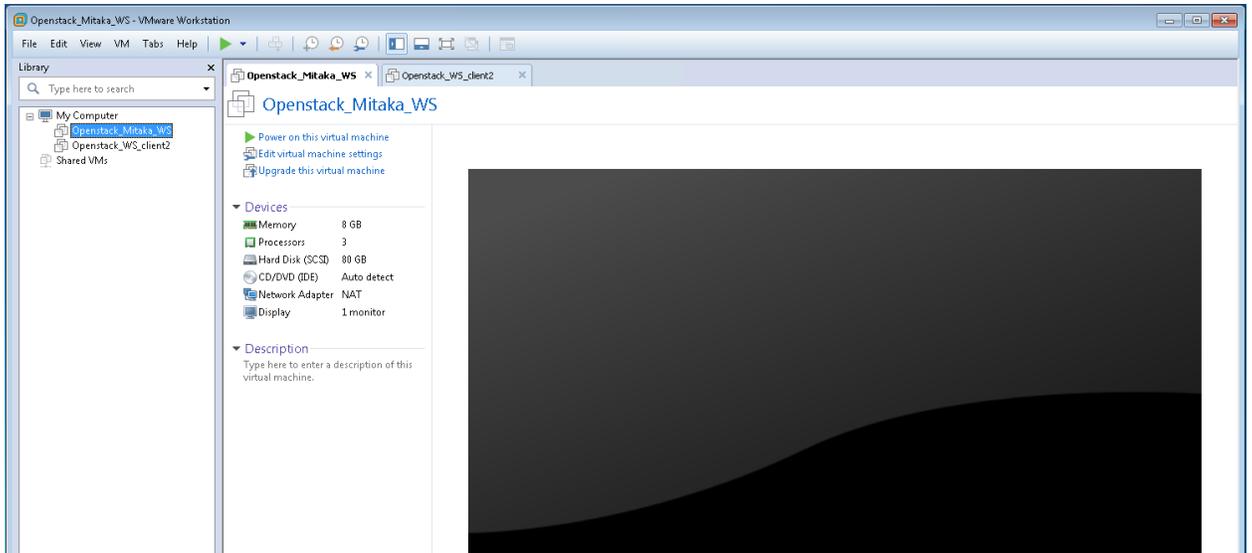
2. Workstation should have two virtual machines (VM) installed; Openstack_Mitaka_WS and Openstack_WS_client2.



3. Ensure that the Openstack_Mitaka_WS is at the correct starting point by reverting to the base snapshot. Right Click on Openstack_Mitaka_WS then Snapshot>Base Snapshot. Repeat for the Openstack_WS_client2 VM.



Module 4: Create a Key Pair and Launch a CentOS 7 Instance



4. **Power on** both VMs by selecting one of the two VMs and **clicking on Power on this virtual machine**. Repeat for the other VM.



Lab Scenario

As part of CLOUDTech’s customer support team, this is your second field visit to XYZ Company. During this visit, you will assist the customer in creating a Key Pair and launching their first cloud instance, a CentOS 7 server.

Lab Settings

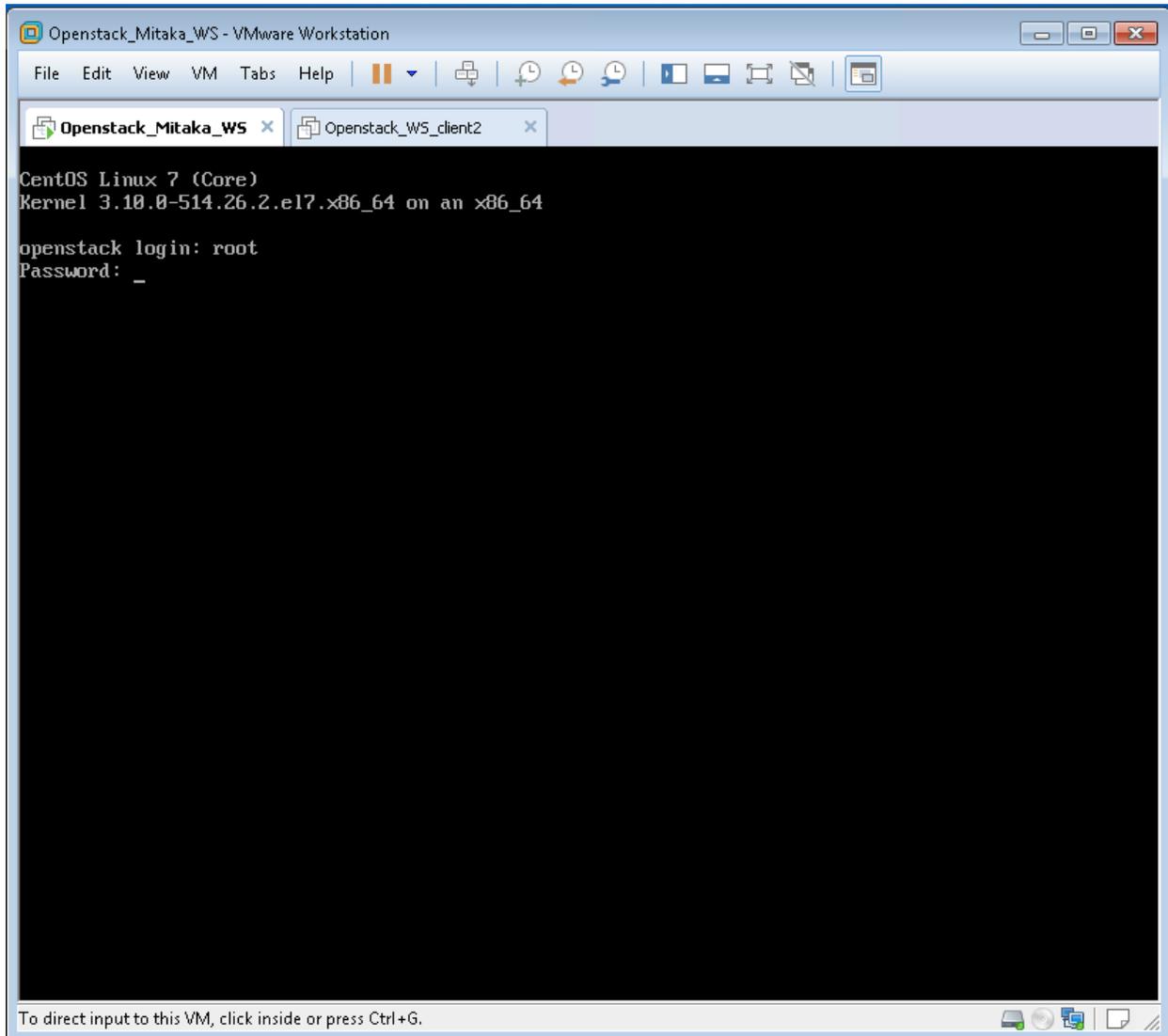
The information in the table below will be needed in order to complete the labs. The task sections that follow provide details on the use of this information

Virtual Machine (VM)	IP ADDRESS	Account	Password	VM Type
Client2	10.220.0.2	Student	P@ssword	CentOS 7 Client
Server1	10.220.0.30	root	P@ssword	Mitaka
Dashboard	10.220.0.30	Student	P@ssword	Web Page Login credentials

Note: In this OpenStack VMware Workstation environment, the two VMs can be reverted back to their base snapshot at any time. This means that you can explore or experiment without fear of permanently damaging the OpenStack environment. If you make a mistake that you can’t recover from, then stop and revert the appropriate VM to the base snapshot and everything will be back to a known good starting point.



Run the lab setup script

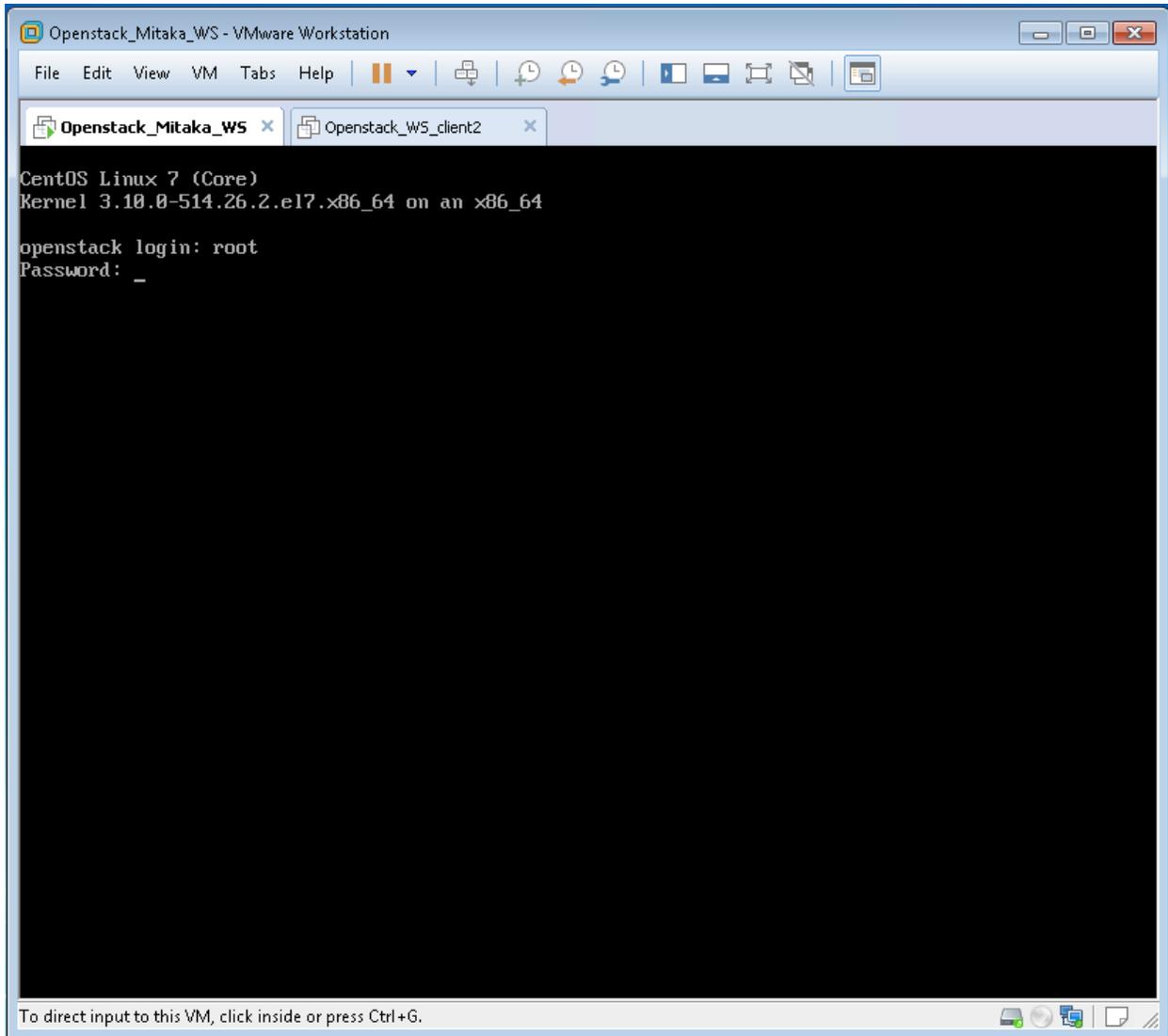


1. Log in as **root** with the Password: **P@ssword**

Note: The password is NOT visible as you type it



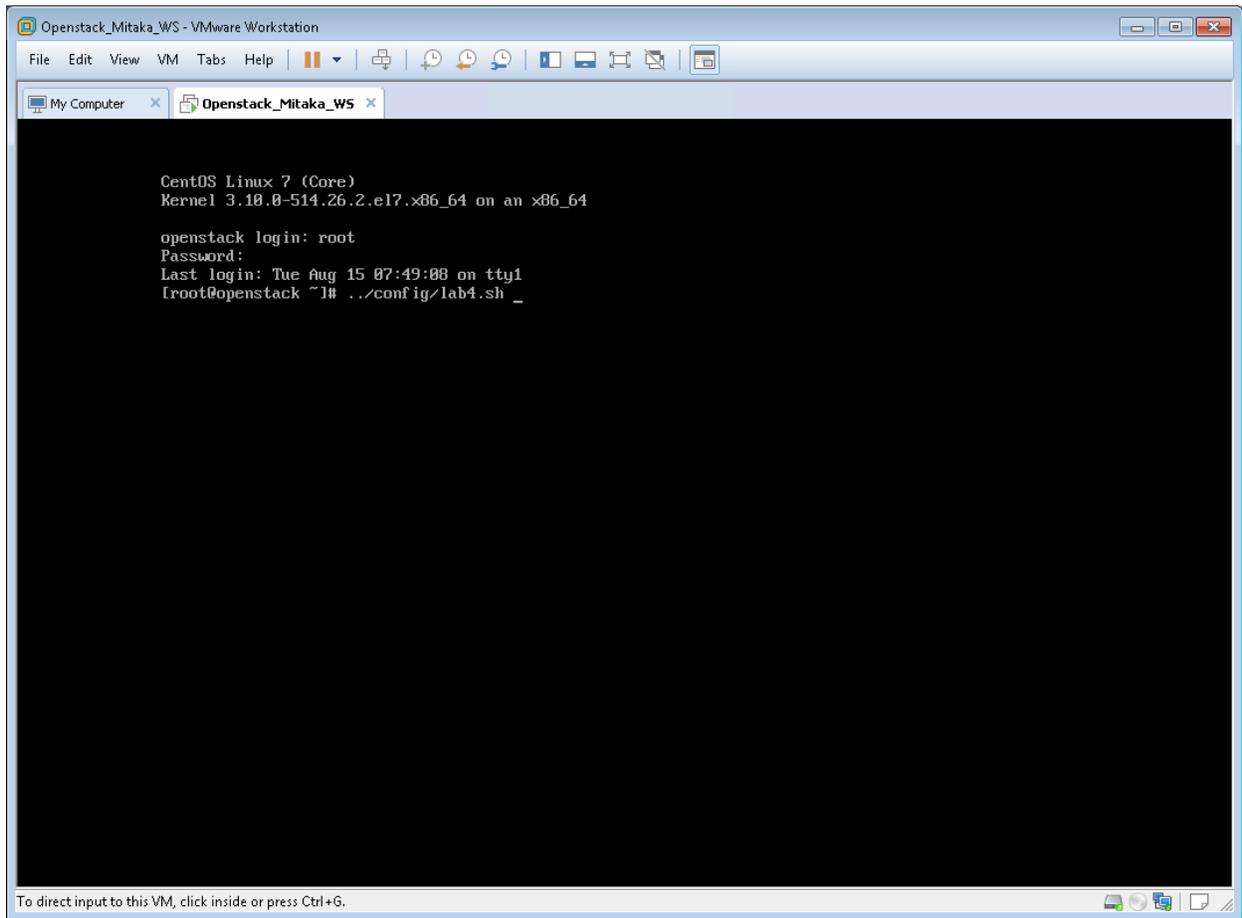
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



2. After successfully logging in as root, you should see this screen. Continue to the next page



Module 4: Create a Key Pair and Launch a CentOS 7 Instance



The screenshot shows a VMware Workstation window titled "Openstack_Mitaka_WS - VMware Workstation". The window contains a terminal window titled "Openstack_Mitaka_WS" with the following text:

```
CentOS Linux 7 (Core)
Kernel 3.10.0-514.26.2.el7.x86_64 on an x86_64

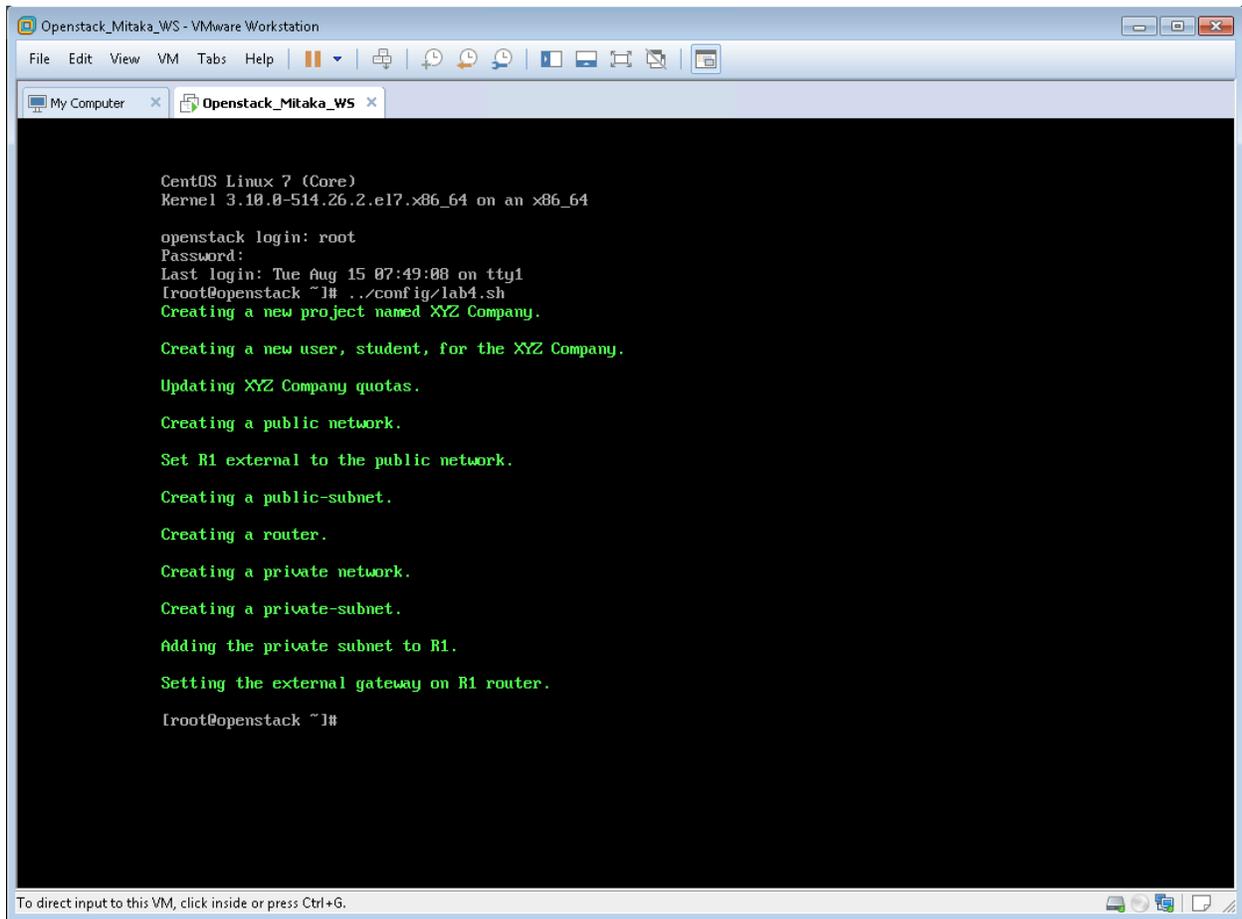
openstack login: root
Password:
Last login: Tue Aug 15 07:49:08 on tty1
[root@openstack ~]# ../config/lab4.sh _
```

At the bottom of the terminal window, there is a status bar that reads: "To direct input to this VM, click inside or press Ctrl+G."

