

# IST198

# OpenStack

# Administration

Version 1: 2017-08-17

These exercises will guide the student through the concepts and topics learned in chapter 4, launch a Windows Server 2012 instance and connect using Remote Desktop Protocol from Windows and Linux VMs.

## Launch a Server 2012 Instance and connect using RDP from Windows and Linux VMs.



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## Attributions:



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## 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 OpenStack Cloud implementation CLOUDTech uses to host customer Cloud environments.



## Lab Objectives

### Learner will be able to:

- Launch a Windows Server 2012 Instance from the OpenStack Dashboard and connect using Remote Desktop Protocol from Windows and Linux VMs.

## Labs 17 - 19

These labs will guide the student through launching a Server2012 Instance and connecting with Remote Desktop Protocol from Windows and Linux virtual machines.

**(Note: This lab is designed to be completed on an NDG NETLAB System with the IST198\_OpenStack\_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).**



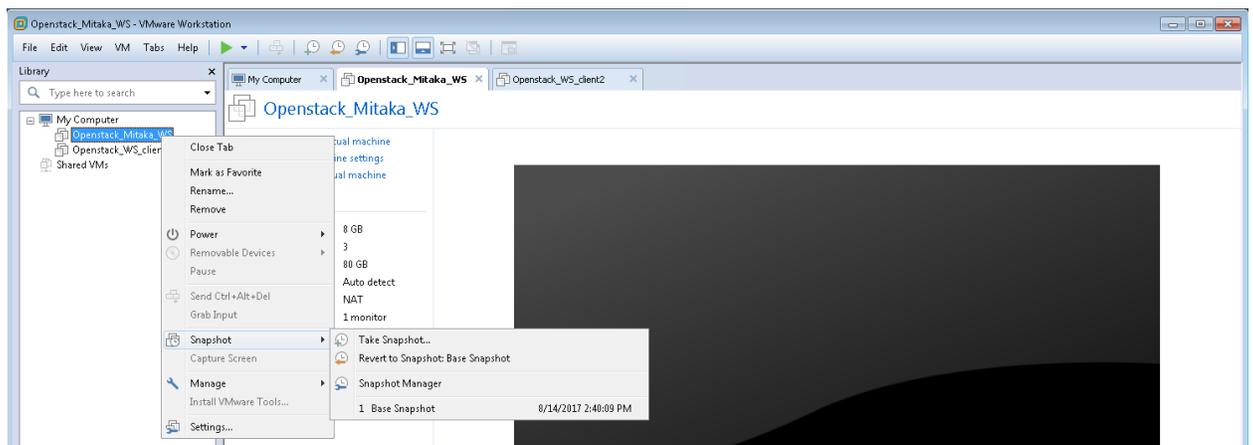
## Prepare the OpenStack Virtual Machines



1. Launch the VMware Workstation Pro application

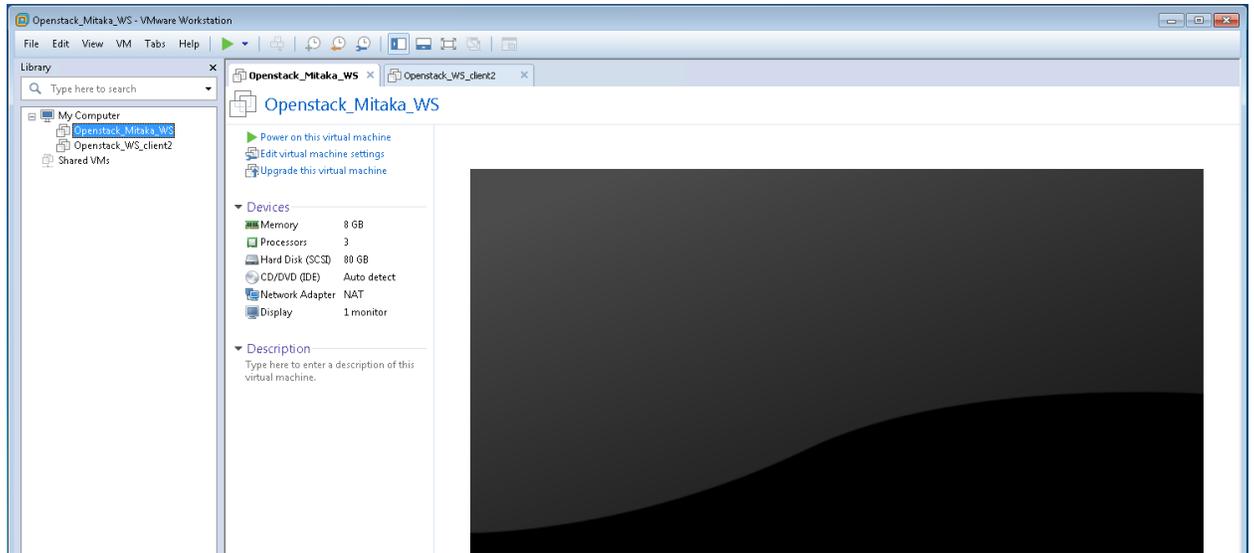


2. Workstation should have two virtual machines (VM) installed; Openstack\_Mitaka\_v2 and Openstack\_Mitaka\_client2.



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 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



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 Server2012 instance, and connect to it using Remote Desktop from a Windows and CentOS 7 VM.

## Lab Settings

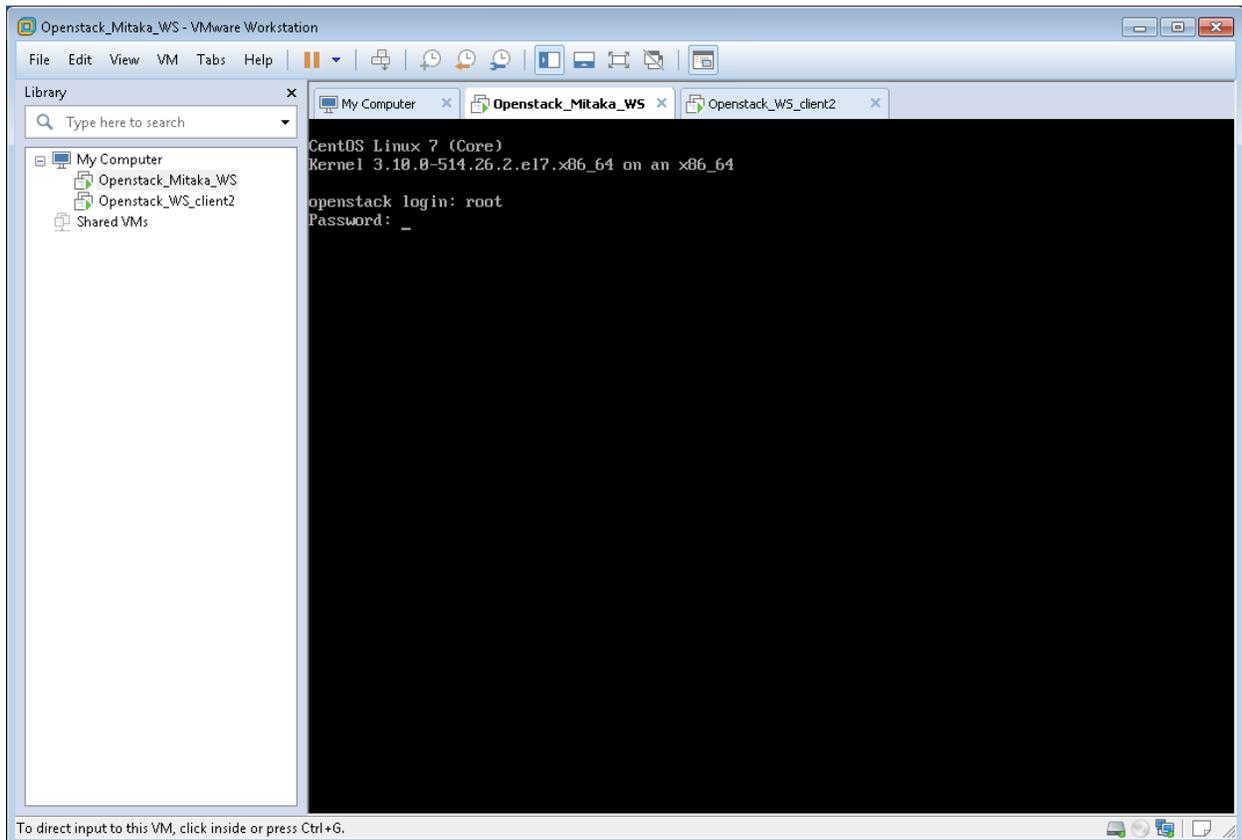
The information in the table below will be needed in order to complete the labs. The task sections that follow provide details on the use of this information

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	OpenStack Mitaka
OpenStack 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.