3. Type the command; `../config/lab4.sh` and **press Enter** as shown in the screen capture above to run the Module 4 setup script



Module 4: Create a Key Pair and Launch a CentOS 7 Instance



```
CentOS Linux 7 (Core)
Kernel 3.10.0-514.26.2.el7.x86_64 on an x86_64

openstack login: root
Password:
Last login: Tue Aug 15 07:49:08 on tty1
[root@openstack ~]# ./config/lab4.sh
Creating a new project named XYZ Company.

Creating a new user, student, for the XYZ Company.

Updating XYZ Company quotas.

Creating a public network.

Set R1 external to the public network.

Creating a public-subnet.

Creating a router.

Creating a private network.

Creating a private-subnet.

Adding the private subnet to R1.

Setting the external gateway on R1 router.

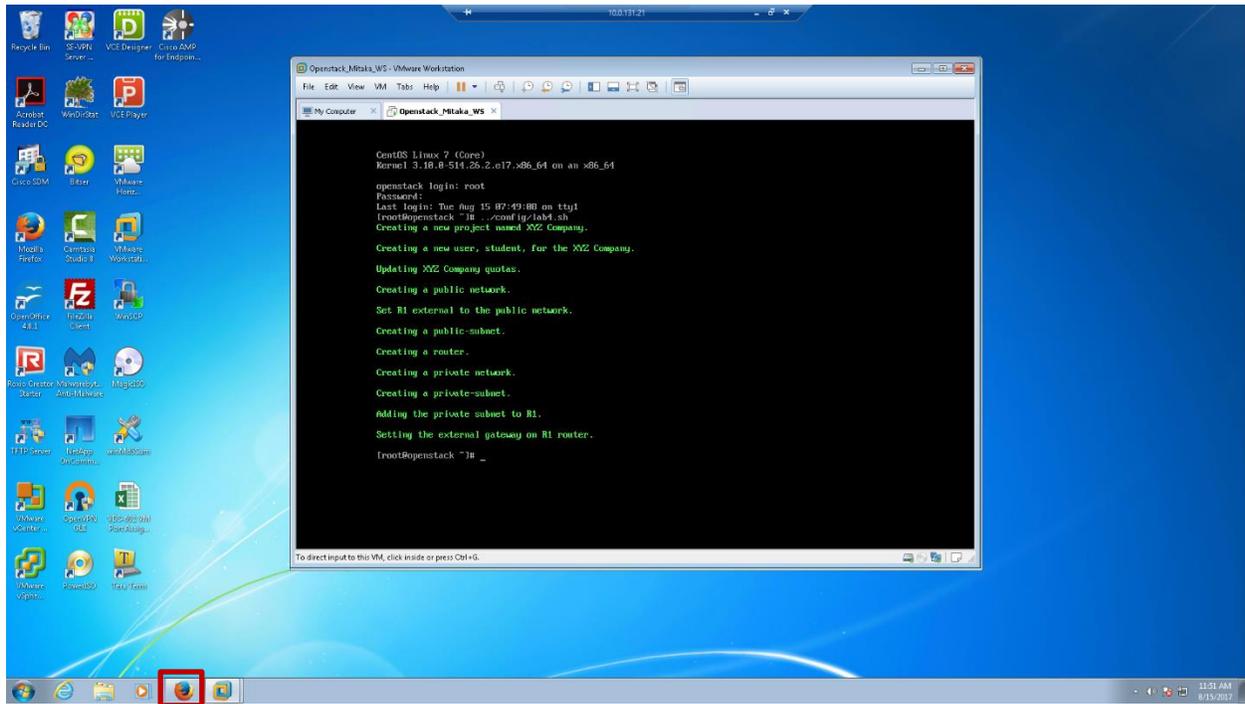
[root@openstack ~]#
```

4. After the setup command completes, you can **minimize VMware Workstation**.

Note: The script is complete when the **[root@openstack ~]#** prompt returns



Access the OpenStack Dashboard

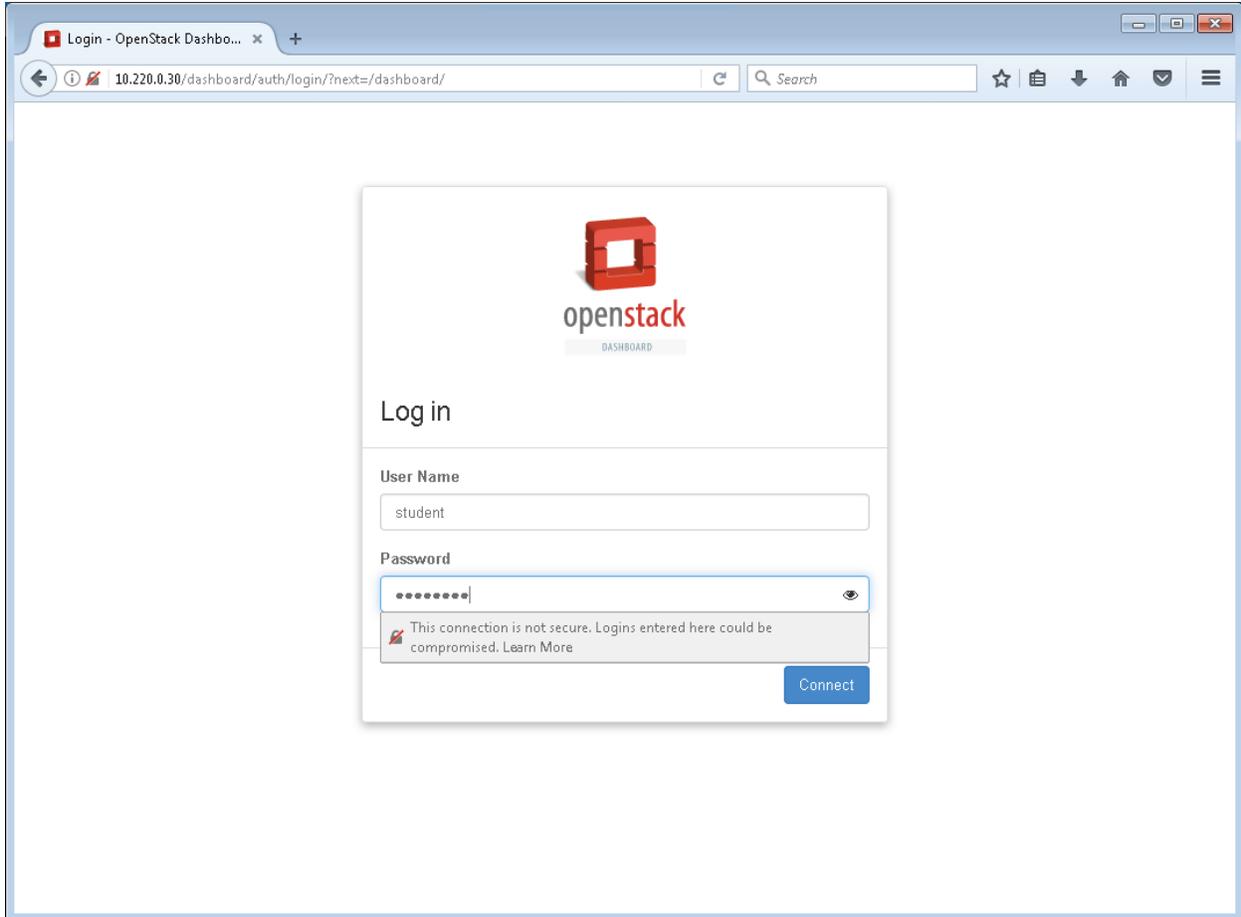


1. On your host, open an internet browser

Note: Openstack_WS_client2 is a CentOS 7 desktop VM that you can use as an alternate to the host to accomplish all of the labs, unless specifically noted in the instructions.



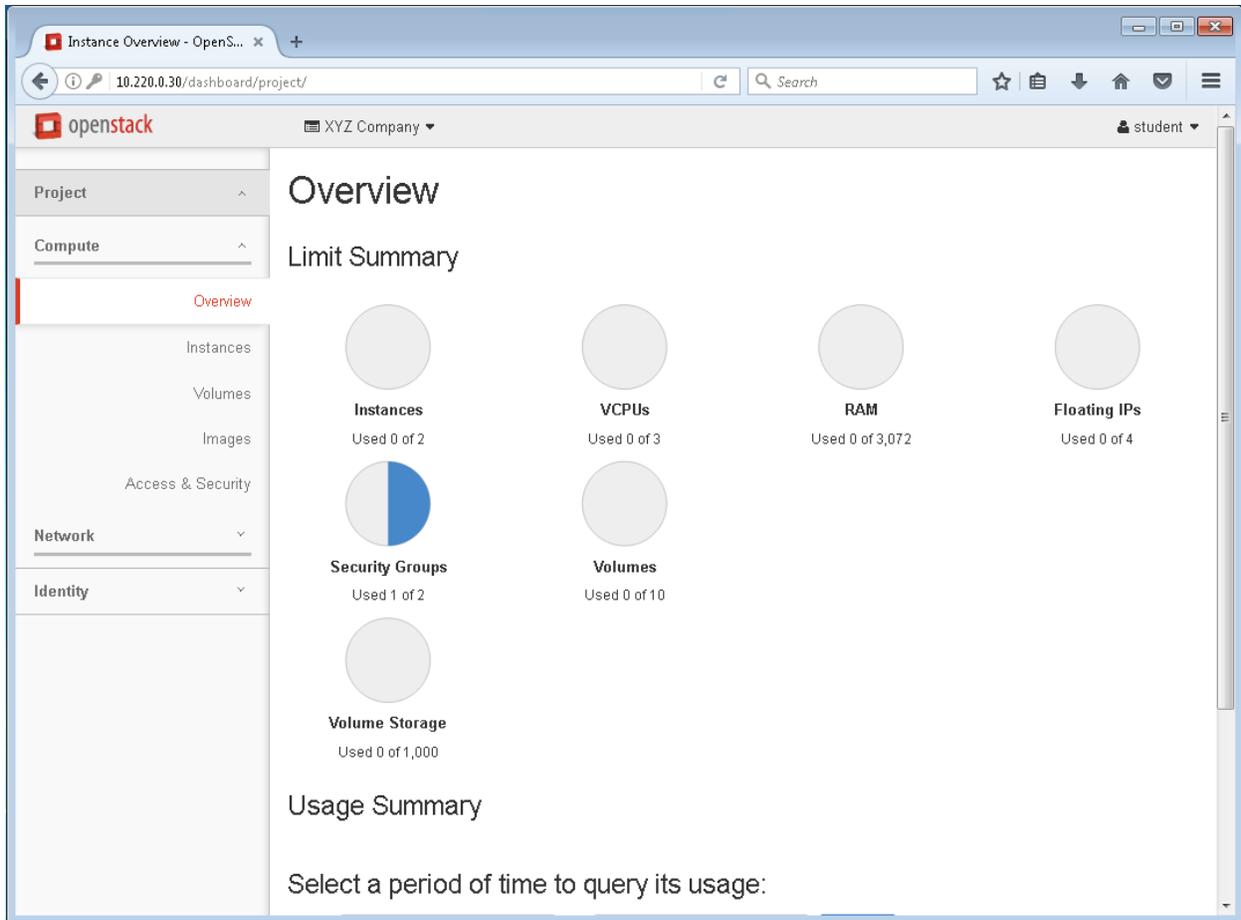
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



2. **Navigate to <http://10.220.0.30/dashboard>. Login to the OpenStack Dashboard with the username **student** and **P@ssword** and press **enter** or **click Connect****

Note: User Name entries are not case sensitive, passwords are.

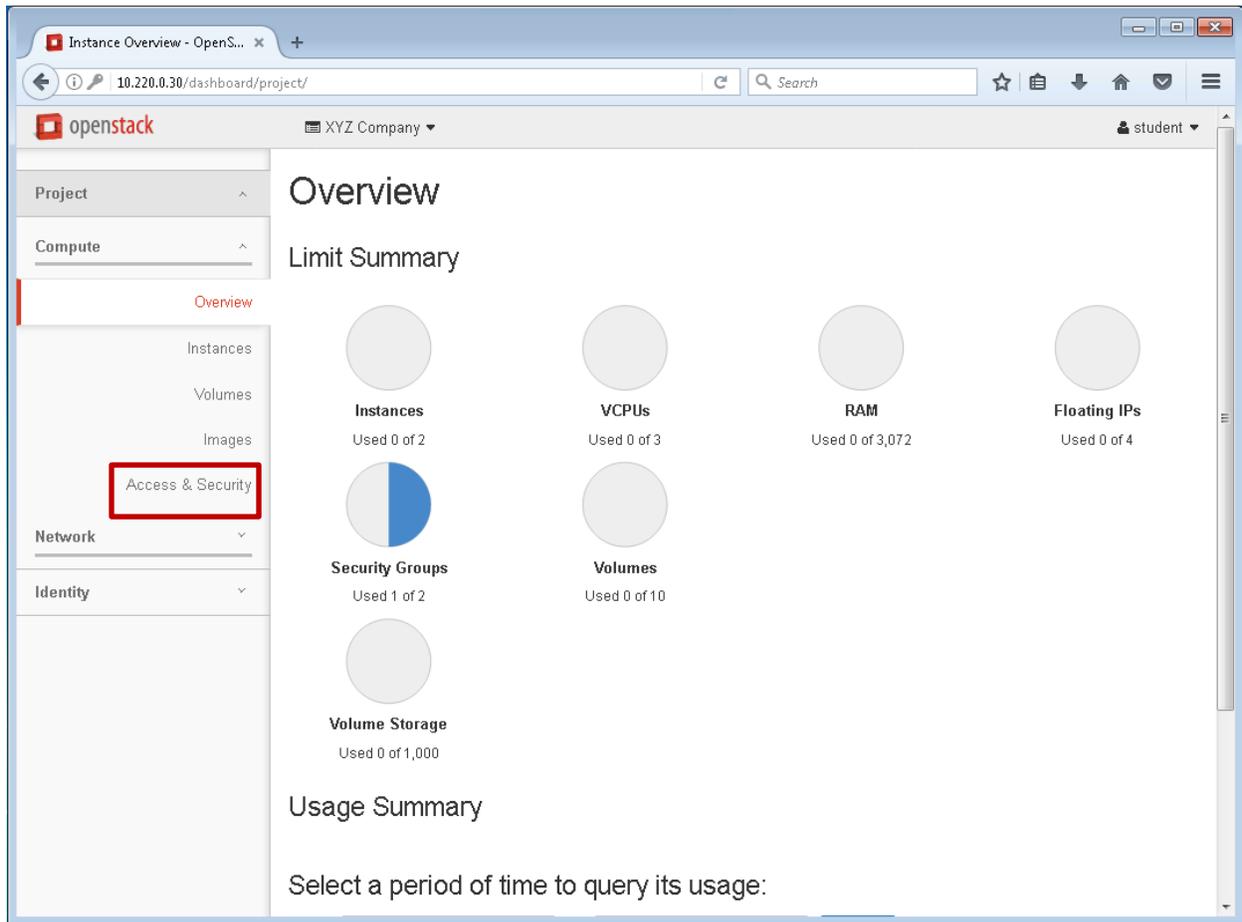
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



5. This is the homepage of the OpenStack Dashboard as seen from the XYZ Companies' customer perspective.



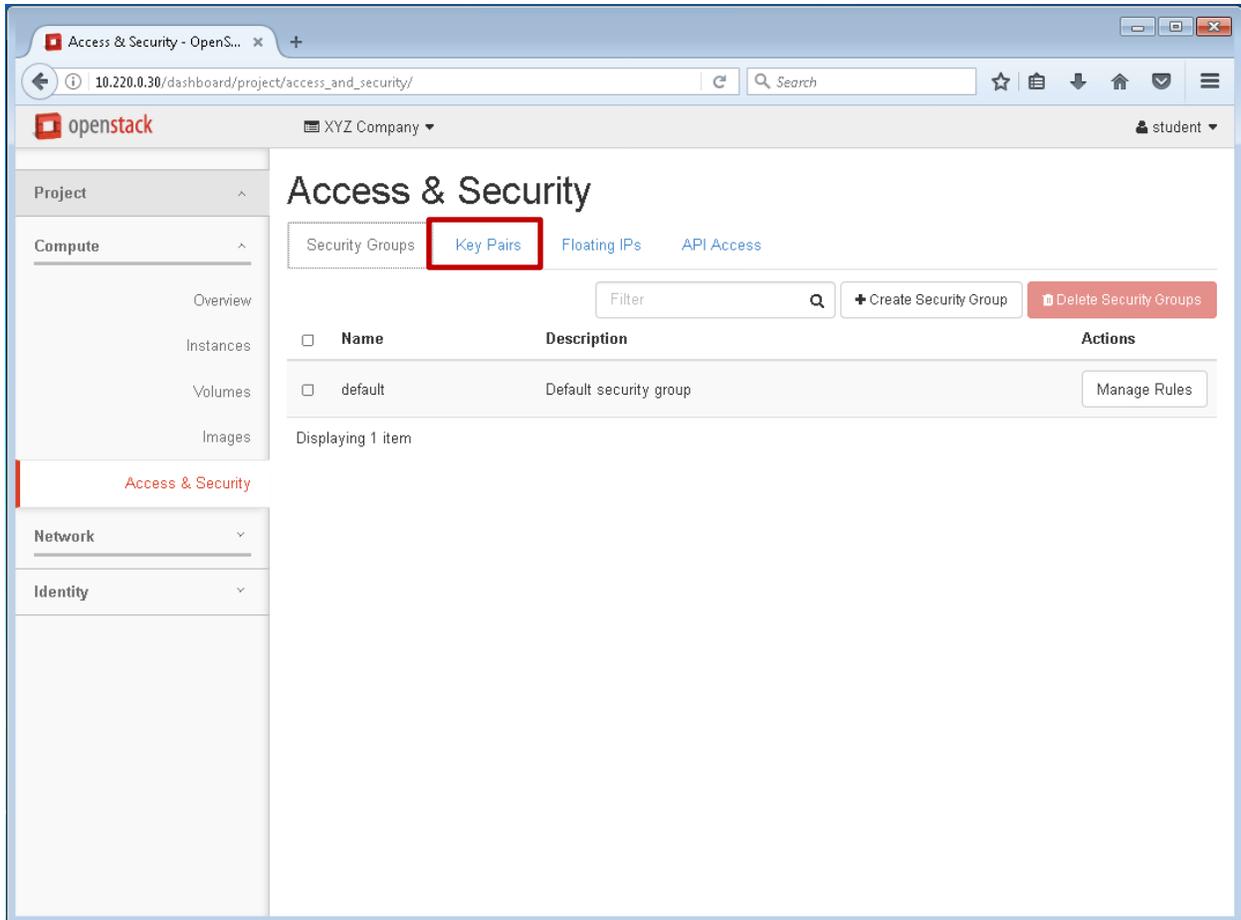
Lab 9: Create an OpenStack Key Pair



1. From the Compute tab, **Click on Access & Security**



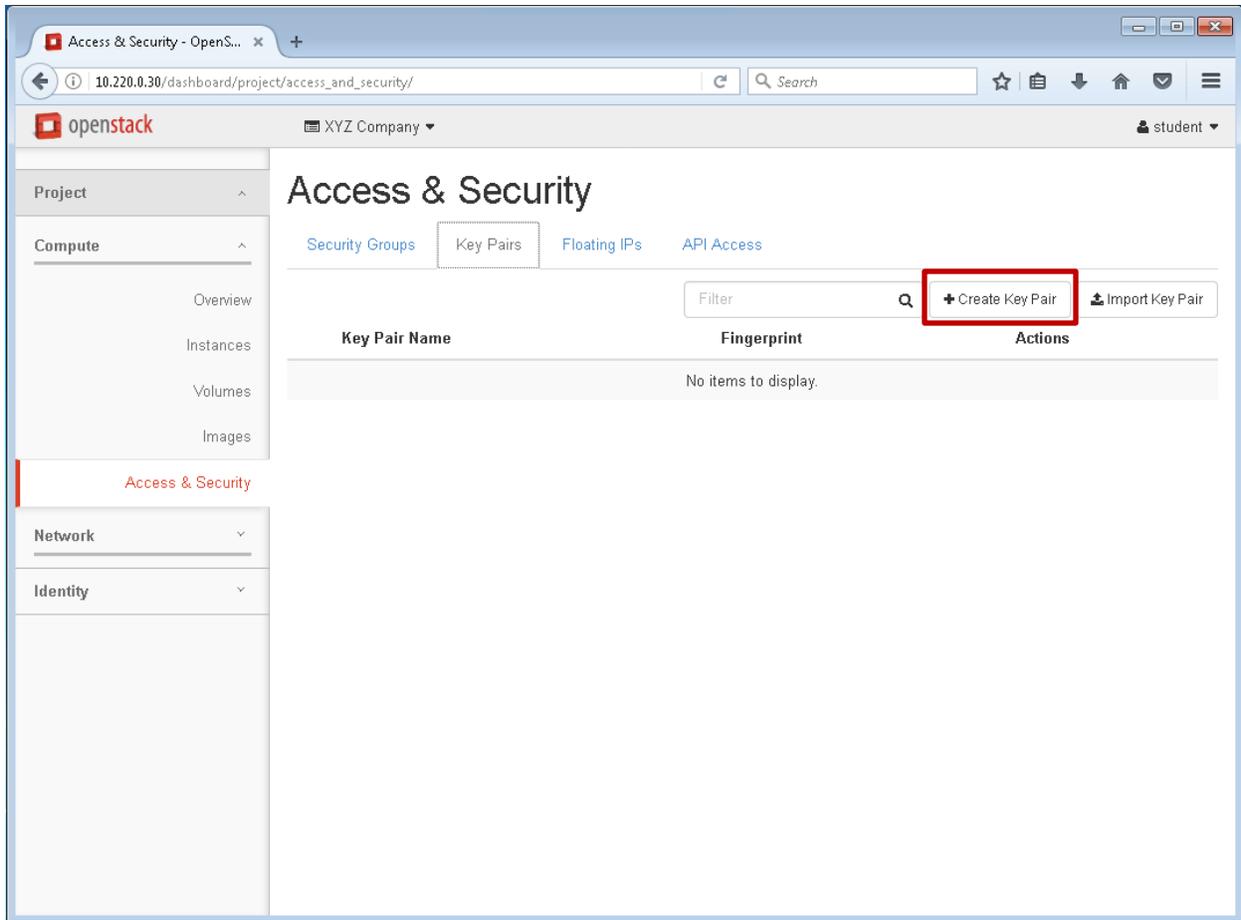
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