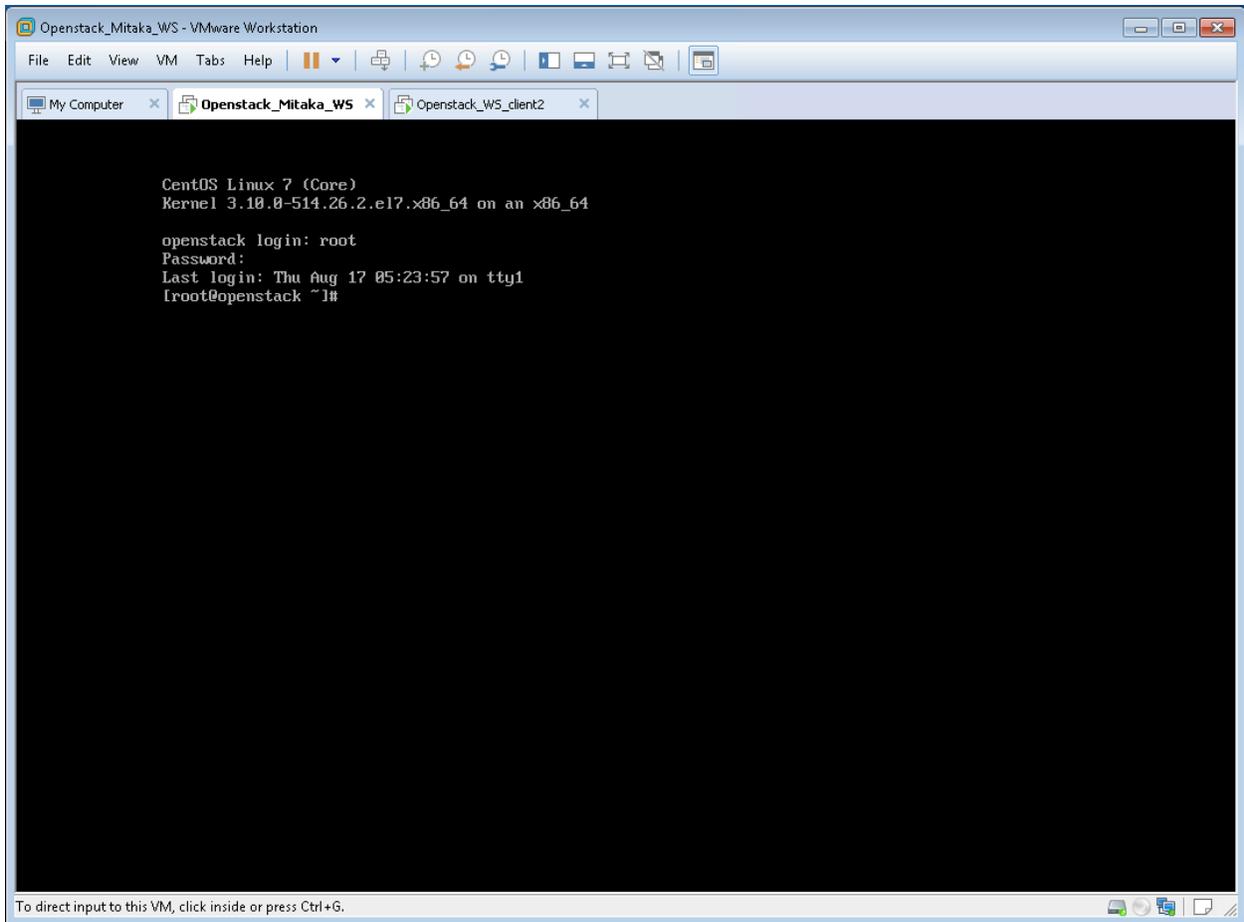
## Run the lab setup script



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

Note: The password is NOT visible as you type it

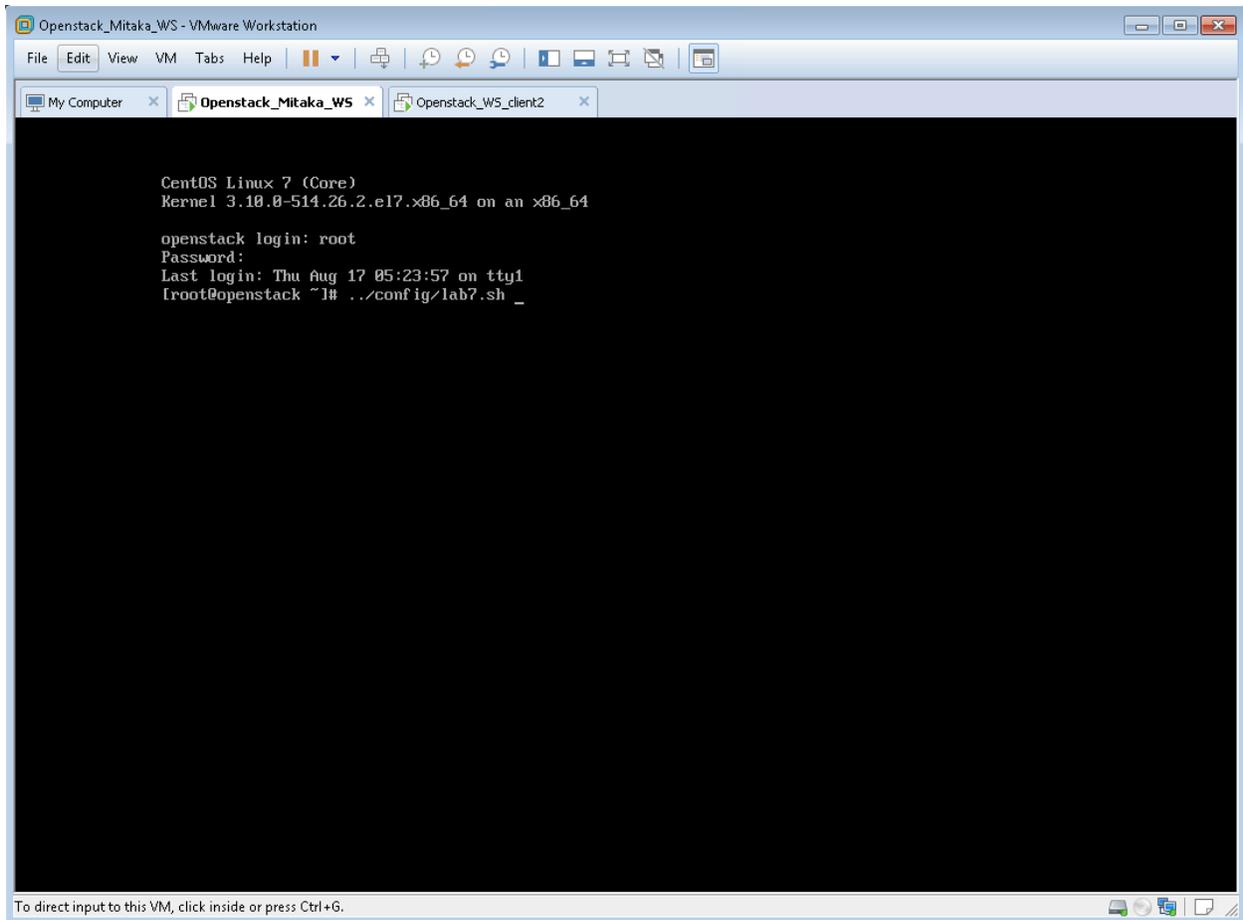
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



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



## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs

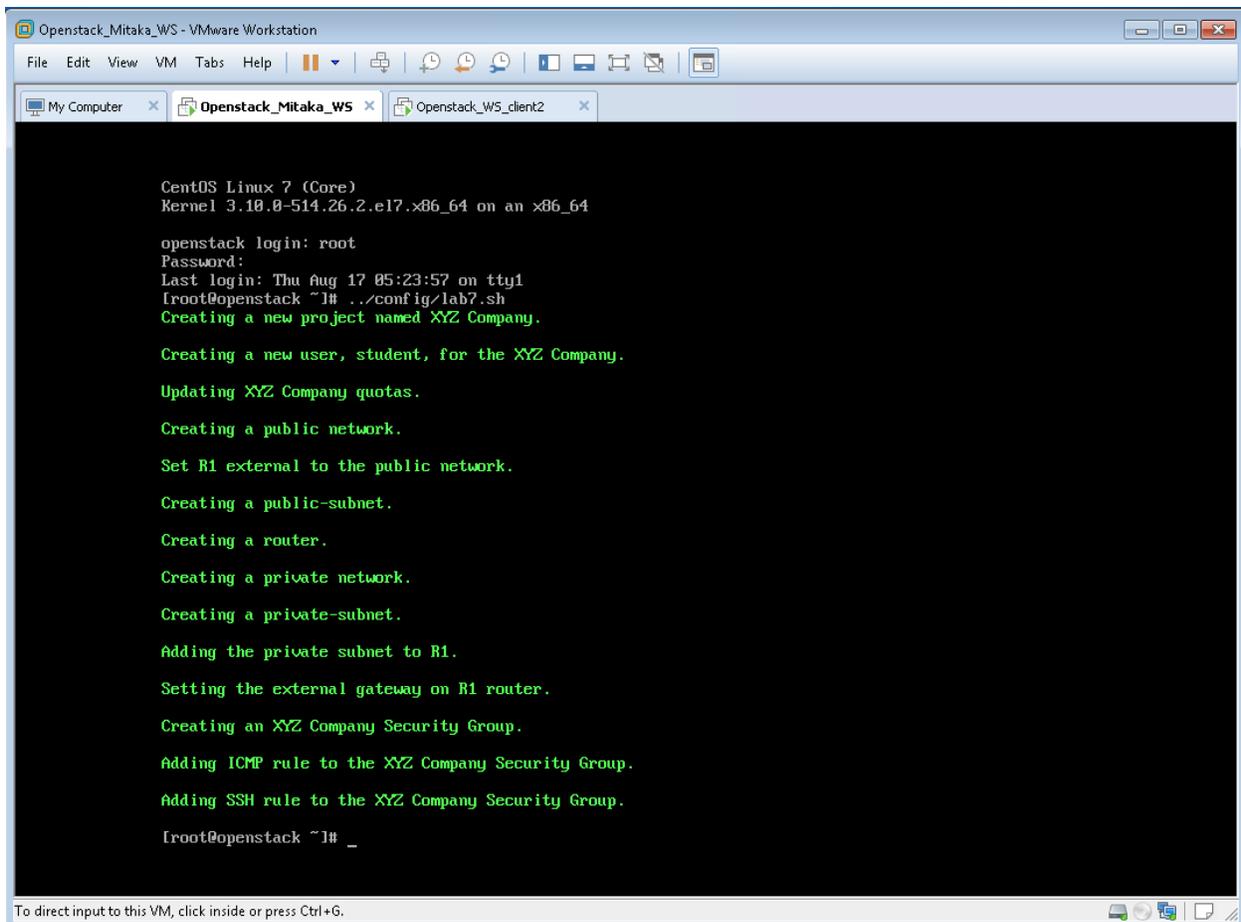


```
CentOS Linux 7 (Core)
Kernel 3.10.0-514.26.2.el7.x86_64 on an x86_64

openstack login: root
Password:
Last login: Thu Aug 17 05:23:57 on tty1
root@openstack ~]# ./config/lab7.sh _
```