2. Click on Key Pairs

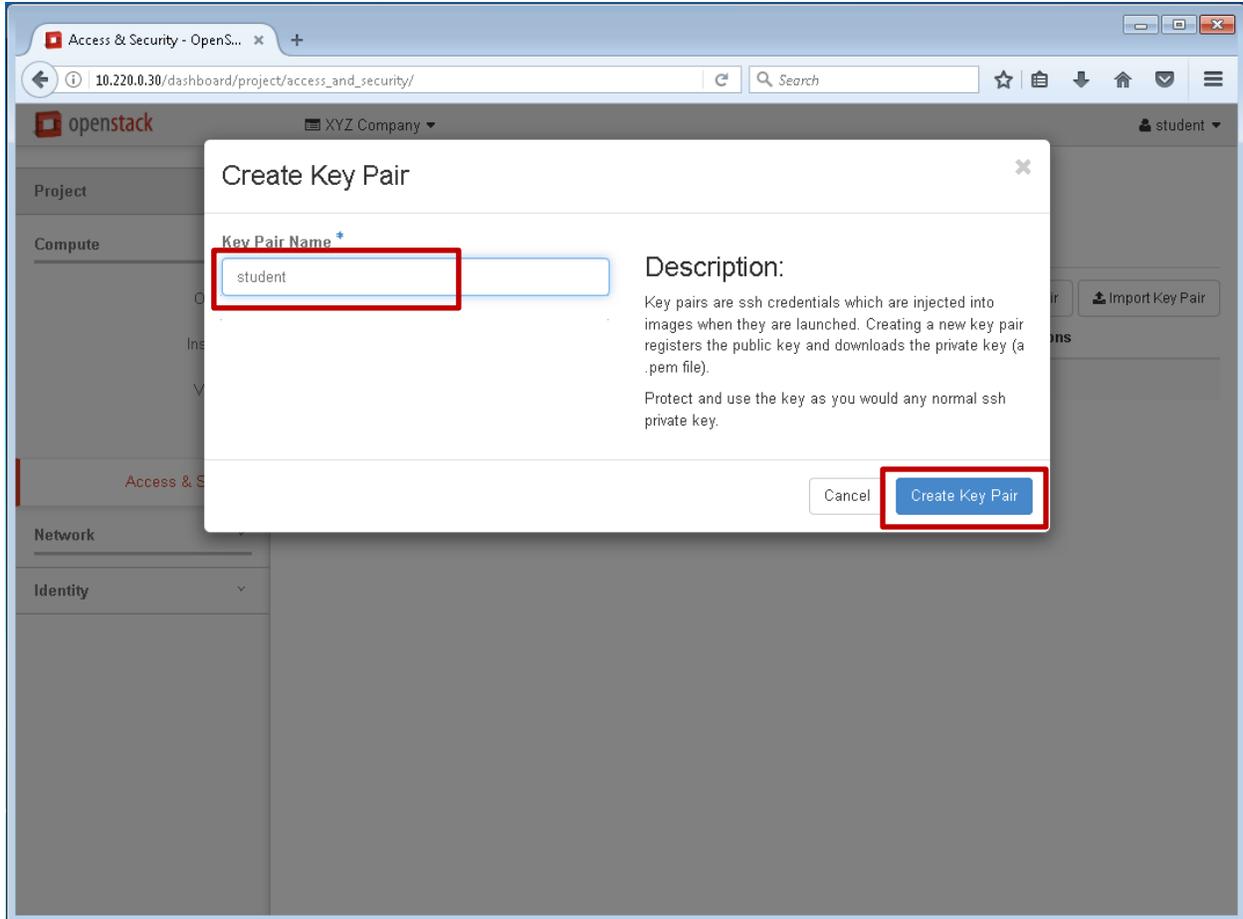


Module 4: Create a Key Pair and Launch a CentOS 7 Instance



3. Click on Create Key Pair

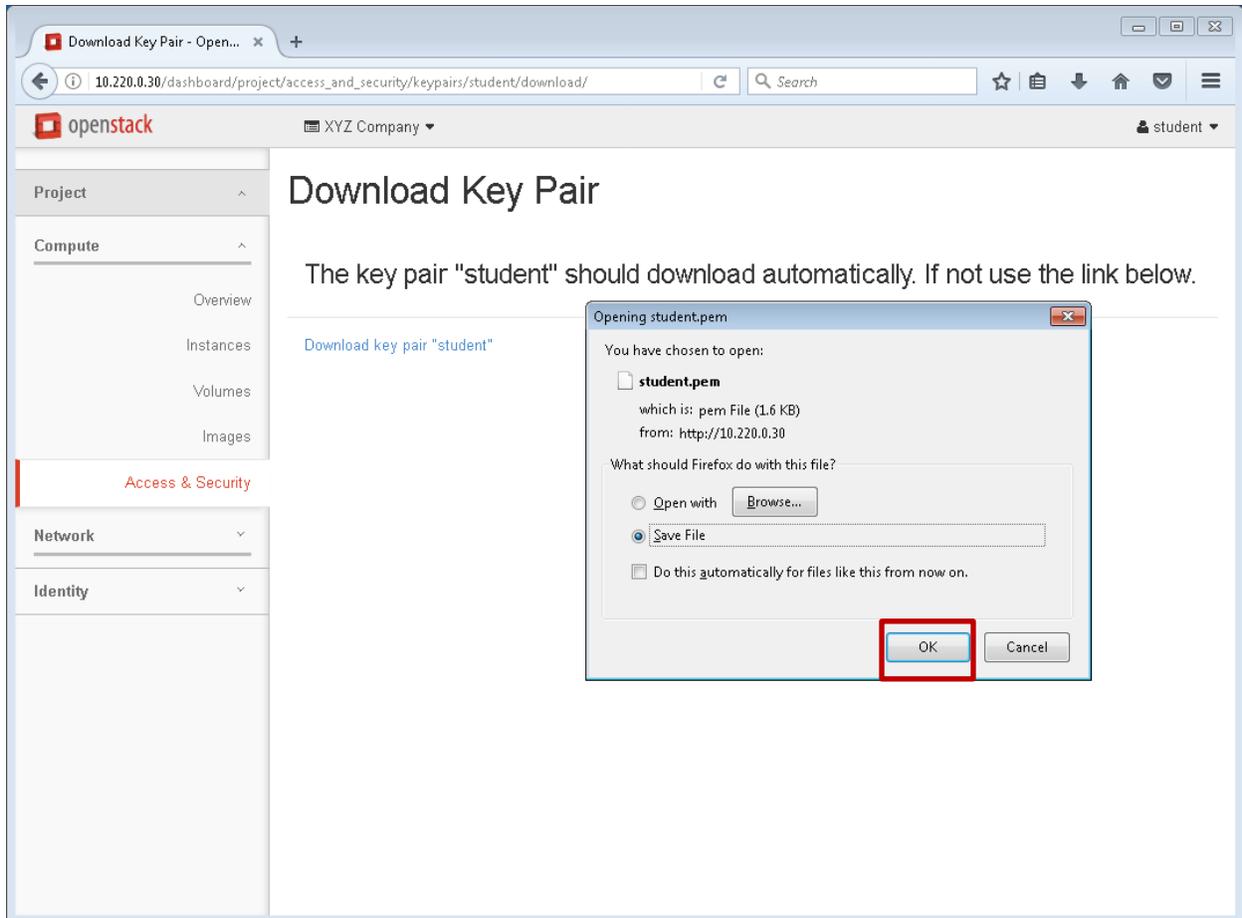
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



4. Enter "student" in the **Key Pair Name** block. Click **Create Key Pair**.

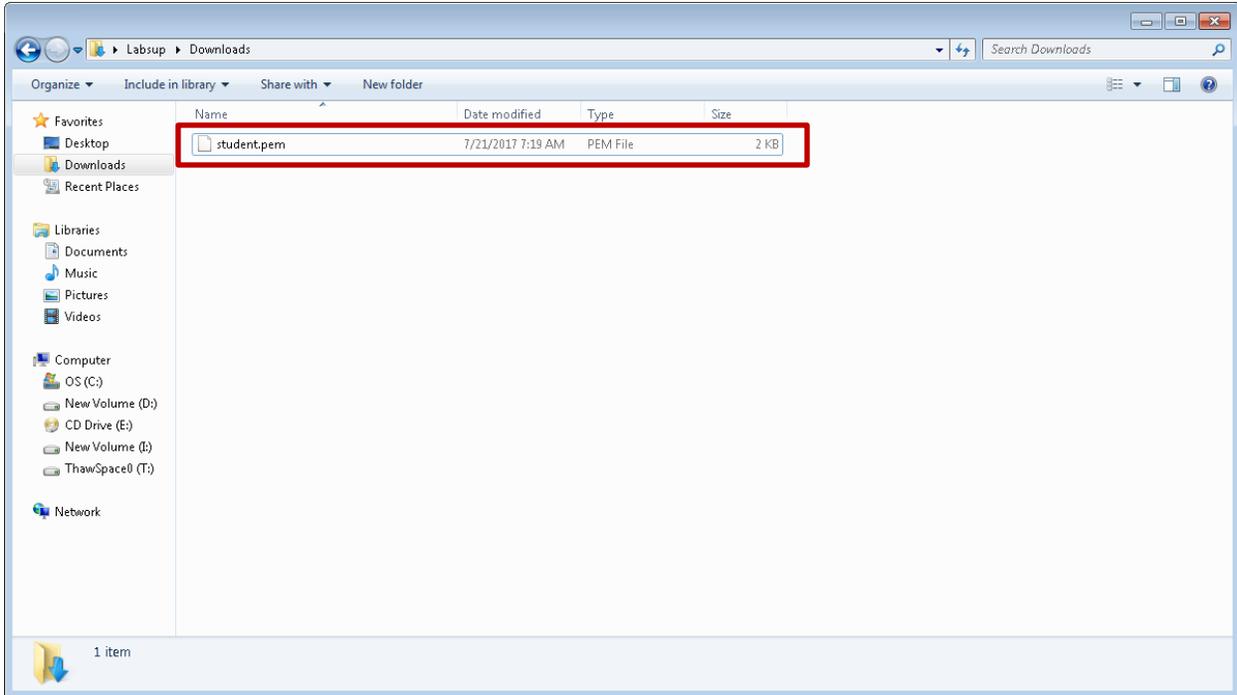


Module 4: Create a Key Pair and Launch a CentOS 7 Instance



5. You should see a windows popup asking if you want to open or save the student.pem (1.64KB) from: http://10.220.0.30? **Click on Ok**

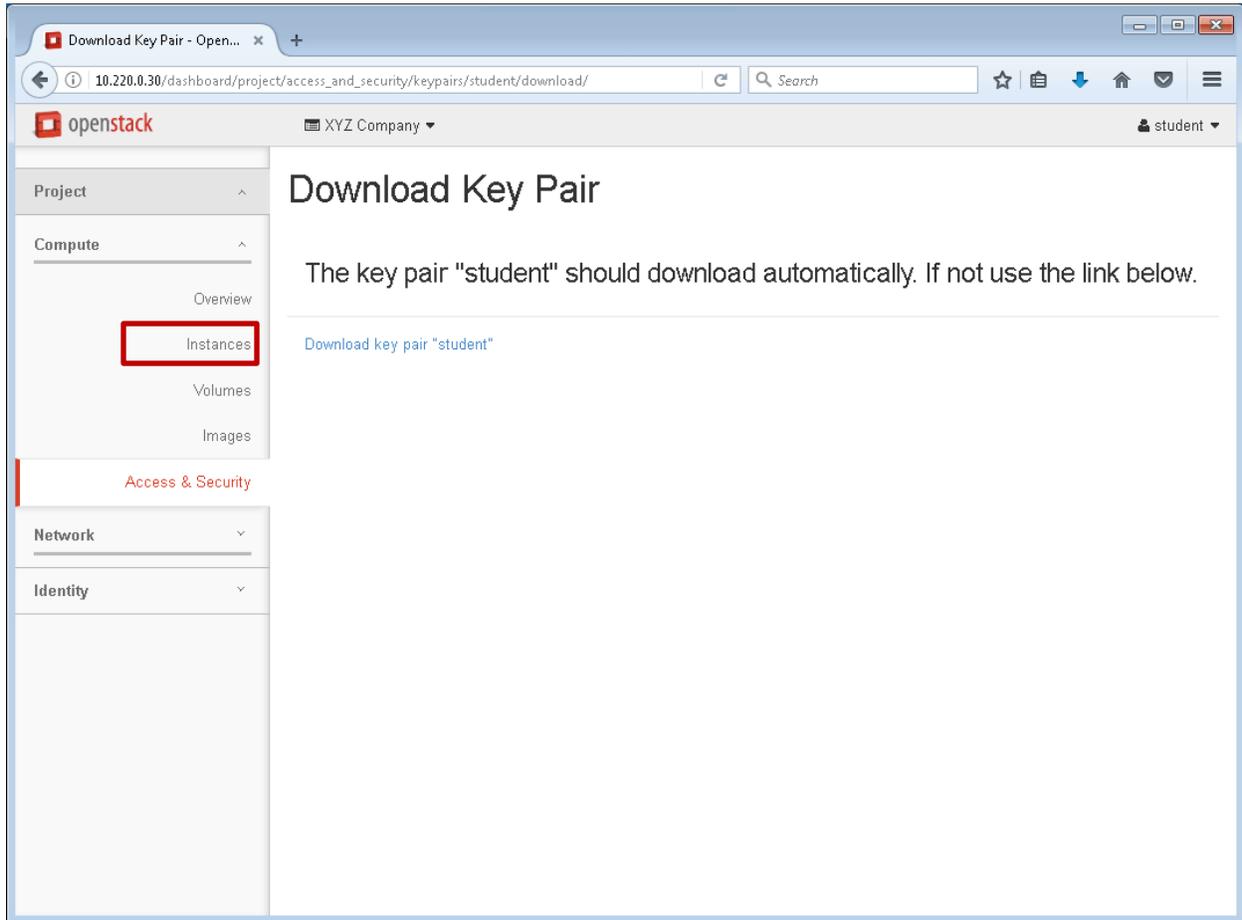
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



6. Check the **Downloads folder** on the **host PC** for the **student.pem file**

Continue to Lab 10

Lab 10: Launch a CentOS 7 Instance



1. Click on the **Instances** tab.

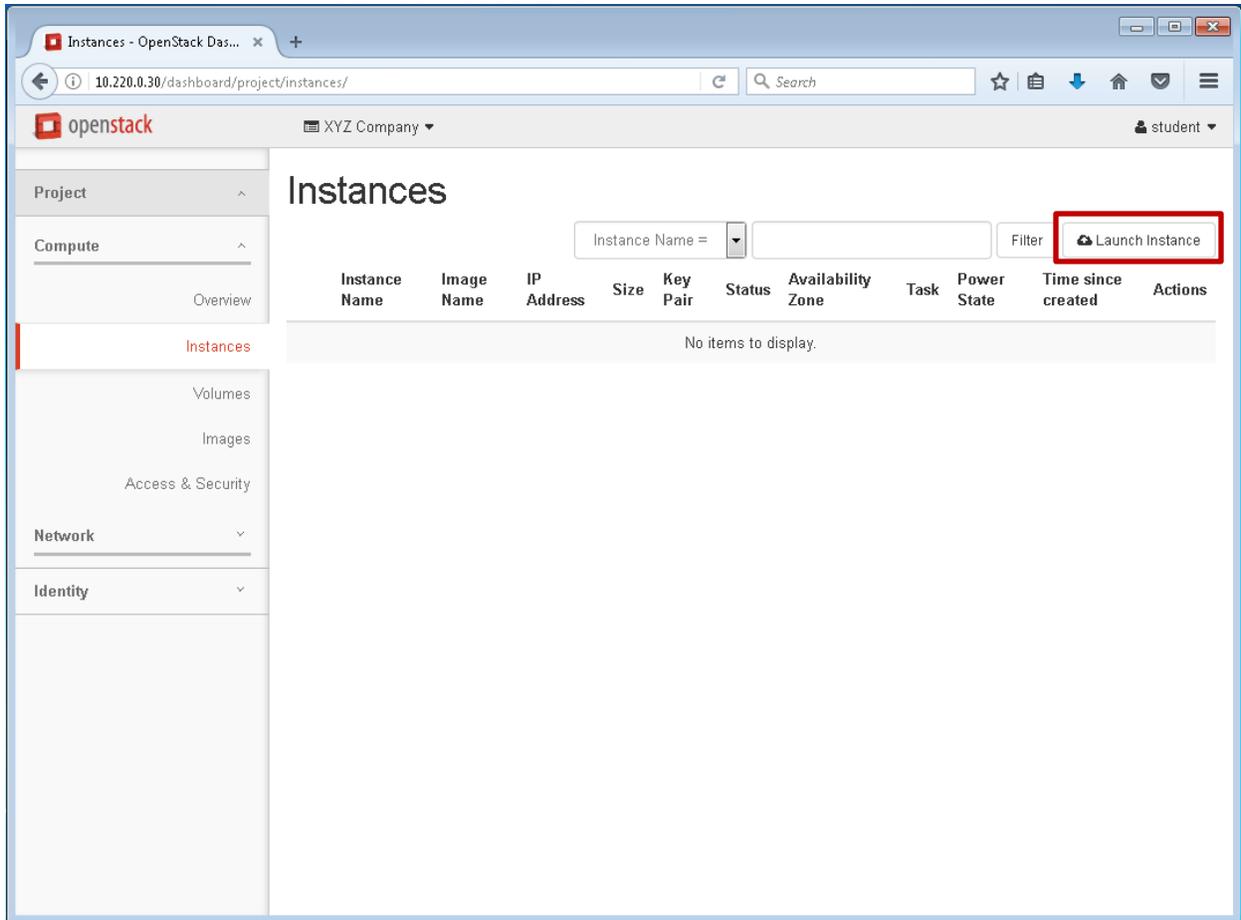
Note: Although the customer has only one Project, **XYZ Company**, you should always ensure that you have selected the correct project, before you start making any changes.