3. Type the command; **./config/lab7.sh** and **press Enter** as shown in the screen capture above to run the Module 7 setup script





```
Openstack_Mitaka_WS - VMware Workstation
File Edit View VM Tabs Help
My Computer x Openstack_Mitaka_WS x Openstack_WS_client2 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: Thu Aug 17 05:23:57 on tty1
[root@openstack ~]# ../config/lab7.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.
Creating an XYZ Company Security Group.
Adding ICMP rule to the XYZ Company Security Group.
Adding SSH rule to the XYZ Company Security Group.

[root@openstack ~]# _
```

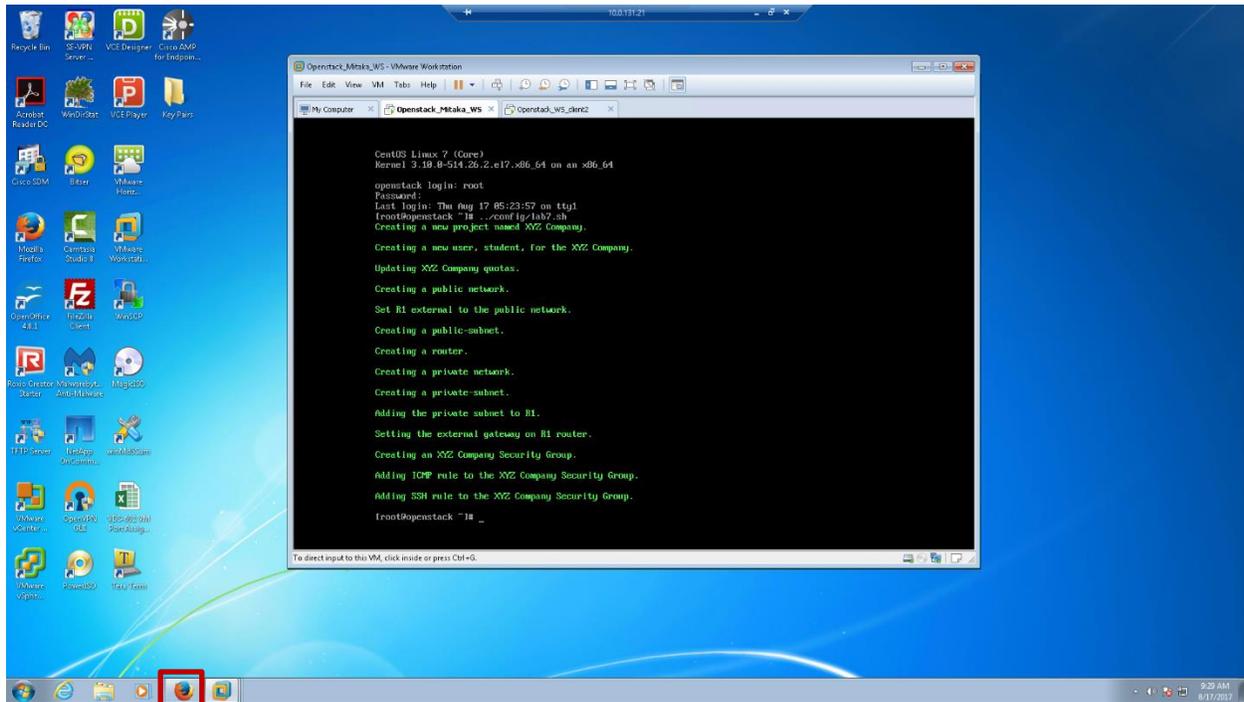
To direct input to this VM, click inside or press Ctrl+G.