Virtual Machine Image

A virtual machine image is a single file which contains a virtual disk that has a bootable operating system installed on it. The image files come in different formats, for example: AKI/AMI/ARI, ISO, OVF, QCOW2, RAW, VDI, VHD, VHDX, and VMDK to name a few. Most of these disk formats are specific to an entities such as Amazon, Microsoft, VMware, Virtual Box, and open source Linux Hypervisors.



Module 4: Create a Key Pair and Launch a CentOS 7 Instance



2. Click on Launch Instance

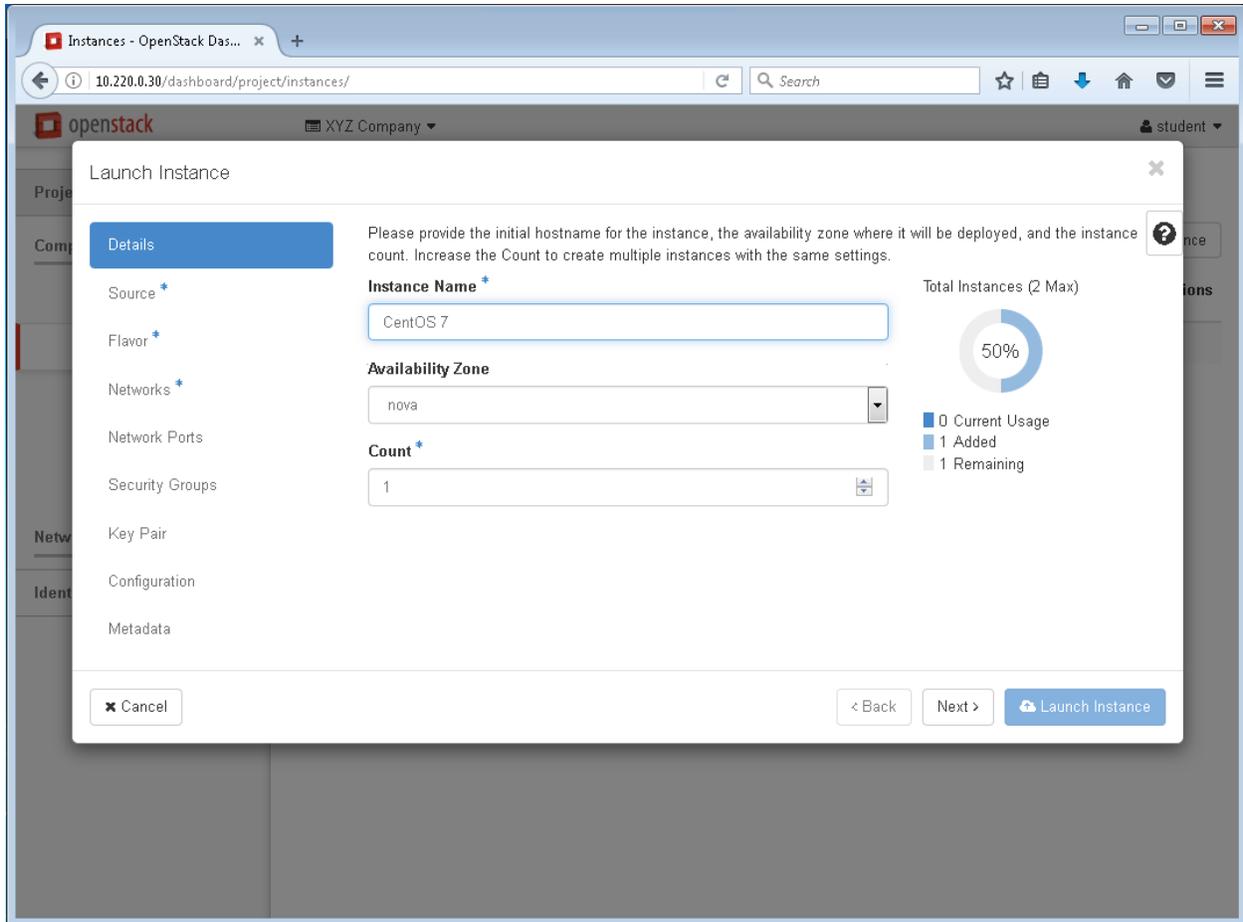
Virtual Machine Image

Virtual machine images are available from numerous sources for download, which include open source, commercial vendors, or can even be created by the user.

For example: Open Source CentOS 7 images can be downloaded from the following URL:
<http://cloud.centos.org/centos/7/images>

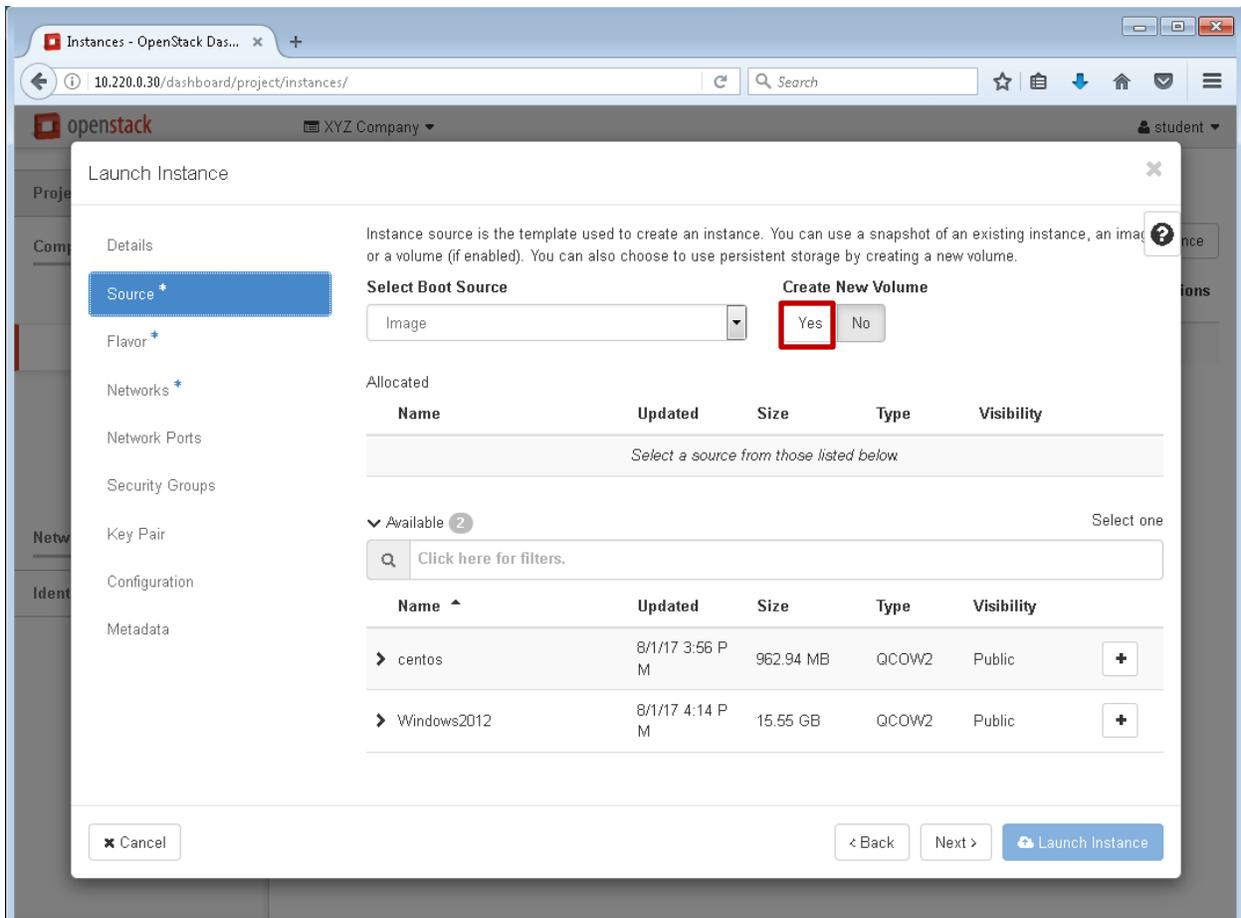
Windows Cloud Images (Evaluation) from the following URL:
<https://cloudbase.it/windows-cloud-images/>

Module 4: Create a Key Pair and Launch a CentOS 7 Instance



3. The **Launch Instance** wizard should open, **Enter CentOS 7** the Instance Name block and keep the **default Availability Zone** and **Count**. **Click on the Source** tab.

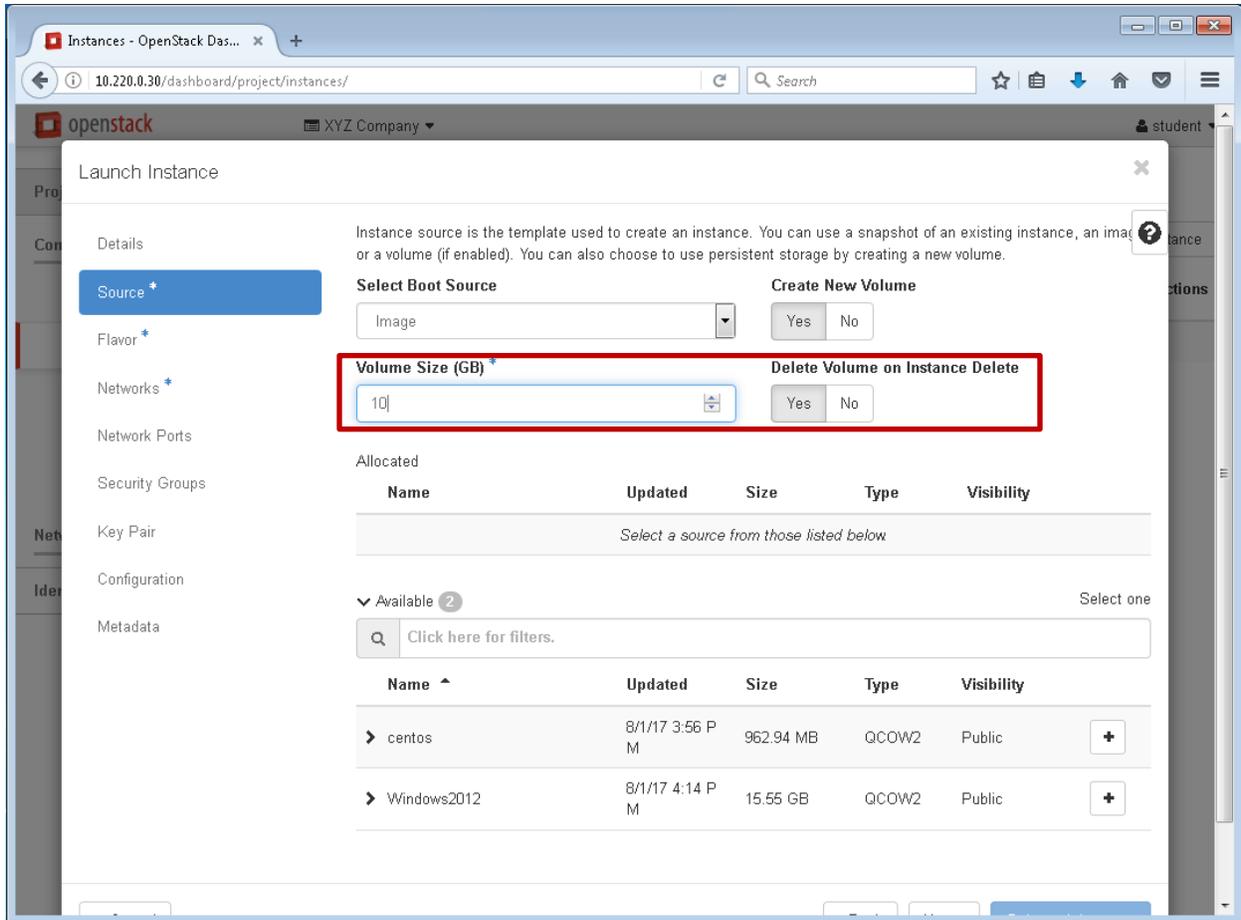
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



4. **Accept the default Image for the Select Boot Source and click on Yes to Create New Volume**

Note: The instance can launch successfully without selecting Create New Volume, but using the create new volume feature allows for automatically deleting the volume with the instance whereas launching an instance without selecting create new volume requires that the administrator manually recover the disk space, which is not shown in this series of labs.

Module 4: Create a Key Pair and Launch a CentOS 7 Instance

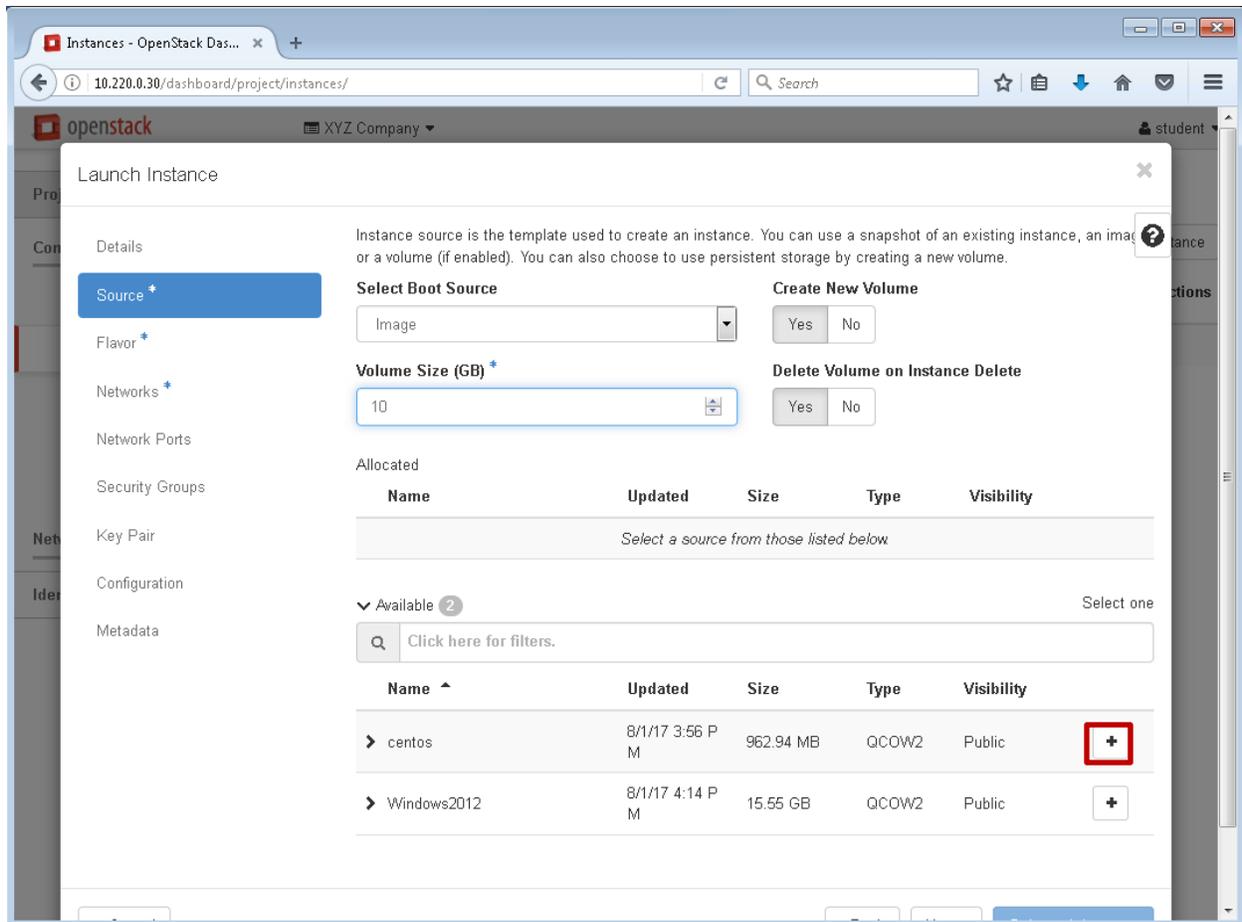


The screenshot shows the 'Launch Instance' dialog in the OpenStack dashboard. The 'Source' tab is selected. The 'Volume Size (GB)' field is highlighted with a red box and contains the value '10'. The 'Delete Volume on Instance Delete' checkbox is checked. Below the form, there are sections for 'Allocated' and 'Available' volumes.

Name	Updated	Size	Type	Visibility
Select a source from those listed below				
Available 2				
Click here for filters.				
Name	Updated	Size	Type	Visibility
> centos	8/1/17 3:56 PM	962.94 MB	QCOW2	Public
> Windows2012	8/1/17 4:14 PM	15.55 GB	QCOW2	Public

5. **Change the default Volume Size (GB) from 1 to 10 and Click on Yes to Delete Volume on Instance Delete**

Module 4: Create a Key Pair and Launch a CentOS 7 Instance



6. Click on the + icon to select the centos image

Note: You can see information about when the image was updated, its size, type and visibility. CLOUDTech set the Visibility to Public as contracted for by XYZ Company.

Module 4: Create a Key Pair and Launch a CentOS 7 Instance

The screenshot shows the 'Launch Instance' dialog in the OpenStack dashboard. The 'Flavor' tab is selected and highlighted with a red box. The dialog contains the following sections:

- Details:** A sidebar menu with 'Source' selected and 'Flavor' highlighted.
- Instance source:** A text box explaining that the instance source is the template used to create an instance, with options for snapshots, images, or volumes.
- Select Boot Source:** A dropdown menu currently set to 'Image'.
- Create New Volume:** Two toggle buttons labeled 'Yes' and 'No'.
- Volume Size (GB):** A text input field containing the value '10'.
- Delete Volume on Instance Delete:** Two toggle buttons labeled 'Yes' and 'No'.
- Allocated:** A table listing allocated flavors.
- Available:** A section with a search filter and a table listing available flavors.

Name	Updated	Size	Type	Visibility	
centos	8/1/17 3:56 P M	962.94 MB	QCOW2	Public	-

Name	Updated	Size	Type	Visibility	
Windows2012	8/1/17 4:14 P M	15.55 GB	QCOW2	Public	+

At the bottom of the dialog, there are three buttons: 'Cancel', '< Back', and 'Next >', and a blue 'Launch Instance' button.

7. Click on the Flavor tab.



Module 4: Create a Key Pair and Launch a CentOS 7 Instance

Launch Instance

Flavors manage the sizing for the compute, memory and storage capacity of the instance.

Allocated

Name	VCPUS	RAM	Total Disk	Public
Select an item from Available items below				

Available 5

Select one

Click here for filters.

Name	VCPUS	RAM	Total Disk	Public	
> m1.tiny	1	512 MB	1 GB	Yes	+
> m1.small	1	1 GB	10 GB	Yes	+
> m1.medium	2	3 GB	20 GB	Yes	+
> m1.large	4	8 GB	80 GB	Yes	+
> m1.xlarge	8	16 GB	160 GB	Yes	+

Cancel < Back Next > Launch Instance

8. Flavors manage the sizing for the compute, memory and storage capacity of the instance. In this case they range from tiny to xlarge. If you hover your mouse over the yellow triangle, you will see that the large and xlarge require more resources than XYZ Company's quotas permit. For this instance, **Click on the + tab** to move the **m1.small** flavor to the Allocated block above, shown on next page.

Flavor

Flavors define the compute (VCPUS), memory (RAM), and storage capacity (Total Disk), resources of the virtual machine, and whether the flavor is public (available to other users). Having a variety of flavors available, allows a more efficient use of the total amount of resources contracted for with CLOUDTech.

Module 4: Create a Key Pair and Launch a CentOS 7 Instance

Launch Instance

Flavors manage the sizing for the compute, memory and storage capacity of the instance.

Allocated

Name	VCPUS	RAM	Total Disk	Public
> m1.small	1	1 GB	10 GB	Yes

Available 4

Select one

Click here for filters.

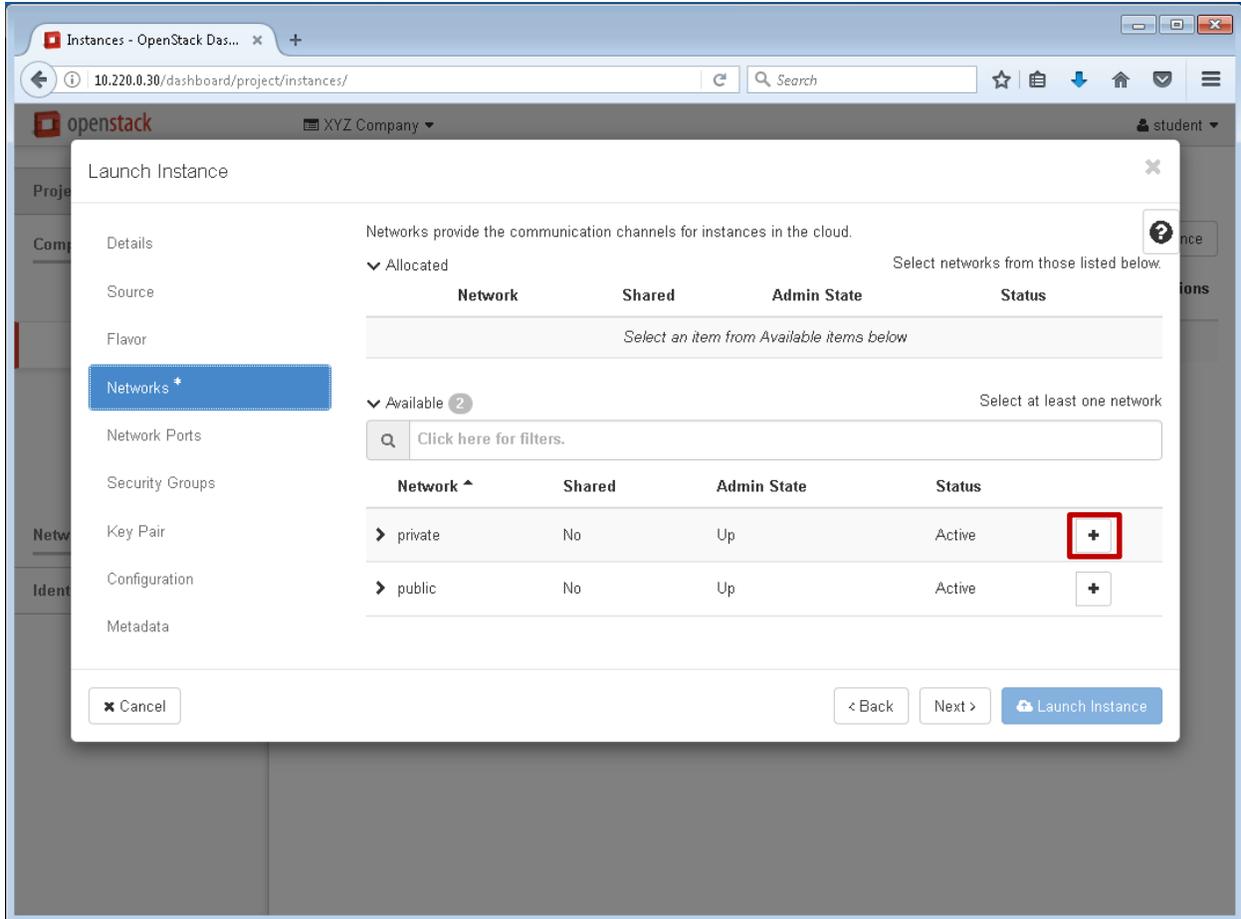
Name	VCPUS	RAM	Total Disk	Public
> m1.tiny	1	512 MB	1 GB	Yes
> m1.medium	2	3 GB	20 GB	Yes
> m1.large	4	8 GB	80 GB	Yes
> m1.xlarge	8	16 GB	160 GB	Yes

Cancel < Back Next > Launch Instance

9. You can see that the m1.small flavor has moved to the **Allocated** block. **Click on the Networks** tab



Module 4: Create a Key Pair and Launch a CentOS 7 Instance



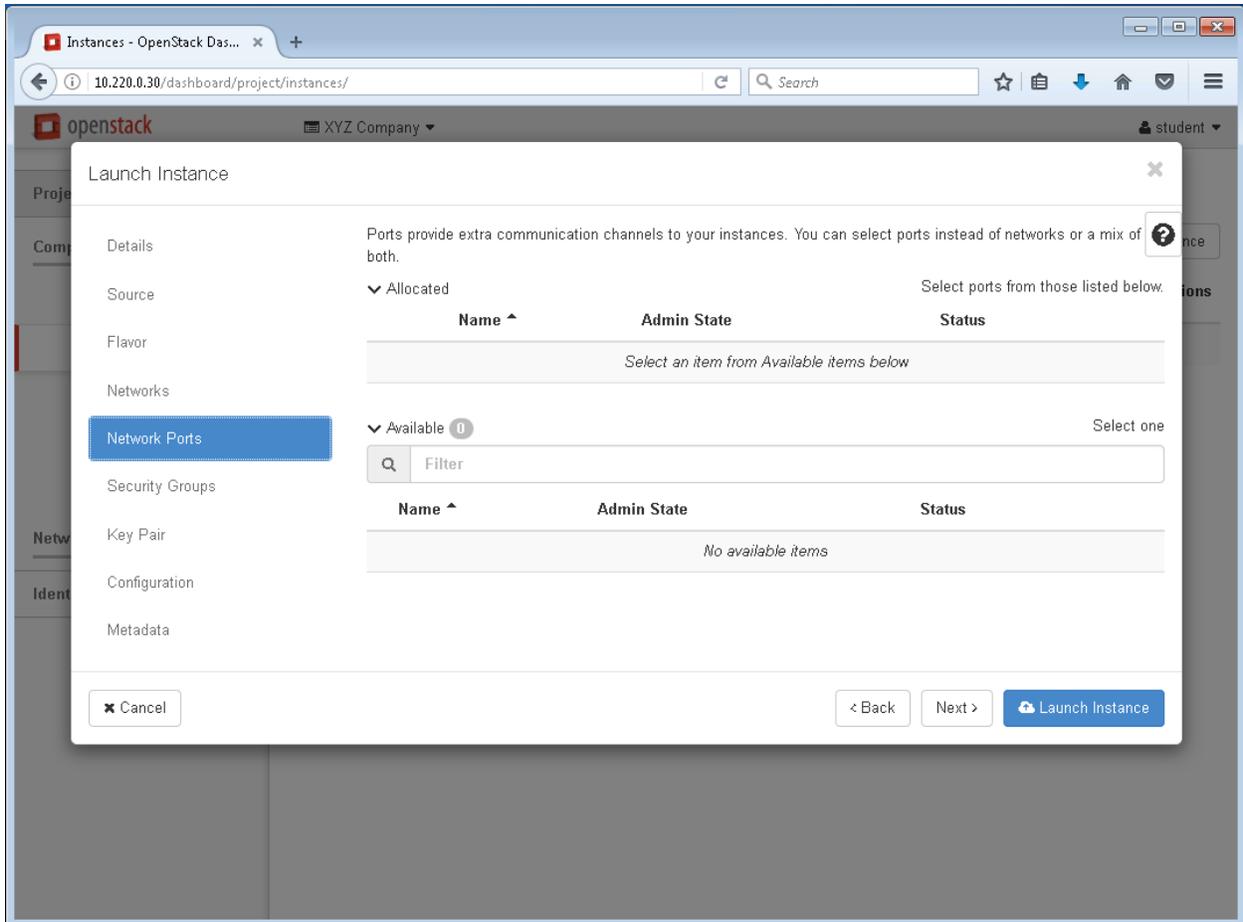
10. Networks provide the communication channels for instances in the cloud. Of the two available networks, **Click** on the + tab to **select** the **private network** and move it up to the Allocated block as shown in the Flavors step. **Click** on **Network Ports**

Note: The public network will be allocated in the next lab.

Networks

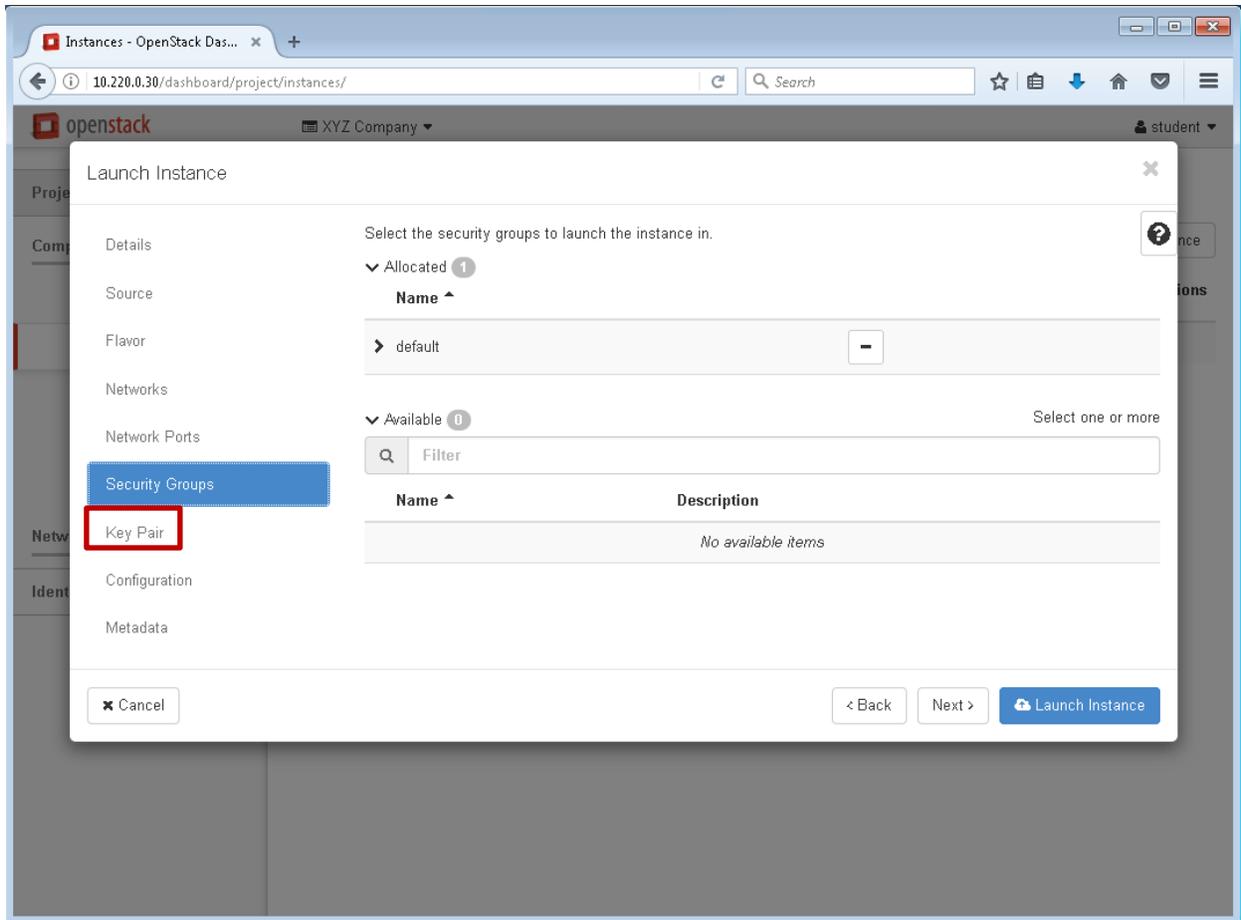
When launching an instance, select the private network to allocate to the instance. The public (external) network will be allocated as a Floating IP address in a separate process during a later lab.

Module 4: Create a Key Pair and Launch a CentOS 7 Instance



11. Port provide extra communication channels to your instances. You can select ports instead of networks or a mix of both. We will not use any Network Ports in this lab. **Click on the Security Groups tab**

Module 4: Create a Key Pair and Launch a CentOS 7 Instance



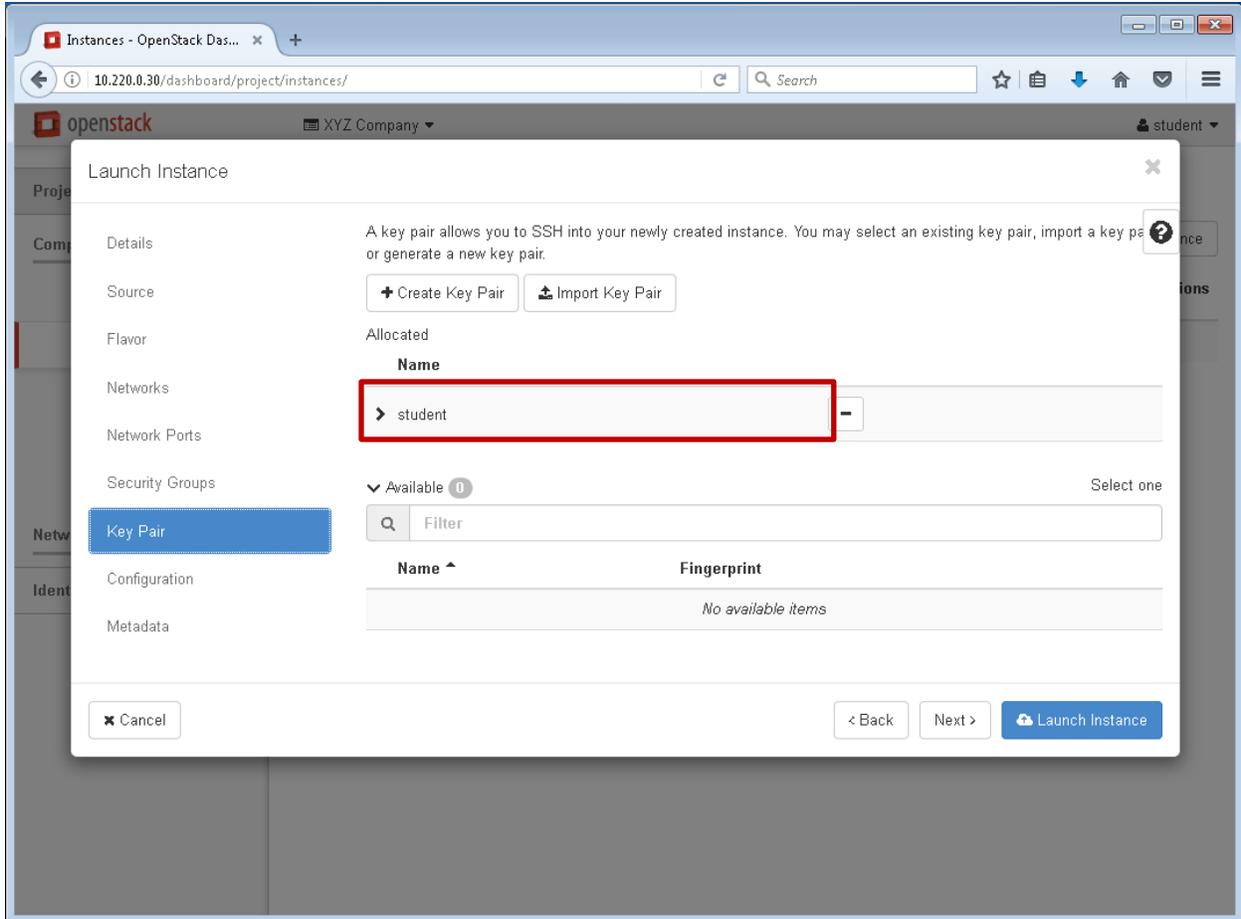
12. The **Default security group** is selected by default. **Click on the Key Pair** tab

Note: For this instance we will use the default security group, in later labs you will create a new Security Group that is dedicated to the XYZ Company project.

Security Groups

A Security Group is a named collection of network access rules that limit network traffic to instances. By default all outbound network traffic from an instance is allowed and all inbound network traffic to an instance is blocked, unless specifically allowed by a rule. You will configure several security group rules in later labs.

Module 4: Create a Key Pair and Launch a CentOS 7 Instance

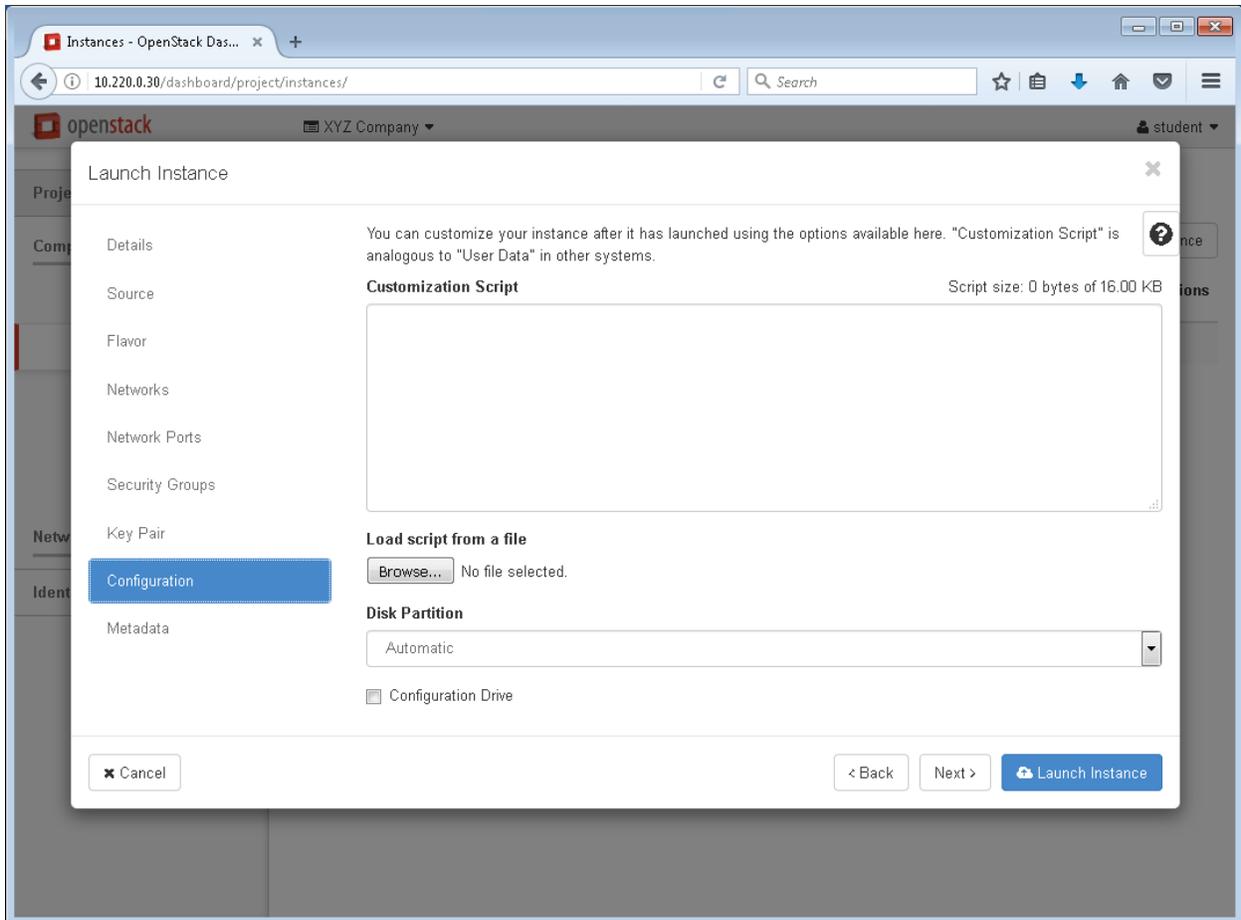


13. A key pair allows you to SSH into your newly created instance. You may select an existing key pair, import a key or generate a new key pair. The student key pair is selected by default. **Click on Configuration**

Key Pair

Key pairs are a more secure method to logon to a system than using the traditional user name and password. Key pairs should be assigned to an individual user and not assigned to a project. Each individual user needs to download or import their specific key pair. Managing key pairs will be addressed in later labs.