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

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



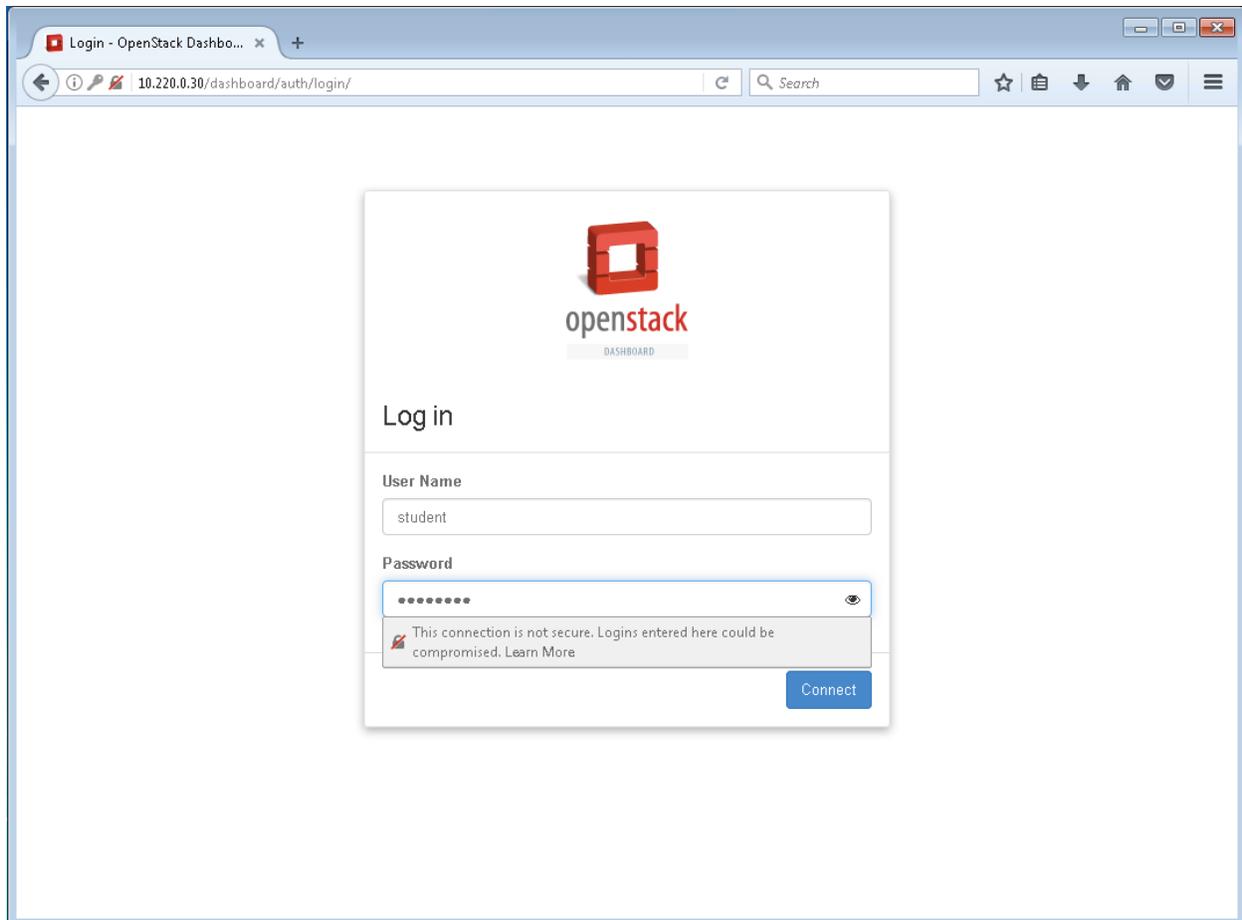
## Access the OpenStack Dashboard



1. On your Windows host PC, open an internet browser

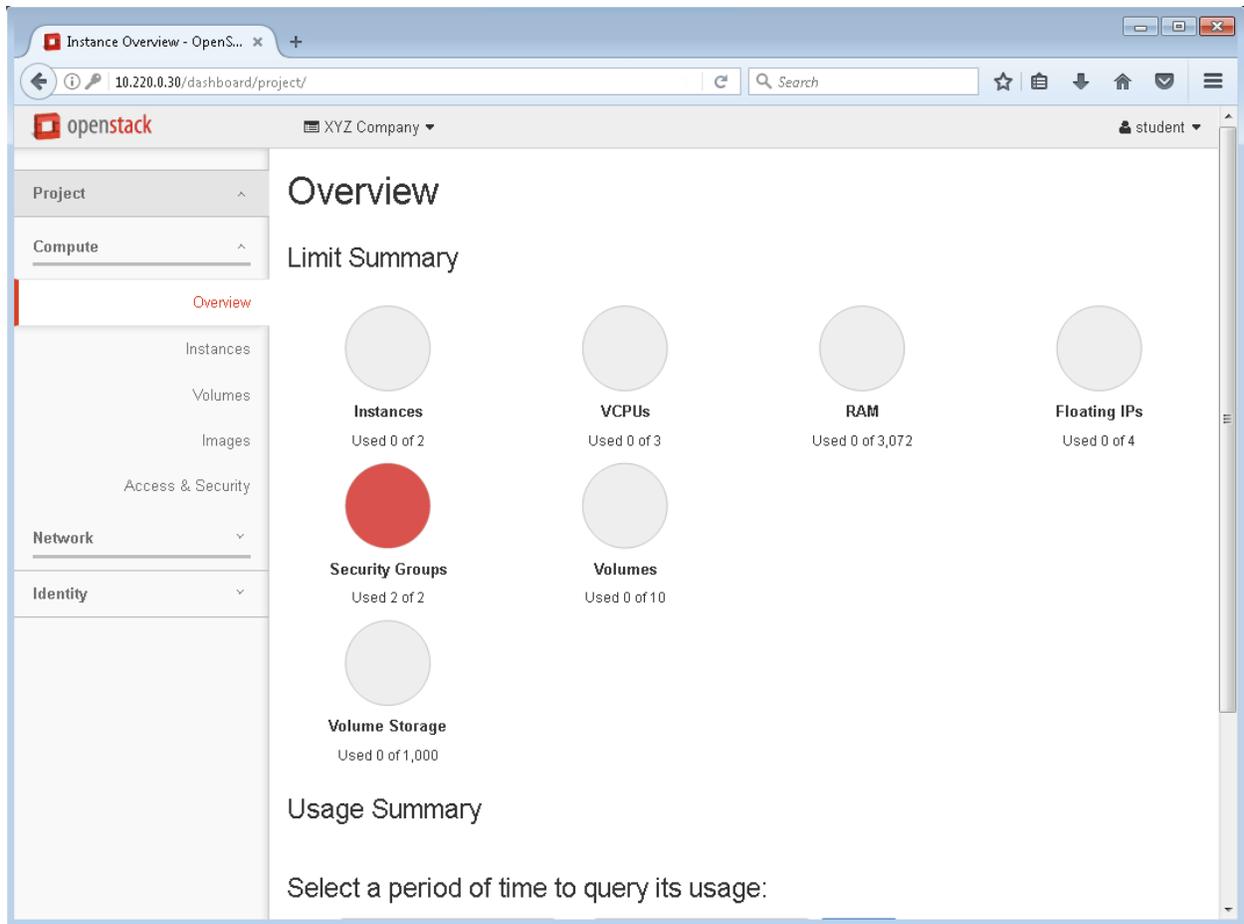
Note: Openstack\_mitaka\_client2 is a CentOS 7 desktop VM that you can use as an alternate to the Windows host PC to accomplish all of the labs, unless specifically noted in the instructions.





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`**

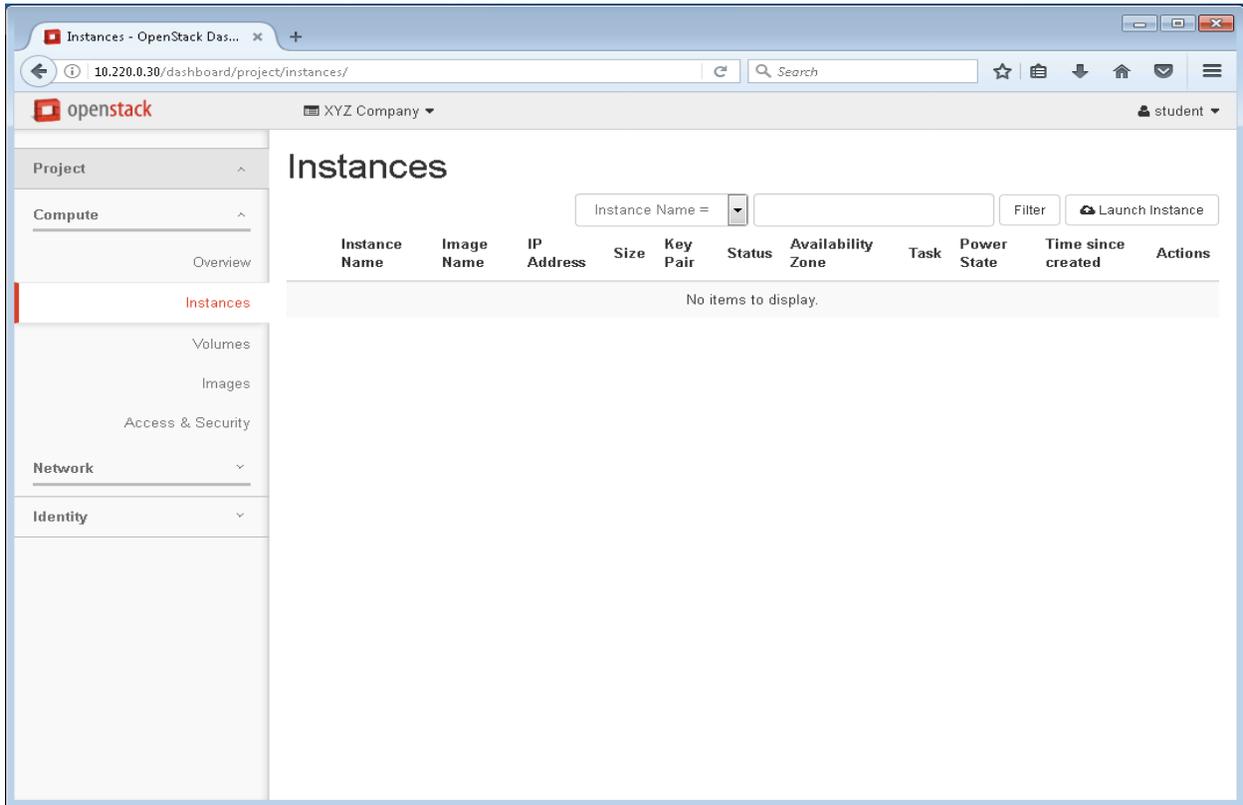
Note: User Name entries are not case sensitive, passwords are.



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



## Lab 17: Launch a Server 2012 instance



1. Using the techniques learned in previous labs, **launch** an **instance** using the information in the table below. This process will take longer to become active and useable than the Linux instance did. Depending on system load, this could take 30 minutes, or more, to finish. Good time for a break while you're waiting.

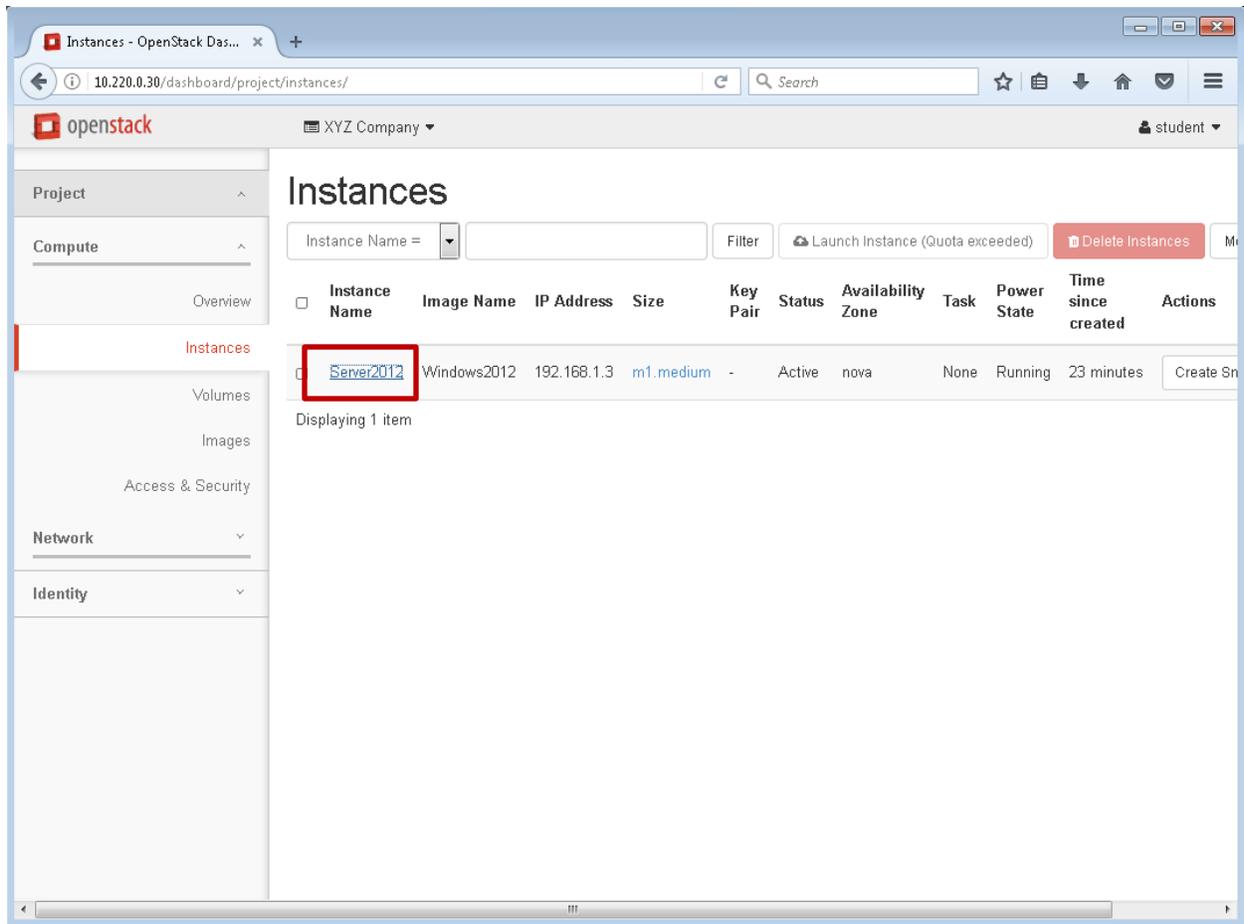
Instance Name	Server2012
Source	Windows2012
Create New Volume	<b>Do Not Create a New Volume</b>
Flavor	m1.medium
Network	private
Security Group	XYZ Company
Floating IP Address	10.220.0.12

Note: Refer to previous lab instructions as needed to complete the process.

Note: The reason for not creating a new volume for the Server2012 instance is because Server 2012 has a larger disk requirement when compared to the CentOS 7 instance and would add significantly to the time needed for the Server2012 instance to be useable.