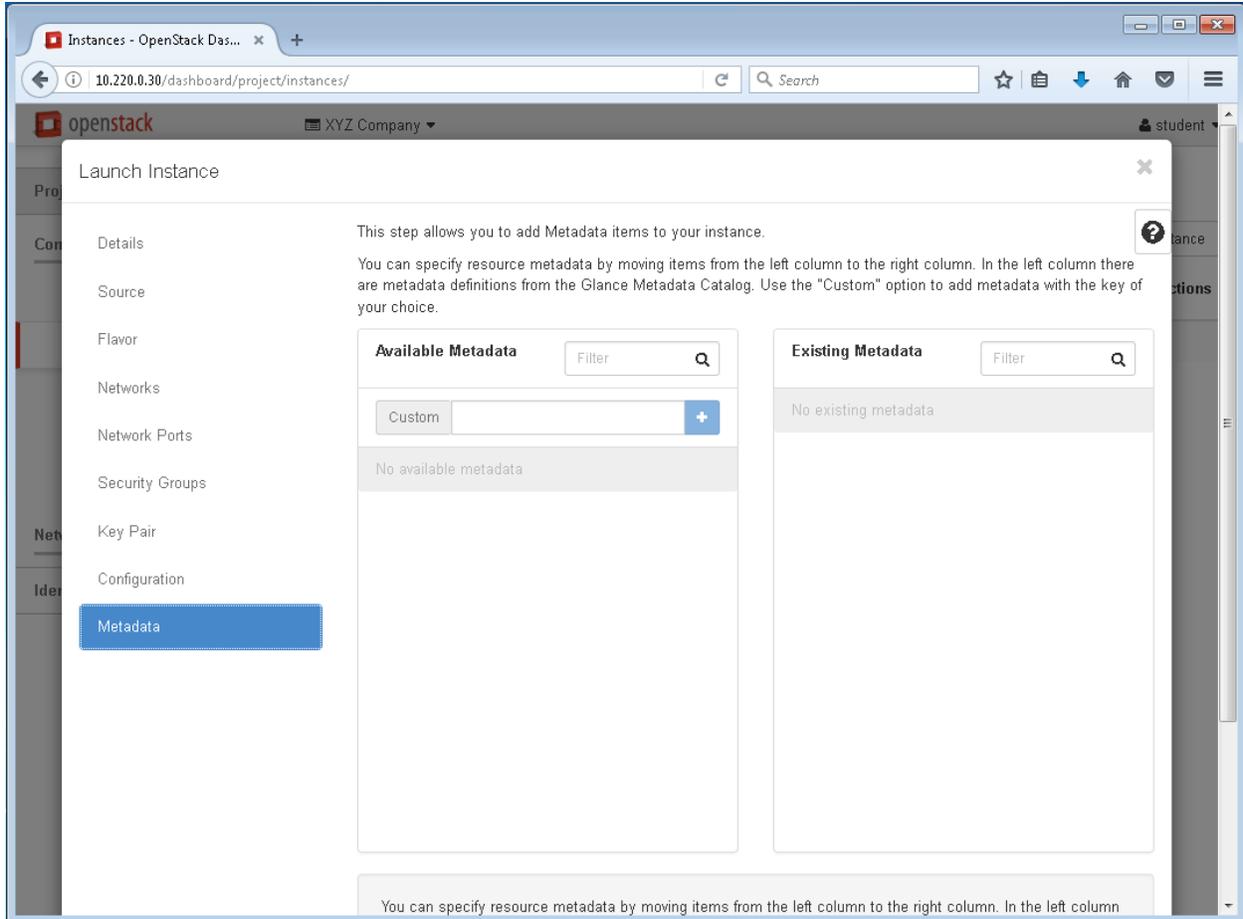
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



14. You can customize your instance as the instance is building using the Customization Script feature. You will use this feature on a later lab. **Click on the Metadata tab**

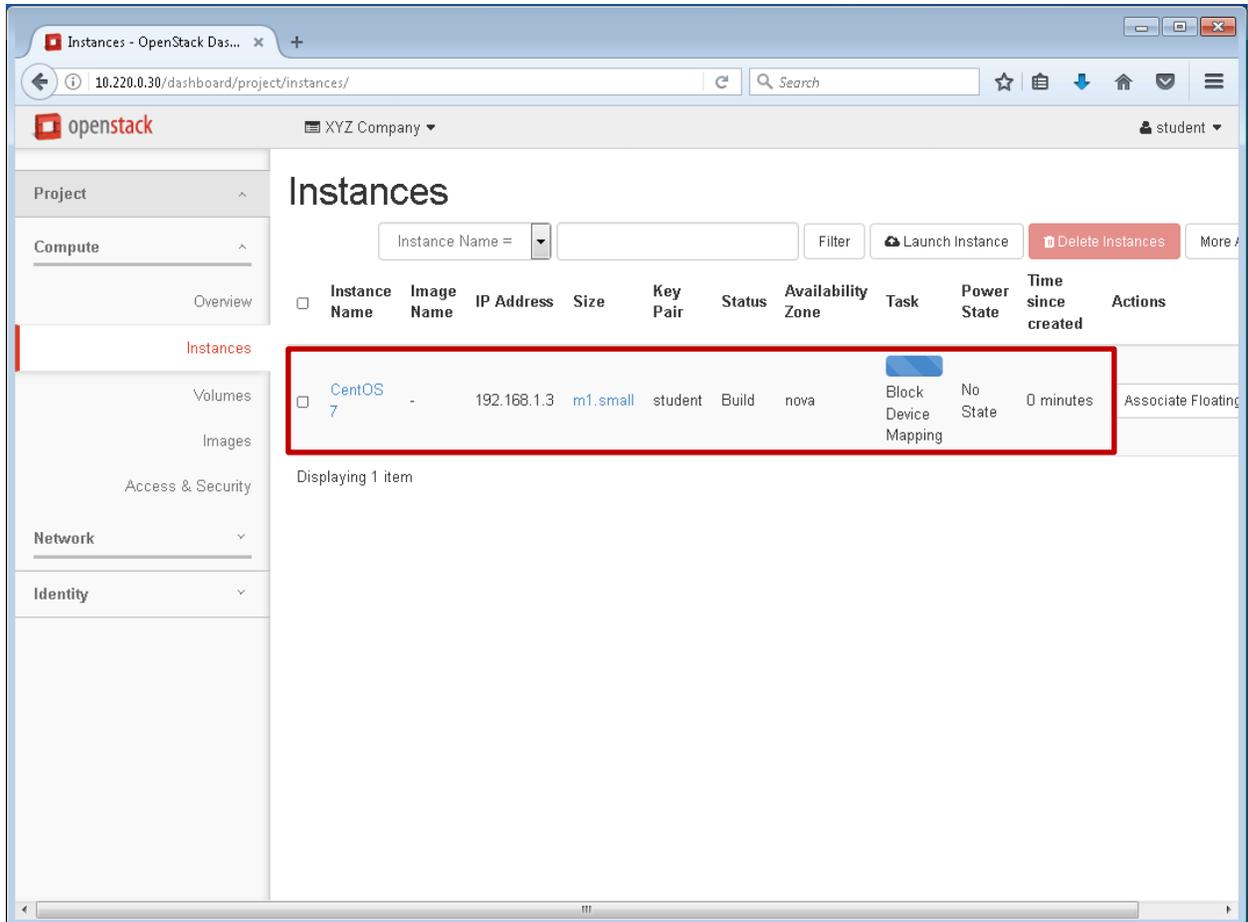
Note: The "Customization Script" is analogous to "User Data" in other systems.

Module 4: Create a Key Pair and Launch a CentOS 7 Instance



12. This step allows you to add Metadata items to your instance. We will not use this feature. **Click on Launch Instance** (not shown, scroll down for Launch Instance button).

Module 4: Create a Key Pair and Launch a CentOS 7 Instance



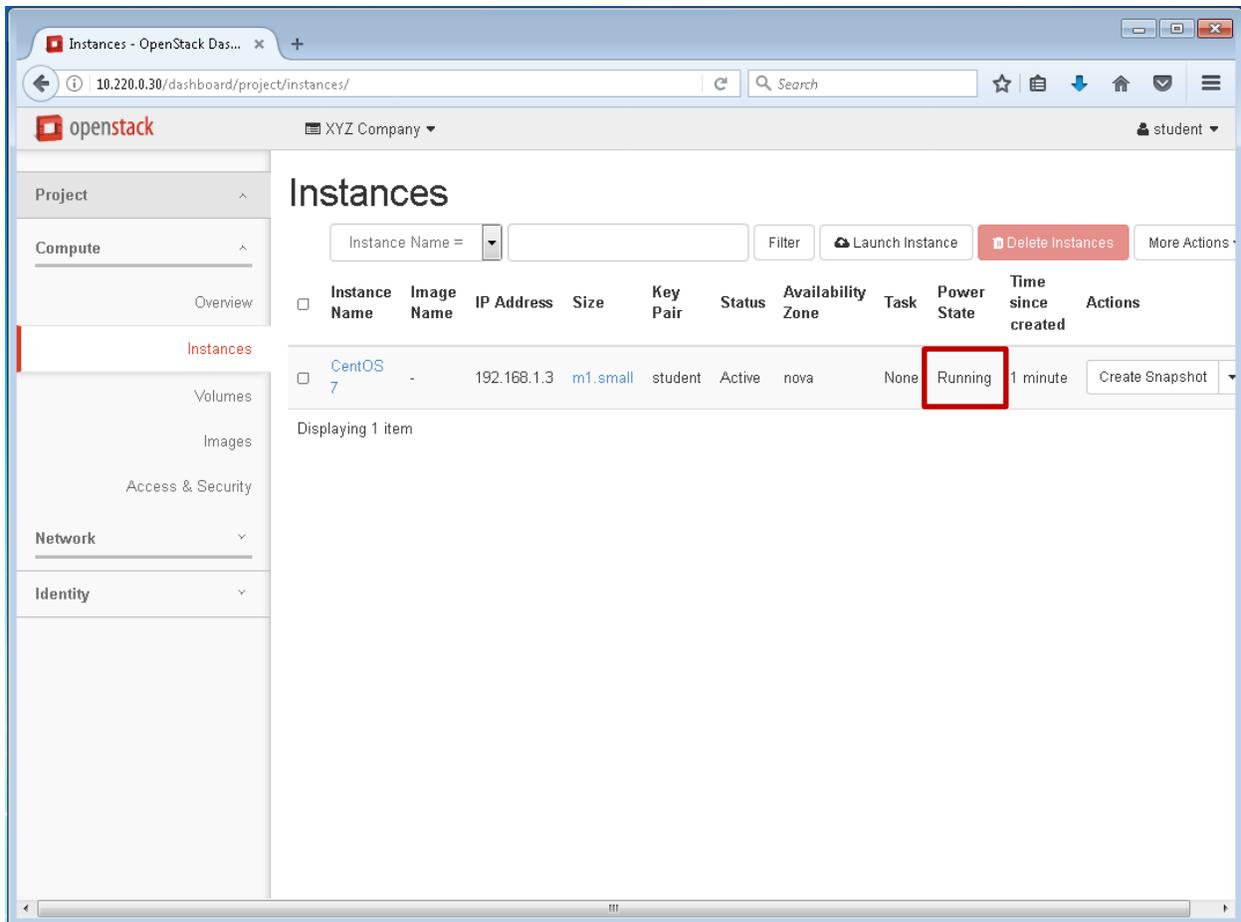
The screenshot shows the OpenStack dashboard interface. The main heading is "Instances". Below the heading, there is a search bar for "Instance Name" and buttons for "Launch Instance" and "Delete Instances". A table lists the instances with the following columns: Instance Name, Image Name, IP Address, Size, Key Pair, Status, Availability Zone, Task, Power State, Time since created, and Actions. One instance is listed: "CentOS 7" with IP address "192.168.1.3", size "m1.small", key pair "student", status "Build", availability zone "nova", task "Block Device Mapping", power state "No State", and time since created "0 minutes". The "Task" and "Power State" cells are highlighted with a red box. Below the table, it says "Displaying 1 item".

Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions
CentOS 7	-	192.168.1.3	m1.small	student	Build	nova	Block Device Mapping	No State	0 minutes	Associate Floating

13. The CentOS 7 Instance will indicate Networking, Block Device Mapping, and Spawning. **Continue** to the **next page**



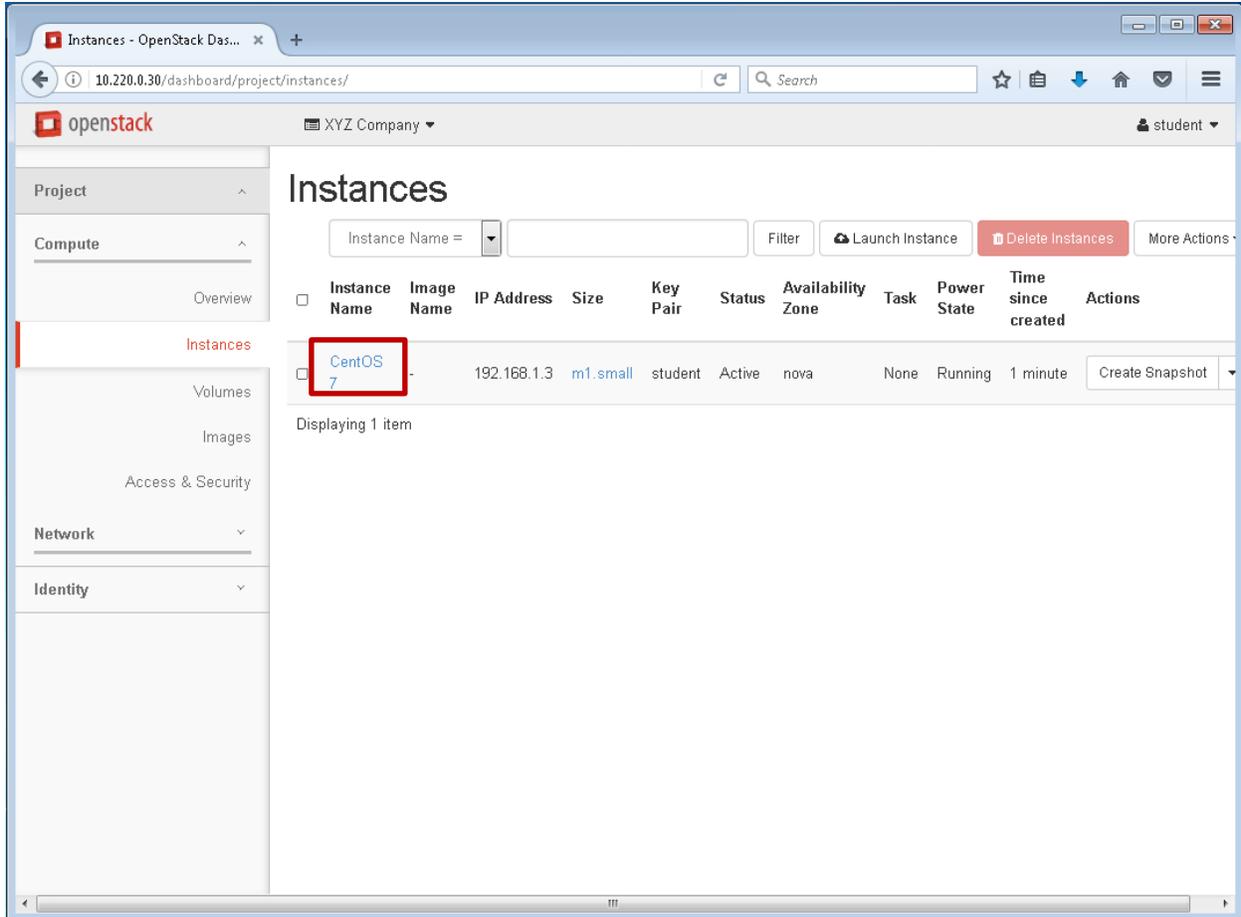
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



14. Once the **Instance** has finished spawning, the **Power State** will change to **Running**.
Continue to the **next page**

Note: You can also see the private IP Address, 192.168.1.3 that was assigned by DHCP, which you configured in the previous lab. Also, the instances status is Active and you can see Time since created.

Module 4: Create a Key Pair and Launch a CentOS 7 Instance



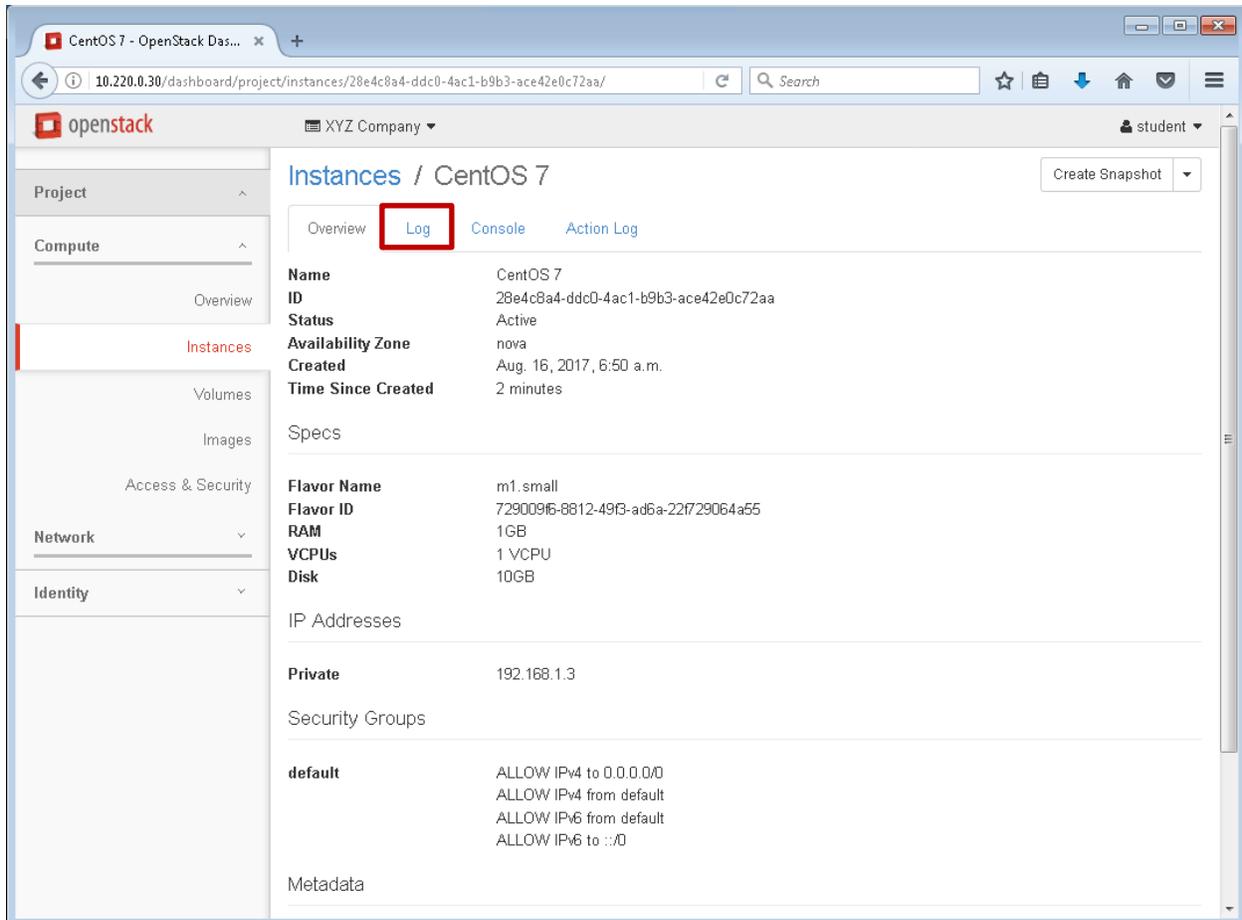
The screenshot shows the OpenStack dashboard interface. The browser address bar displays "10.220.0.30/dashboard/project/instances/". The OpenStack logo and "XYZ Company" are visible at the top. The left sidebar contains navigation options: Project, Compute, Instances (highlighted in red), Volumes, Images, Access & Security, Network, and Identity. The main content area is titled "Instances" and features a search bar for "Instance Name", a "Filter" button, and action buttons for "Launch Instance", "Delete Instances", and "More Actions". A table lists the instances with the following columns: Instance Name, Image Name, IP Address, Size, Key Pair, Status, Availability Zone, Task, Power State, Time since created, and Actions. One instance is listed: "CentOS 7" (highlighted with a red box), with IP Address "192.168.1.3", Size "m1.small", Key Pair "student", Status "Active", Availability Zone "nova", Task "None", Power State "Running", and Time since created "1 minute". The "Actions" column for this instance includes a "Create Snapshot" button. Below the table, it says "Displaying 1 item".

Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions
CentOS 7		192.168.1.3	m1.small	student	Active	nova	None	Running	1 minute	Create Snapshot

15. Click on the Instance Name CentOS 7



Module 4: Create a Key Pair and Launch a CentOS 7 Instance



The screenshot shows the OpenStack dashboard interface for a CentOS 7 instance. The 'Log' tab is highlighted with a red box. The instance details are as follows:

Property	Value
Name	CentOS 7
ID	28e4c8a4-ddc0-4ac1-b9b3-ace42e0c72aa
Status	Active
Availability Zone	nova
Created	Aug. 16, 2017, 6:50 a.m.
Time Since Created	2 minutes

Specs:

Property	Value
Flavor Name	m1.small
Flavor ID	729009f6-8812-49f3-ad6a-22f729064a55
RAM	1GB
VCPUs	1 VCPU
Disk	10GB

IP Addresses:

Type	Address
Private	192.168.1.3

Security Groups:

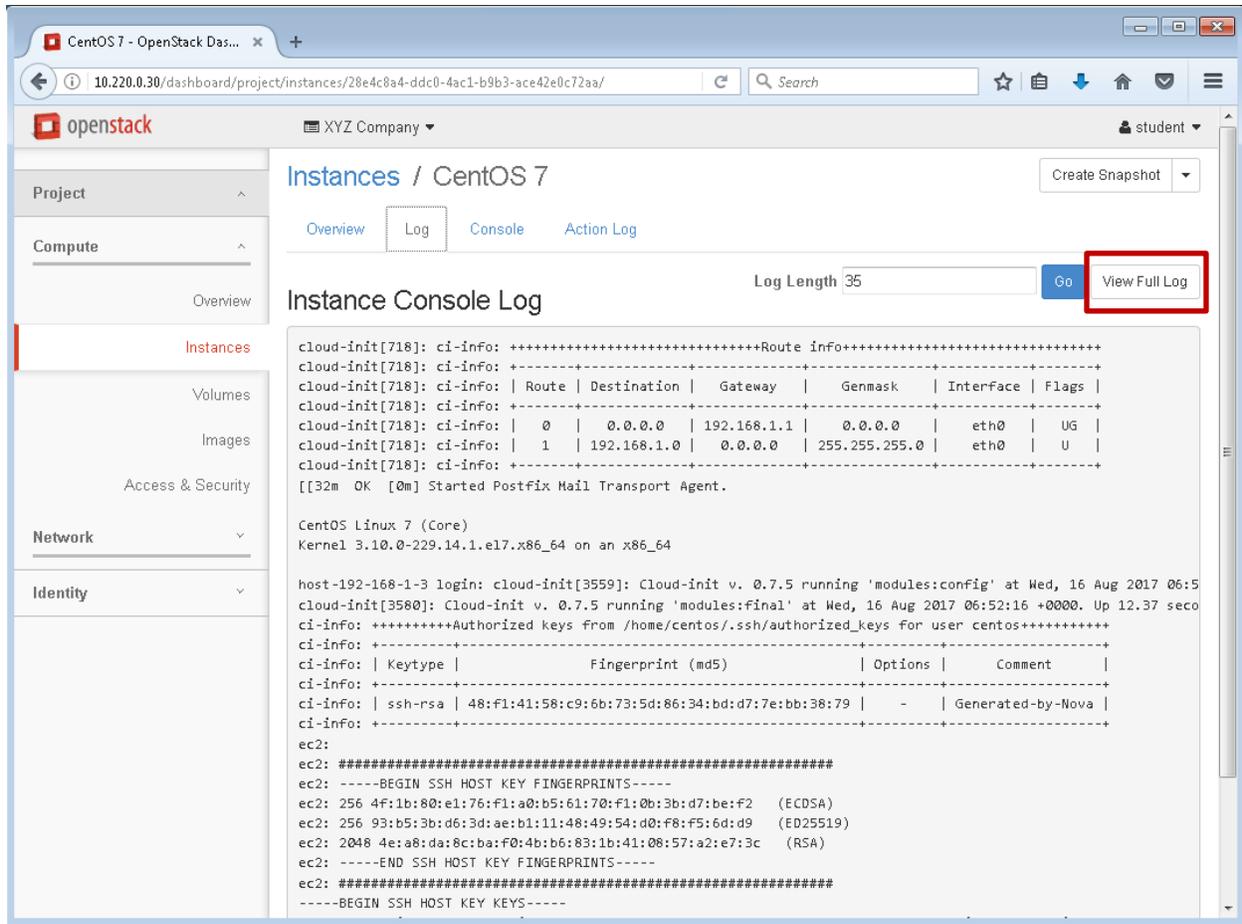
Group	Rules
default	ALLOW IPv4 to 0.0.0.0/0 ALLOW IPv4 from default ALLOW IPv6 from default ALLOW IPv6 to ::/0

Metadata:

Key	Value
-----	-------

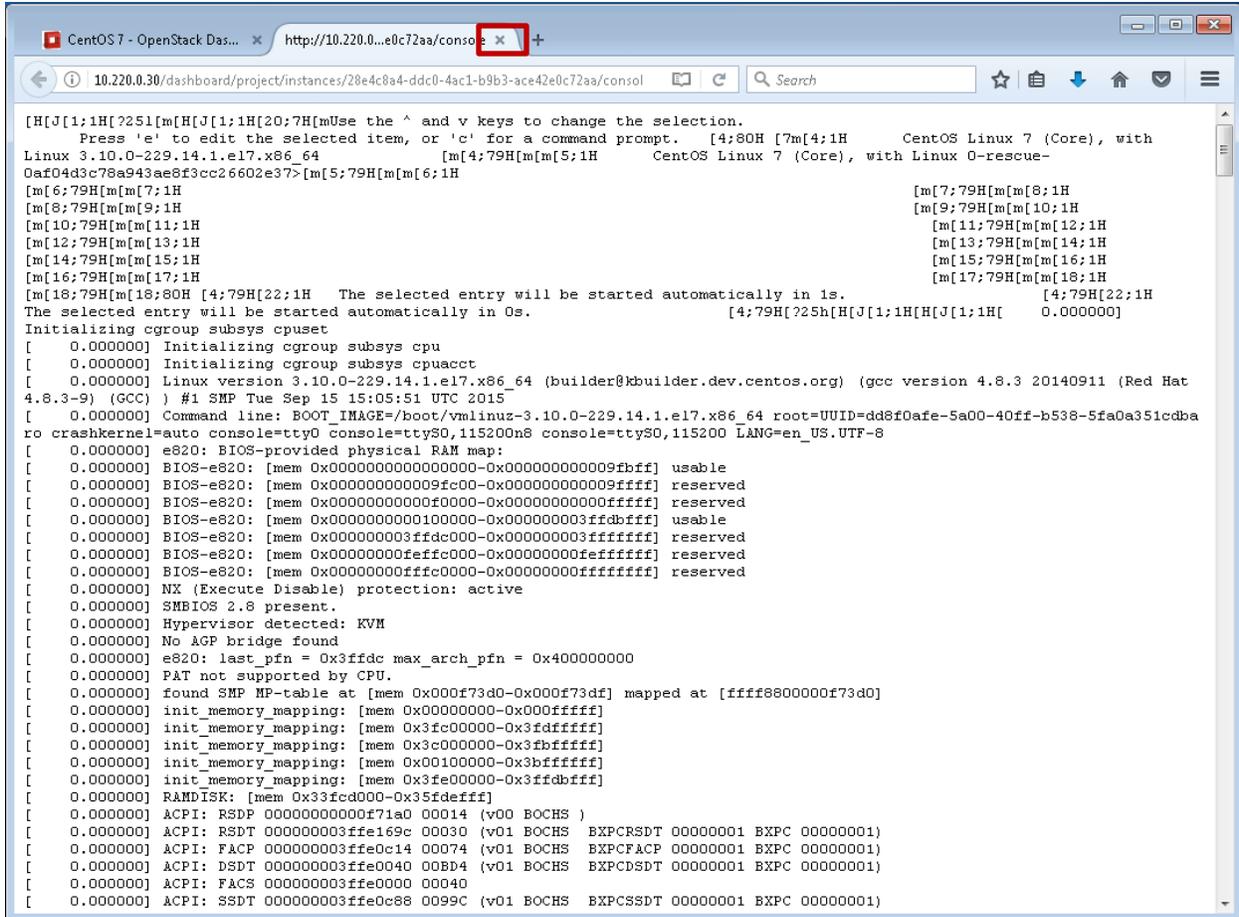
16. On the Instances / CentOS 7 pane, you should see four tabs; **Overview**, **Log**, **Console**, and **Action log**. The Overview tab is a quick method to see basic information about the instance. **Click on the Log tab**

Module 4: Create a Key Pair and Launch a CentOS 7 Instance



17. The Instance Console Log provides a text log of events related to a particular instance. You can also **Click** on the **View Full Log** to see more information.

Module 4: Create a Key Pair and Launch a CentOS 7 Instance

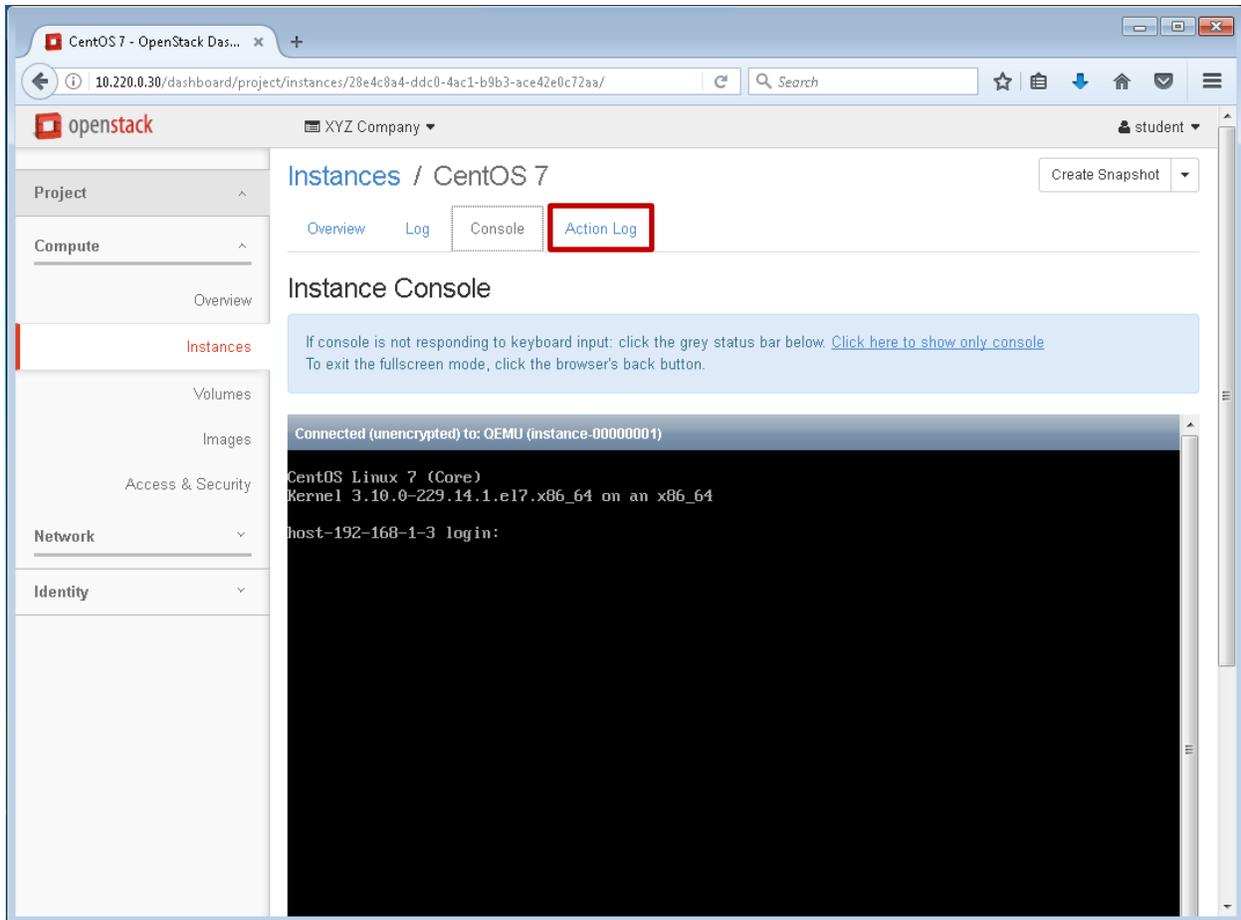


```
[H[J[1;1H[?251[m[H[J[1;1H[20;7H[mUse the ^ and v keys to change the selection.
Press 'e' to edit the selected item, or 'c' for a command prompt. [4;80H [7m[4;1H CentOS Linux 7 (Core), with
Linux 3.10.0-229.14.1.el7.x86_64 [m[4;79H[m[5;1H CentOS Linux 7 (Core), with Linux 0-rescue-
0af04d3c78a943ae8f3cc26602e37>[m[5;79H[m[6;1H
[m[6;79H[m[7;1H [m[7;79H[m[8;1H
[m[8;79H[m[9;1H [m[9;79H[m[10;1H
[m[10;79H[m[11;1H [m[11;79H[m[12;1H
[m[12;79H[m[13;1H [m[13;79H[m[14;1H
[m[14;79H[m[15;1H [m[15;79H[m[16;1H
[m[16;79H[m[17;1H [m[17;79H[m[18;1H
[m[18;79H[m[18;80H [4;79H[22;1H The selected entry will be started automatically in is. [4;79H[22;1H
The selected entry will be started automatically in Os. [4;79H[?25H[H[J[1;1H[H[J[1;1H[ 0.000000]
Initializing cgroup subsys cpuset
[ 0.000000] Initializing cgroup subsys cpu
[ 0.000000] Initializing cgroup subsys cpuacct
[ 0.000000] Linux version 3.10.0-229.14.1.el7.x86_64 (builder@kbuilder.dev.centos.org) (gcc version 4.8.3 20140911 (Red Hat
4.8.3-9) (GCC) ) #1 SMP Tue Sep 15 15:05:51 UTC 2015
[ 0.000000] Command line: BOOT_IMAGE=/boot/vmlinuz-3.10.0-229.14.1.el7.x86_64 root=UUID=dd8f0afe-5a00-40ff-b538-5fa0a351cdba
ro crashkernel=auto console=tty0 console=ttyS0,115200n8 console=ttyS0,115200 LANG=en_US.UTF-8
[ 0.000000] e820: BIOS-provided physical RAM map:
[ 0.000000] BIOS-e820: [mem 0x0000000000000000-0x0000000000009fbfff] usable
[ 0.000000] BIOS-e820: [mem 0x0000000000009fc00-0x0000000000009ffff] reserved
[ 0.000000] BIOS-e820: [mem 0x000000000000f0000-0x000000000000fffff] reserved
[ 0.000000] BIOS-e820: [mem 0x000000000100000-0x0000000003ffdbfff] usable
[ 0.000000] BIOS-e820: [mem 0x0000000003ffdc000-0x0000000003fffffff] reserved
[ 0.000000] BIOS-e820: [mem 0x00000000feffc000-0x00000000fefffffff] reserved
[ 0.000000] BIOS-e820: [mem 0x00000000fffc0000-0x00000000fffffff] reserved
[ 0.000000] NX (Execute Disable) protection: active
[ 0.000000] SMBIOS 2.8 present.
[ 0.000000] Hypervisor detected: KVM
[ 0.000000] No AGP bridge found
[ 0.000000] e820: last_pfn = 0x3ffdc max_arch_pfn = 0x400000000
[ 0.000000] PAT not supported by CPU.
[ 0.000000] found SMP MP-table at [mem 0x000f73d0-0x000f73df] mapped at [ffff880000f73d0]
[ 0.000000] init_memory_mapping: [mem 0x00000000-0x000ffff]
[ 0.000000] init_memory_mapping: [mem 0x3fc00000-0x3fdffff]
[ 0.000000] init_memory_mapping: [mem 0x3c000000-0x3fbffff]
[ 0.000000] init_memory_mapping: [mem 0x00100000-0x3bffff]
[ 0.000000] init_memory_mapping: [mem 0x3fe00000-0x3ffdbfff]
[ 0.000000] RAMDISK: [mem 0x33fcd000-0x335defff]
[ 0.000000] ACPI: RSDP 0000000000f71a0 00014 (v00 BOCHS )
[ 0.000000] ACPI: RSDT 000000003ffe169c 00030 (v01 BOCHS BXPGRSDT 00000001 BXP 00000001)
[ 0.000000] ACPI: FACP 000000003ffe0c14 00074 (v01 BOCHS BXPFCFAC 00000001 BXP 00000001)
[ 0.000000] ACPI: DSDT 000000003ffe0040 00BD4 (v01 BOCHS BXPDSDT 00000001 BXP 00000001)
[ 0.000000] ACPI: FACS 000000003ffe0000 00040
[ 0.000000] ACPI: SSDT 000000003ffe0c88 0099C (v01 BOCHS BXPSSDT 00000001 BXP 00000001)
```

18. The View Full Log tab will open a new web page to view the entire log. Review and close the new web browser page. **Continue to the next page**