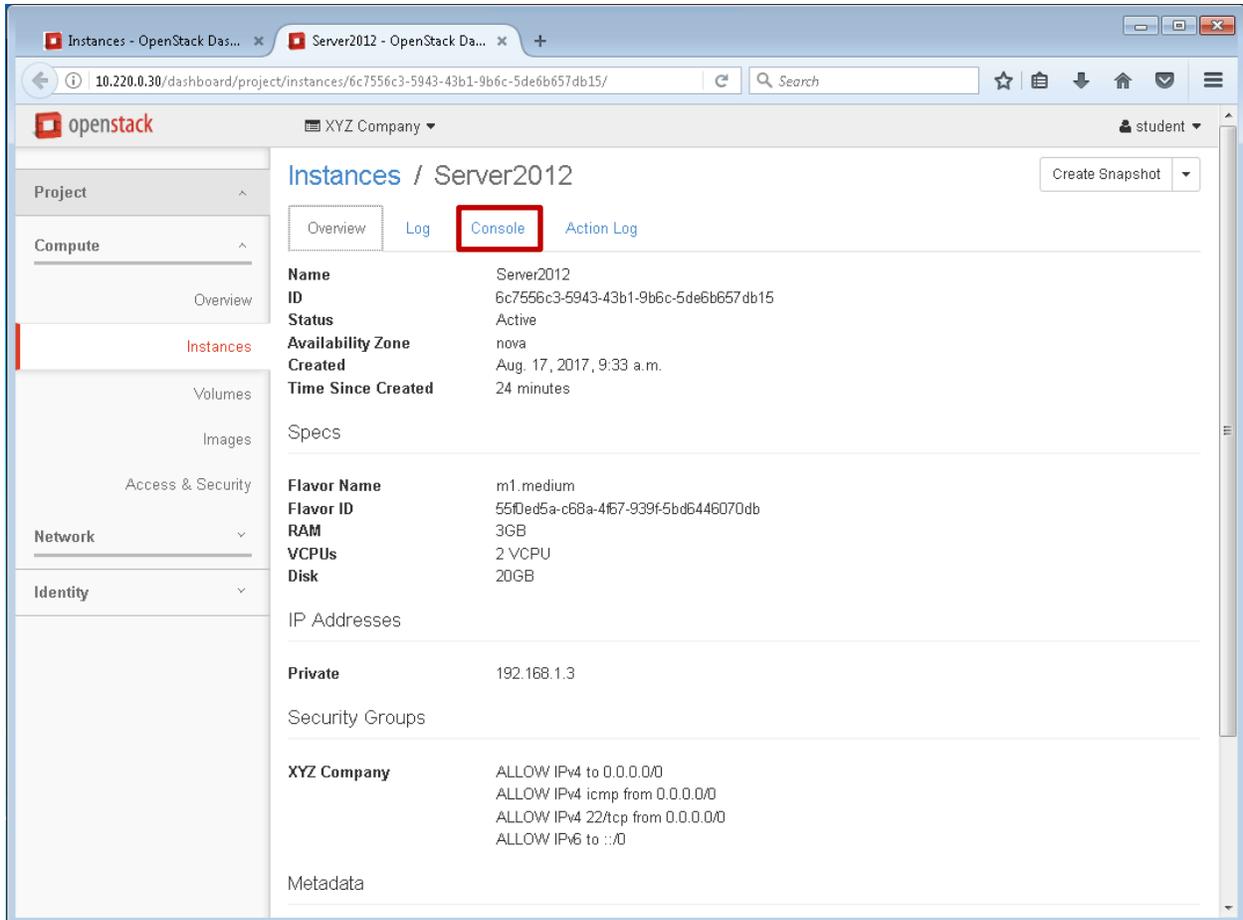
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



2. After Server2012 instance changes Status to Active. Right click on Server2012 and select **Open in new tab** (shown on next the page)



## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



The screenshot shows the OpenStack dashboard interface. The browser address bar displays the URL: `10.220.0.30/dashboard/project/instances/6c7556c3-5943-43b1-9b6c-5de6b657db15/`. The page title is "Instances / Server2012". The "Console" tab is highlighted with a red box. The instance details are as follows:

<b>Name</b>	Server2012
<b>ID</b>	6c7556c3-5943-43b1-9b6c-5de6b657db15
<b>Status</b>	Active
<b>Availability Zone</b>	nova
<b>Created</b>	Aug. 17, 2017, 9:33 a.m.
<b>Time Since Created</b>	24 minutes

Specs:

<b>Flavor Name</b>	m1.medium
<b>Flavor ID</b>	55f0ed5a-c68a-4f67-939f-5bd6446070db
<b>RAM</b>	3GB
<b>VCPUs</b>	2 VCPU
<b>Disk</b>	20GB

IP Addresses:

<b>Private</b>	192.168.1.3
----------------	-------------

Security Groups:

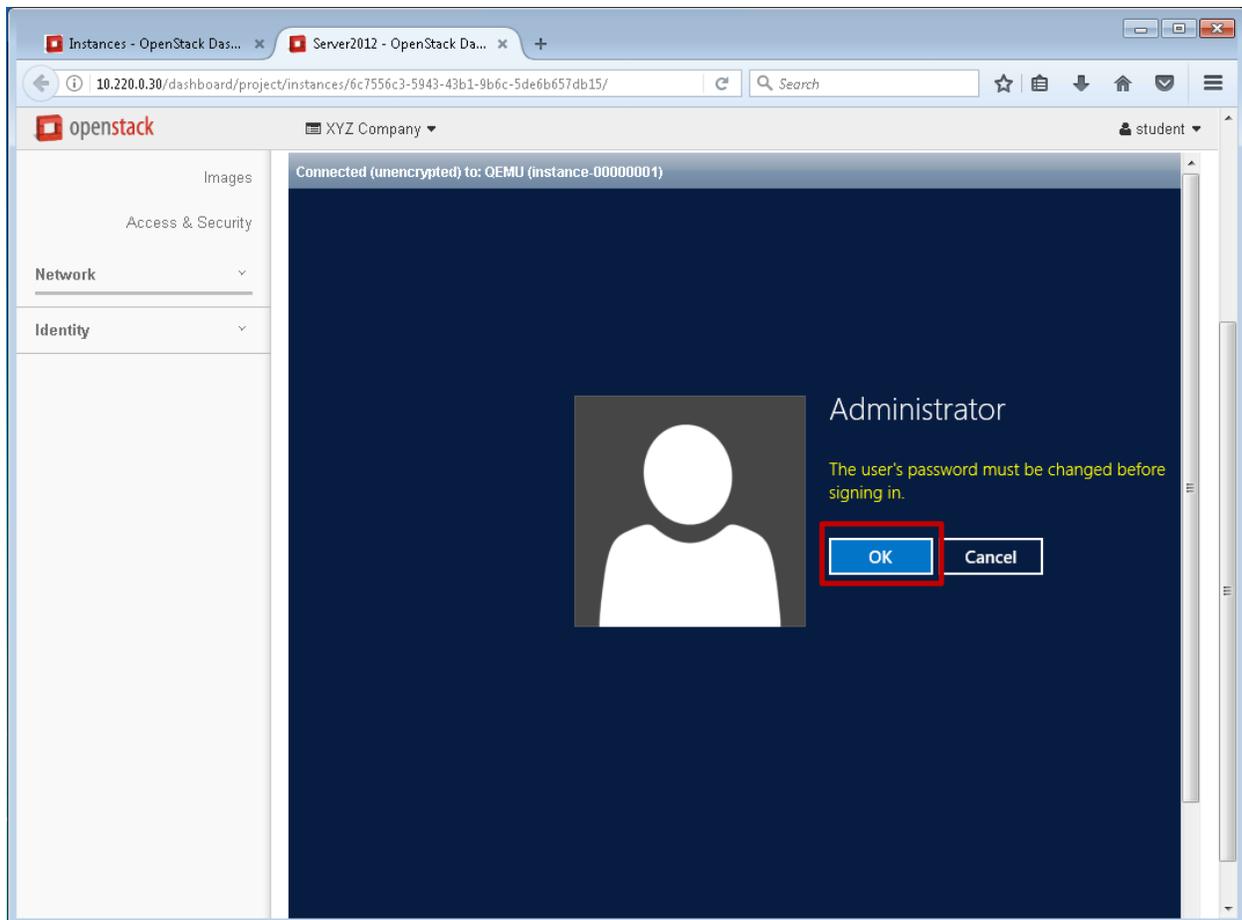
<b>XYZ Company</b>	ALLOW IPv4 to 0.0.0.0/0 ALLOW IPv4 icmp from 0.0.0.0/0 ALLOW IPv4 22/tcp from 0.0.0.0/0 ALLOW IPv6 to ::/0
--------------------	---

Metadata:

3. Switch to the new tab and **click on Console** (shown on next page)



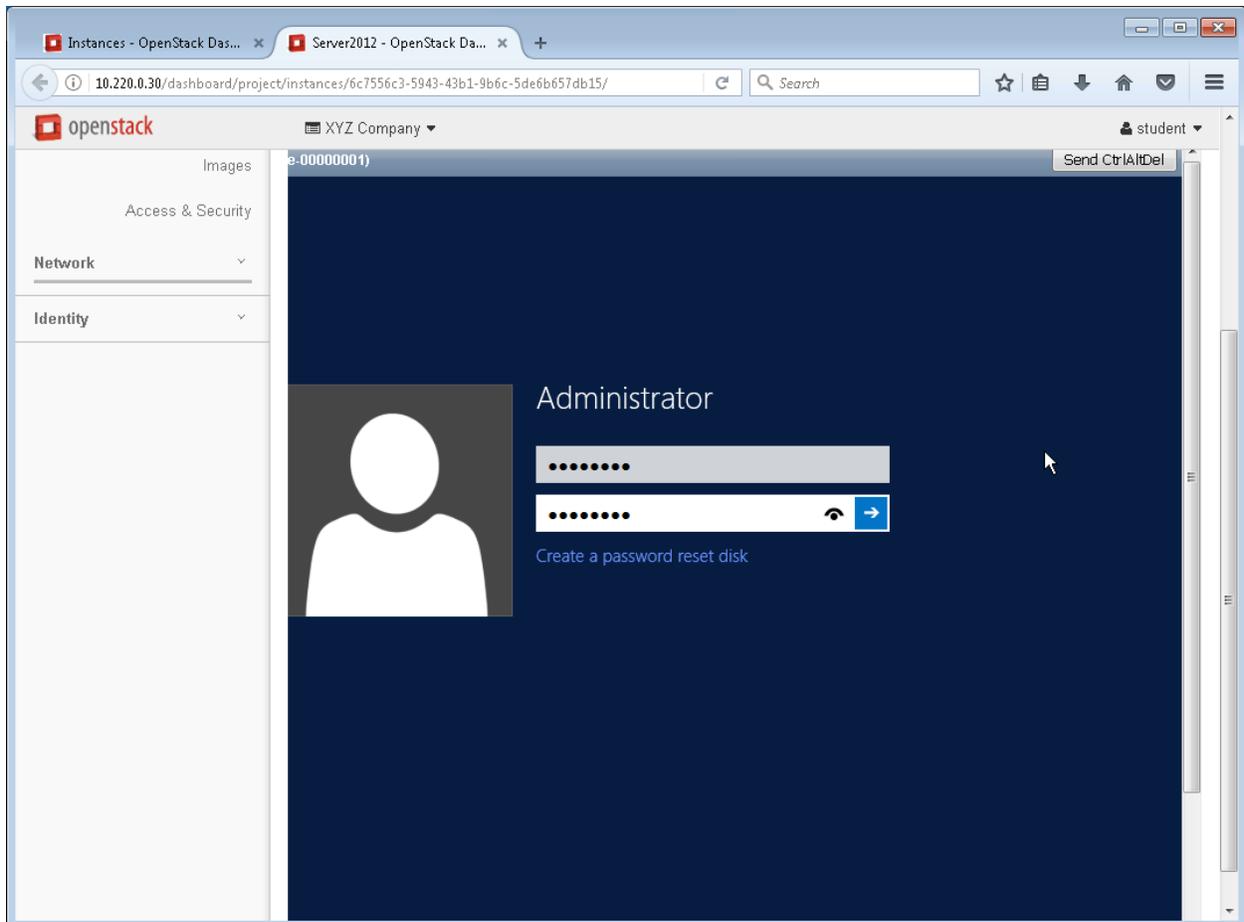
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



4. Follow the prompts to change the Administrator's password.

Note: The Server 2012 image that we used is a Windows demo image publicly available for download from the internet. If you are using a different or custom Windows image to launch the instance, the steps may differ from those shown in this lab.

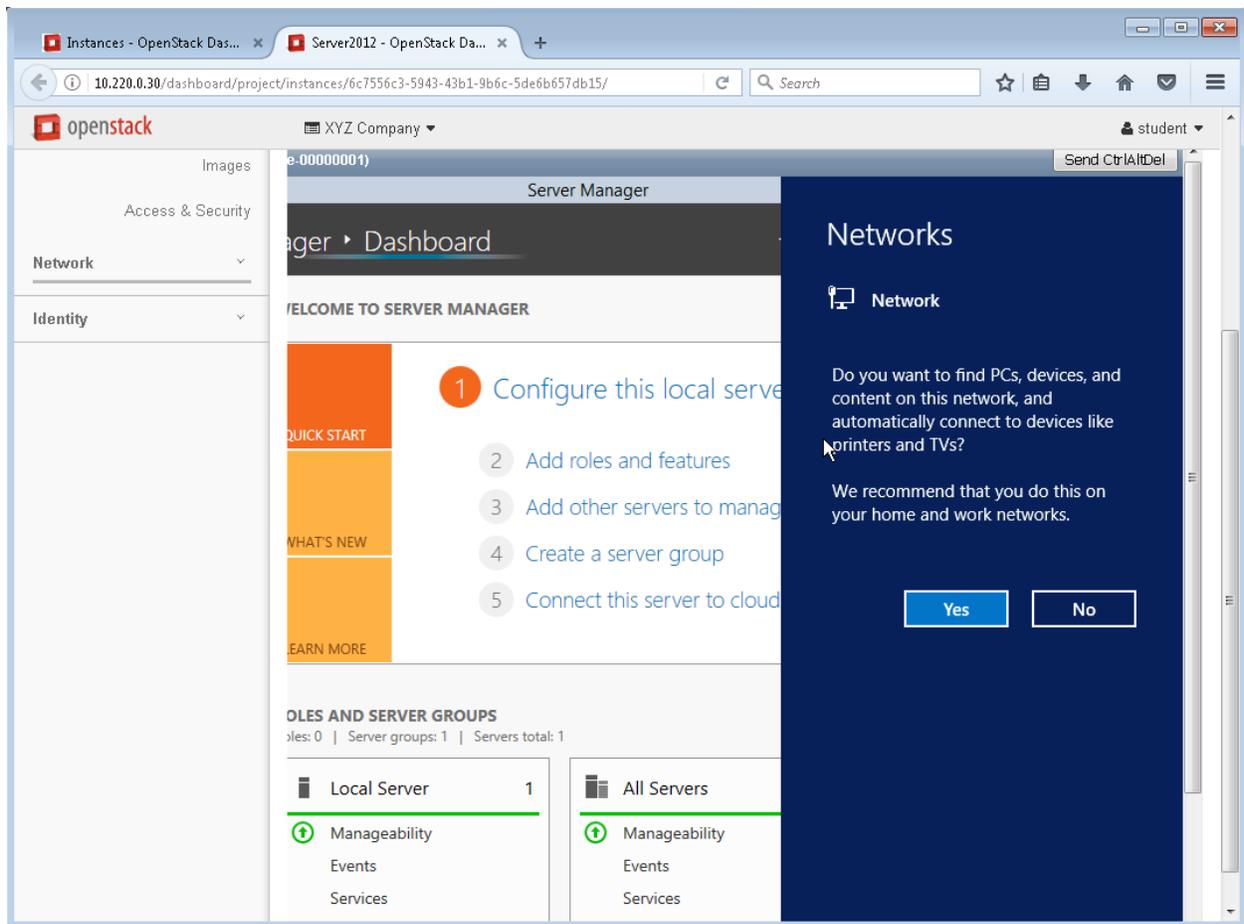
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



5. **Enter** the new password **P@ssword** twice and press enter. Watch for the remaining configuration steps to complete and the Server desktop to appear (shown on next page).

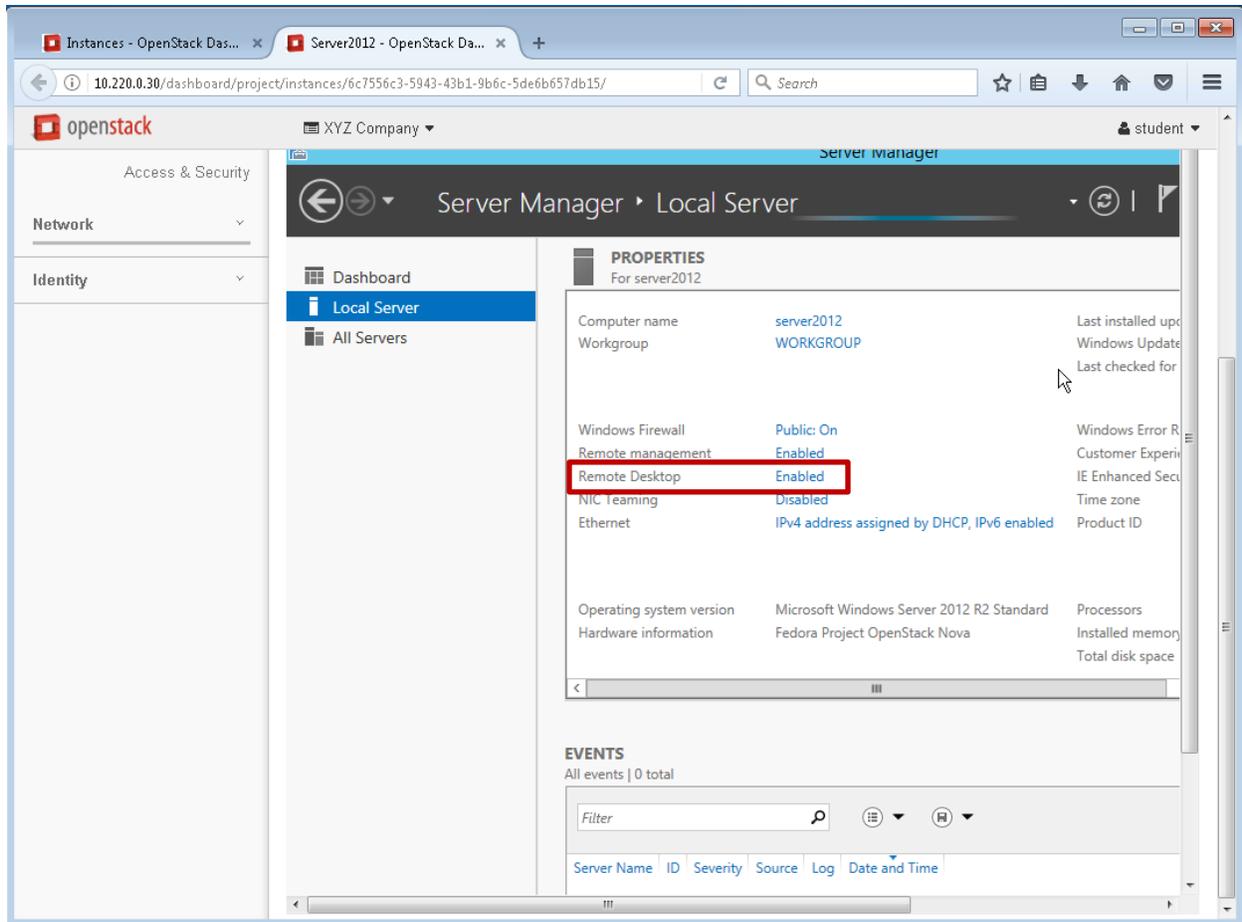
Note: If nothing happens when you type the password in the appropriate block, click on the gray bar first, with the “Connected (unencrypted) to: QEMU (instance-0000001)” statement, and then return to the VM and you will be able to type in the VM.

## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



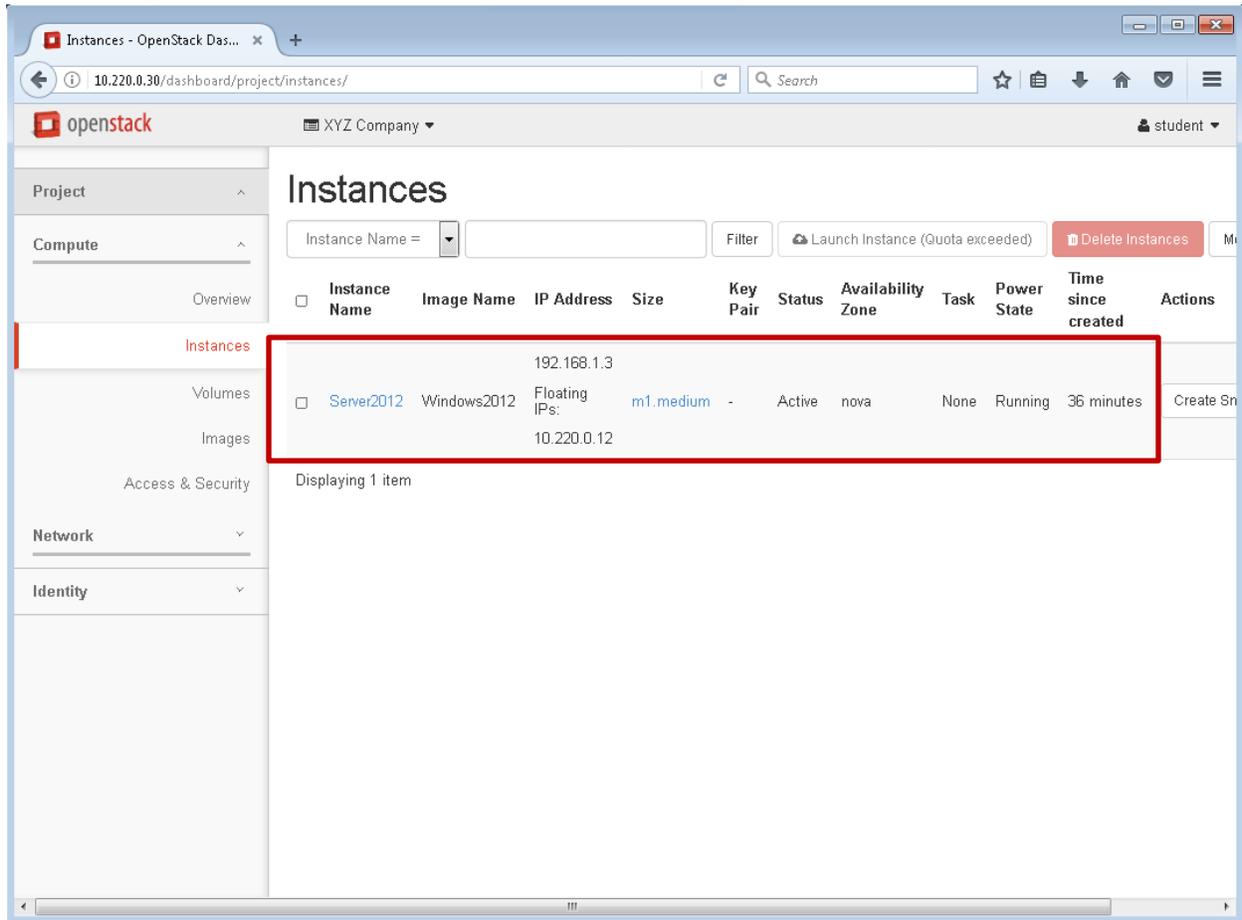
6. The Server2012 console should look like the screen capture above before you continue, or the Remote Desktop Connect will fail. Did you remember to allocate and associate a floating IP address?

## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



7. This demo image of Server 2012 is already configured to allow Remote Desktop, other Windows images may not be. To check Server 2012, open the Server Manager Dashboard and click on Local Server, then look to see if Remote Desktop is enabled (shown in the screen capture above).

## Lab 18: Connect to the Server2012 instance using Remote Desktop Connection

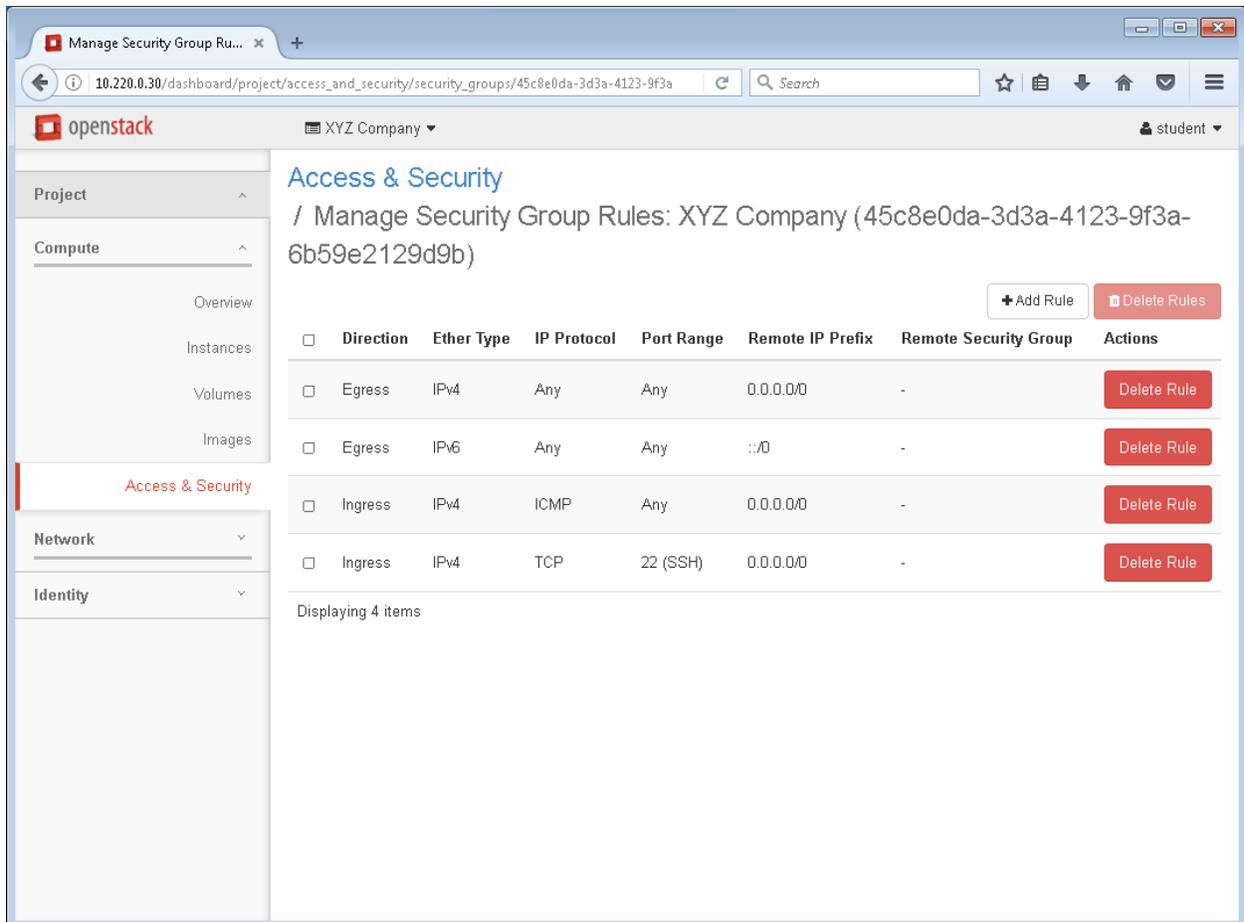


1. Your Instances tab should resemble the screen capture above, before you continue.

Question: Is the instance ready for you to use Remote Desktop Connection?

Answer: No. Think about remote desktop protocol and the default Security Group Rules.