Module 4: Create a Key Pair and Launch a CentOS 7 Instance

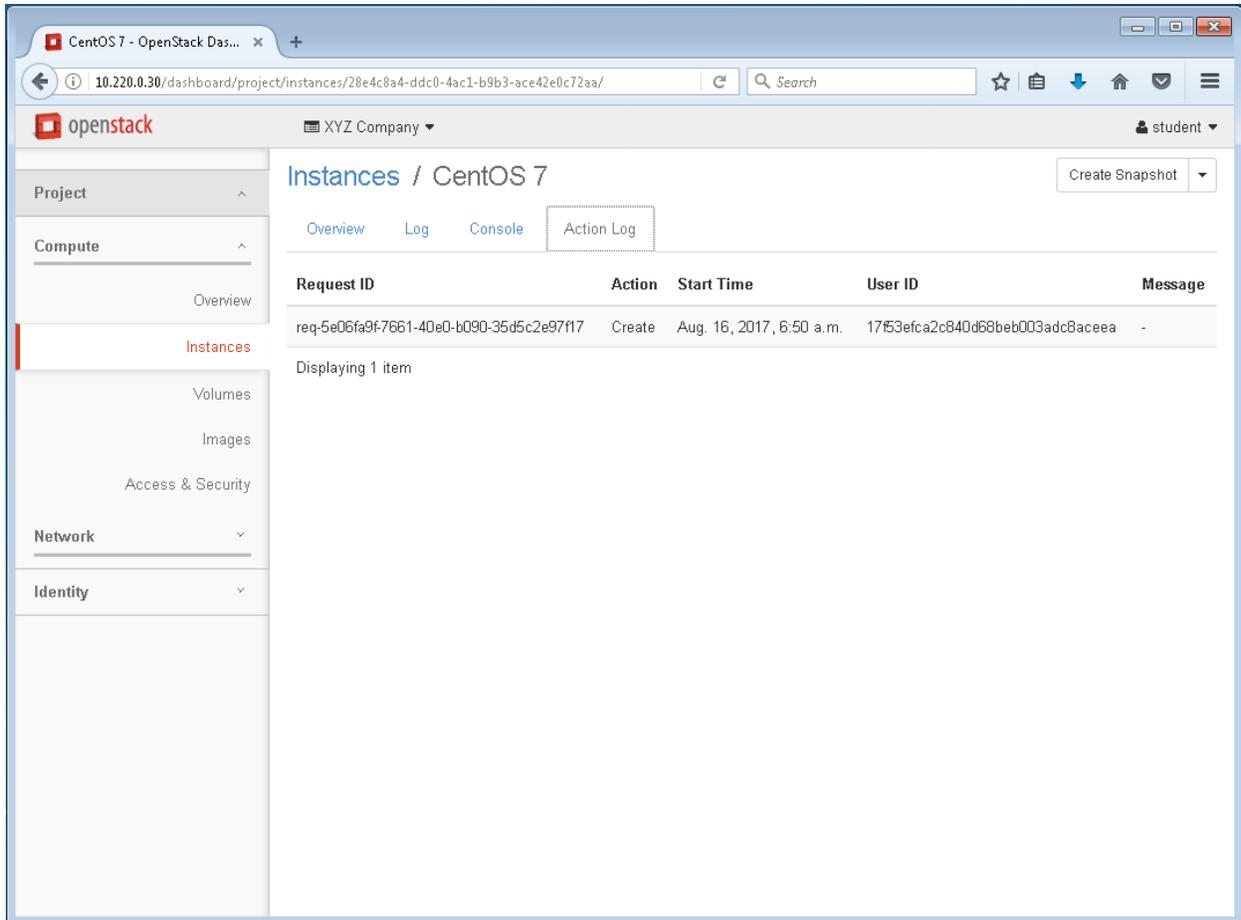


19. Click on the **Console** tab. This will open a console view of your new CentOS 7 instance.
Click on the **Action Log** tab

Note: For any instances that have a **Key Pair** allocated to it, **you will not be able to login using this console.**



Module 4: Create a Key Pair and Launch a CentOS 7 Instance



The screenshot shows the OpenStack dashboard interface. The browser address bar displays the URL: `10.220.0.30/dashboard/project/instances/28e4c8a4-ddc0-4ac1-b9b3-ace42e0c72aa/`. The page title is "Instances / CentOS 7". The left sidebar contains navigation menus for "Project", "Compute", "Network", and "Identity". The "Compute" menu is expanded, showing "Overview" and "Instances" (highlighted in red). The "Instances" section displays a table with the following data:

Request ID	Action	Start Time	User ID	Message
req-5e06fa9f-7661-40e0-b090-35d5c2e97f17	Create	Aug. 16, 2017, 6:50 a.m.	17f53efca2c840d68beb003adc8aceea	-

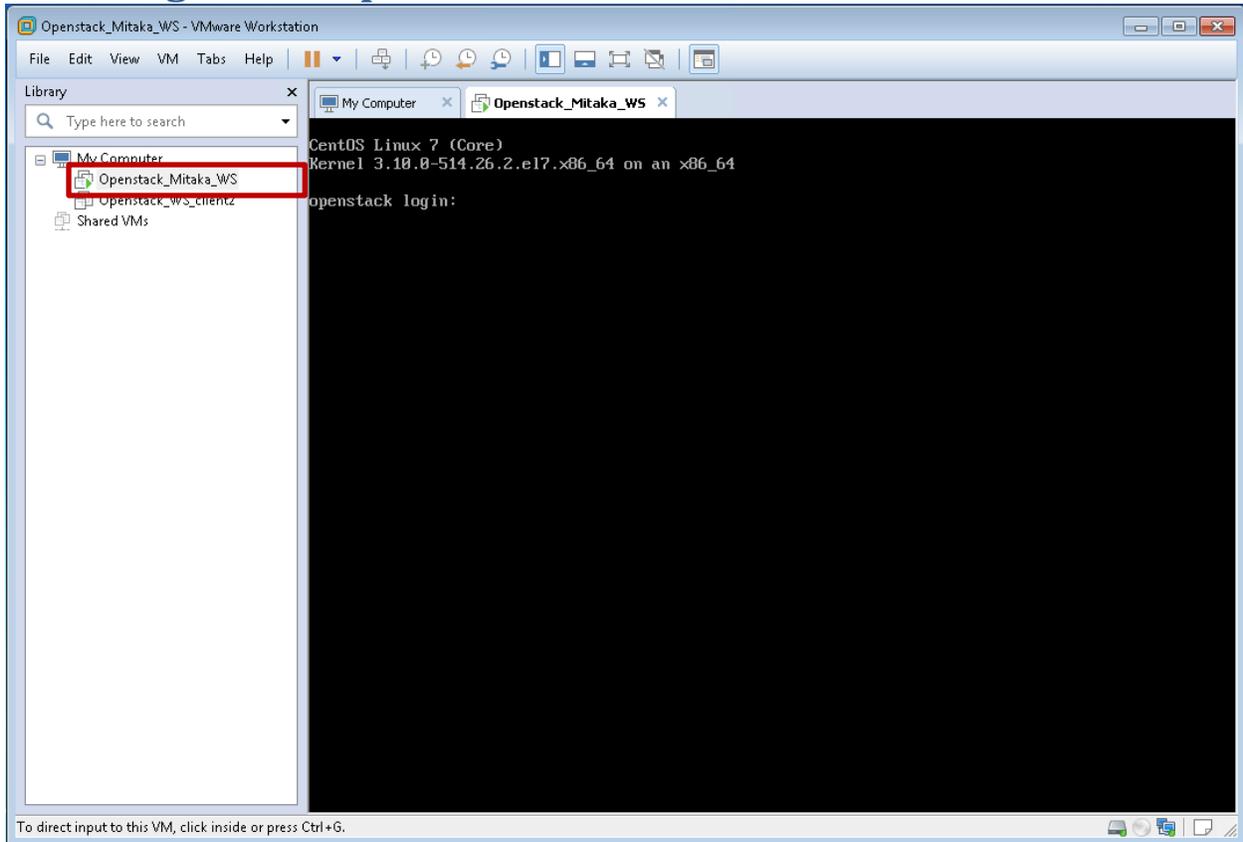
Below the table, it states "Displaying 1 item".

20. The Action Log provides basic information on the instance.

End of Module 4, continue to grade script



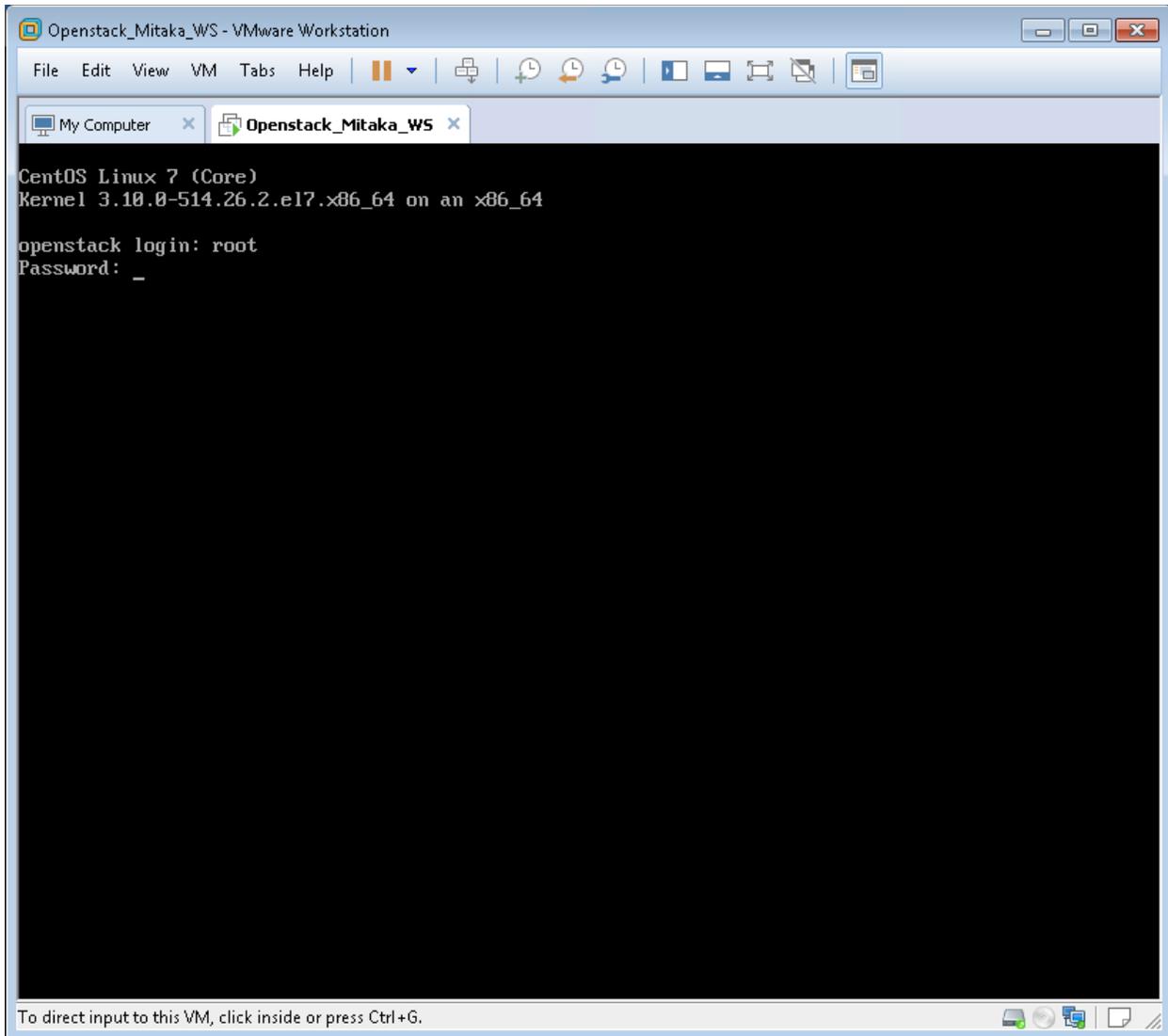
Run the grade script



1. Return to Workstation and **Click on OpenStack_Mitaka_WS VM**

Note: The OpenStack_Mitaka_WS console may still be open on your desktop from when you ran the setup script

Module 4: Create a Key Pair and Launch a CentOS 7 Instance

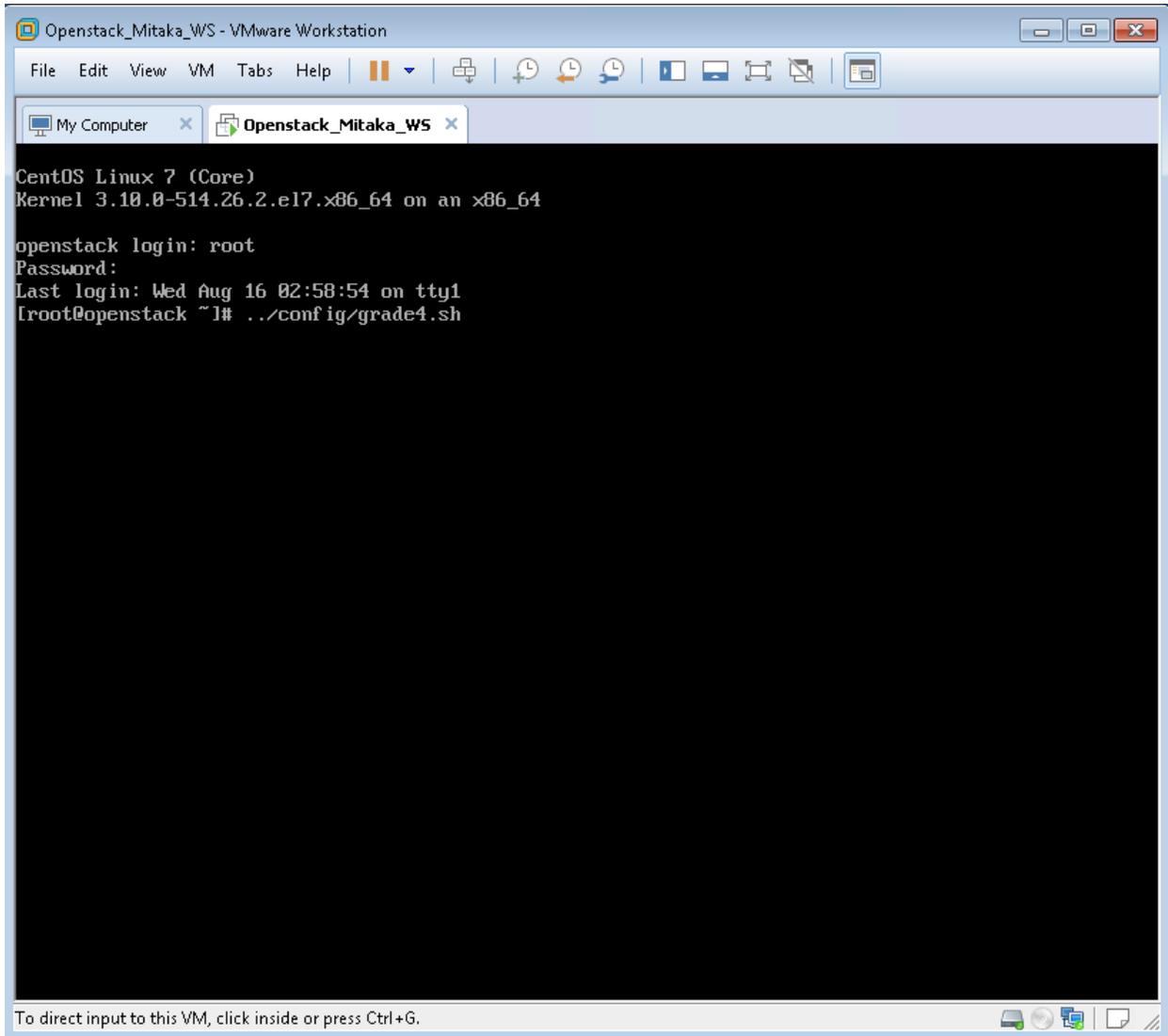


2. Log in as root with the Password: P@ssword

Note: The password is NOT visible as you type it



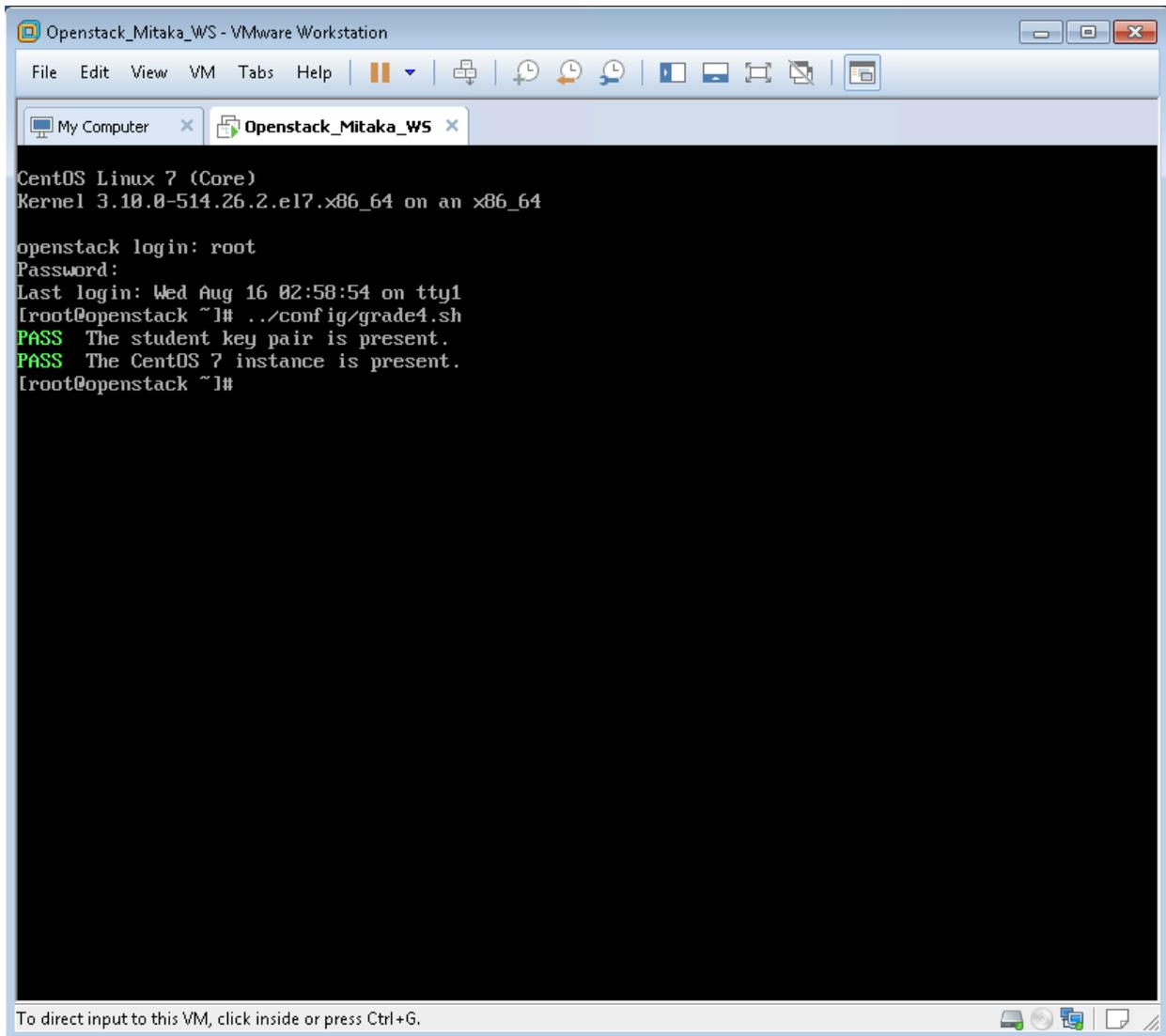
Module 4: Create a Key Pair and Launch a CentOS 7 Instance



3. Enter the command; `../config/grade4.sh` and **press Enter**



Module 4: Create a Key Pair and Launch a CentOS 7 Instance



```
Openstack_Mitaka_WS - VMware Workstation
File Edit View VM Tabs Help
My Computer x Openstack_Mitaka_WS x
CentOS Linux 7 (Core)
Kernel 3.10.0-514.26.2.el7.x86_64 on an x86_64

openstack login: root
Password:
Last login: Wed Aug 16 02:58:54 on tty1
[root@openstack ~]# ../config/grade4.sh
PASS The student key pair is present.
PASS The CentOS 7 instance is present.
[root@openstack ~]#
```

To direct input to this VM, click inside or press Ctrl+G.

4. The grading script will produce an output with **PASS** or **FAIL** for each of the categories, similar to the screen capture above. If you receive a **FAIL** on one or more of the categories, you can go back and fix the issue and run the grading script again, or you can revert the OpenStack_Mitaka_v2 VM to the base snapshot and start over again.

This completes Module 4, continue to conclusion



Conclusion:

You have successfully assisted the customer with creating a key pair and launching their first instance. There are more configurations that are needed before the CentOS 7 cloud server is ready for the customer to connect to and begin their configurations. Your next field visit to XYZ Company will be to show the user how to permit SSH traffic and how to connect to the server using a Windows virtual machine.