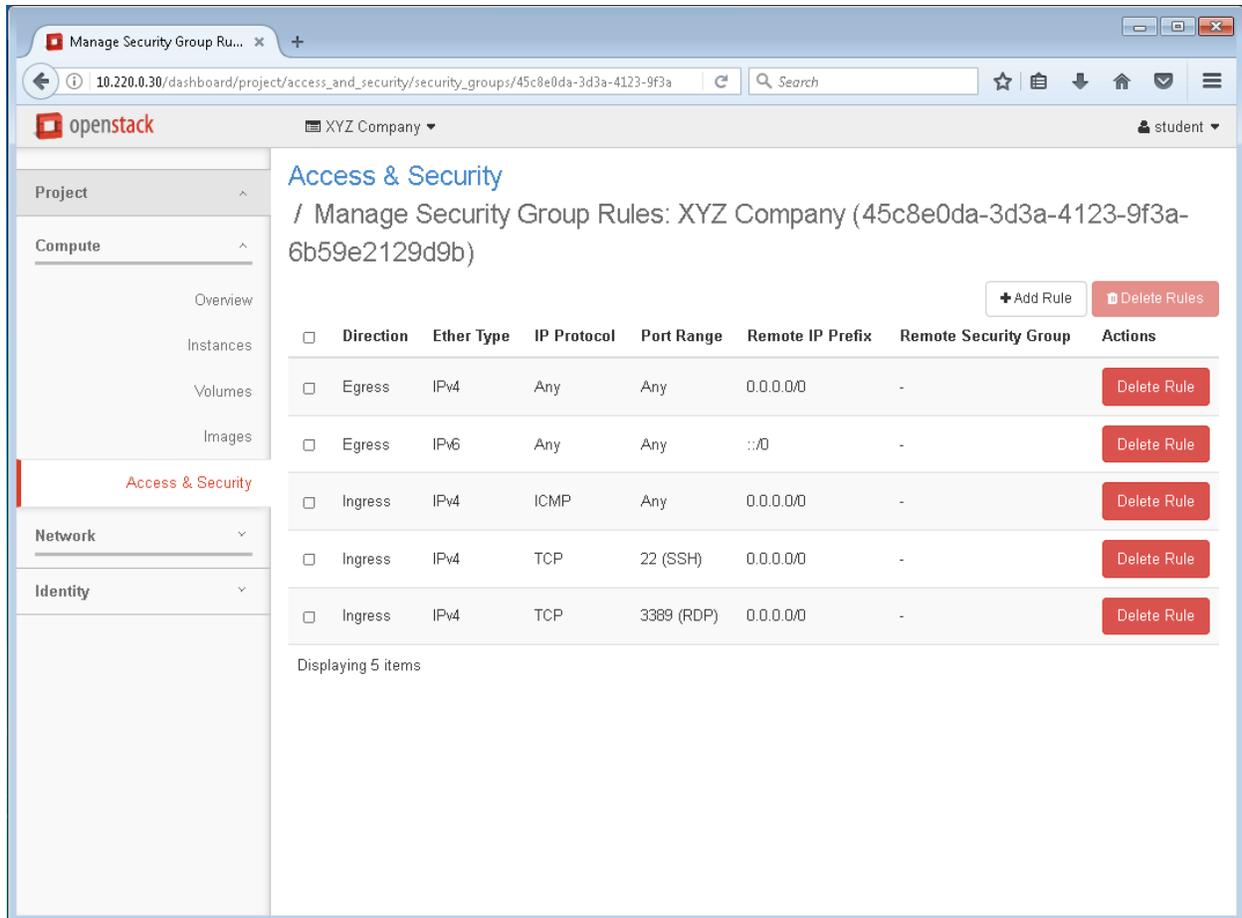


2. **Add a new XYZ Company Security Group Rule to allow RDP, port 3389, from anywhere.** Also, verify that there is a XYZ Company Security Group Rule that allows an SSH connection.

Note: Allowing the ICMP protocol is probably a good idea when you first deploy an instance, but it could also be a security risk, consider deleting the ICMP rule after your instance is working as expected. The lab grade script doesn't check for removal of the ICMP rule.



## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



The screenshot shows the OpenStack dashboard interface for managing security group rules. The browser address bar indicates the URL: `10.220.0.30/dashboard/project/access_and_security/security_groups/45c8e0da-3d3a-4123-9f3a-6b59e2129d9b`. The page title is "Access & Security" and the breadcrumb is "/ Manage Security Group Rules: XYZ Company (45c8e0da-3d3a-4123-9f3a-6b59e2129d9b)".

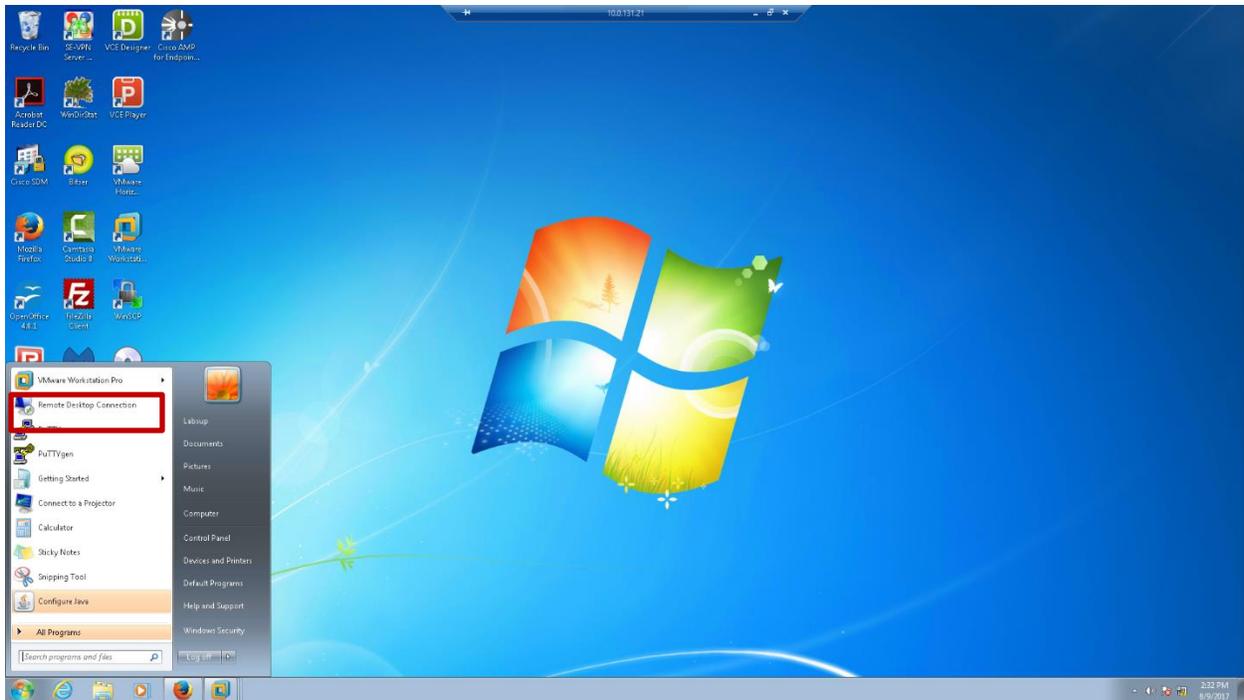
On the left sidebar, the "Access & Security" section is highlighted. The main content area displays a table of security group rules with the following columns: Direction, Ether Type, IP Protocol, Port Range, Remote IP Prefix, Remote Security Group, and Actions. There are five rules listed, each with a "Delete Rule" button.

<input type="checkbox"/>	Direction	Ether Type	IP Protocol	Port Range	Remote IP Prefix	Remote Security Group	Actions
<input type="checkbox"/>	Egress	IPv4	Any	Any	0.0.0.0/0	-	Delete Rule
<input type="checkbox"/>	Egress	IPv6	Any	Any	:::0	-	Delete Rule
<input type="checkbox"/>	Ingress	IPv4	ICMP	Any	0.0.0.0/0	-	Delete Rule
<input type="checkbox"/>	Ingress	IPv4	TCP	22 (SSH)	0.0.0.0/0	-	Delete Rule
<input type="checkbox"/>	Ingress	IPv4	TCP	3389 (RDP)	0.0.0.0/0	-	Delete Rule

Displaying 5 items

3. Your XYZ Company Security Group Rules should match those in the screen capture above. Minimize the Internet Explorer web browser page.





**4. Open the Remote Desktop Connection.**

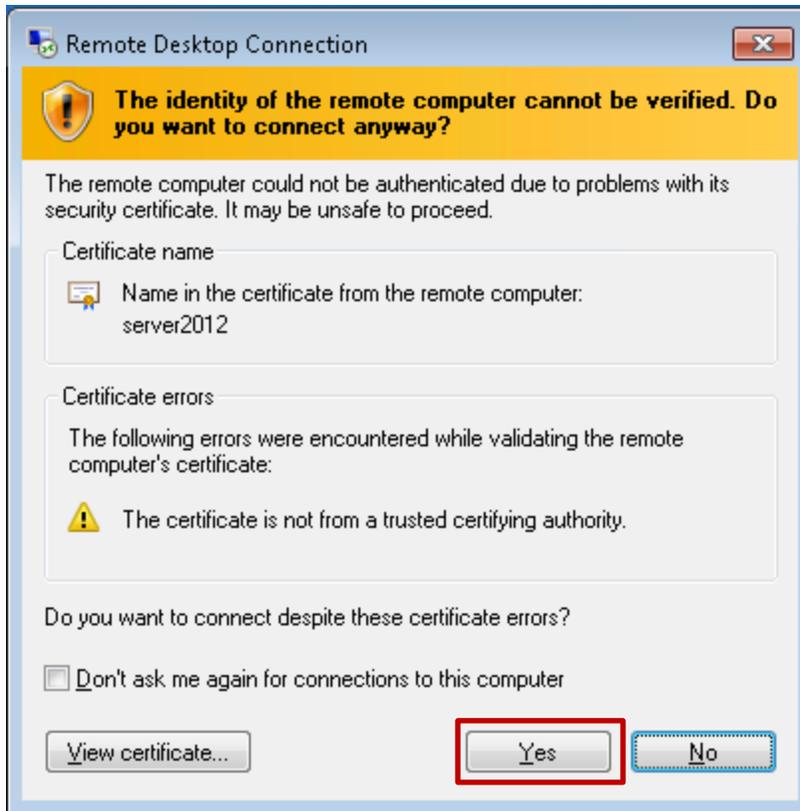




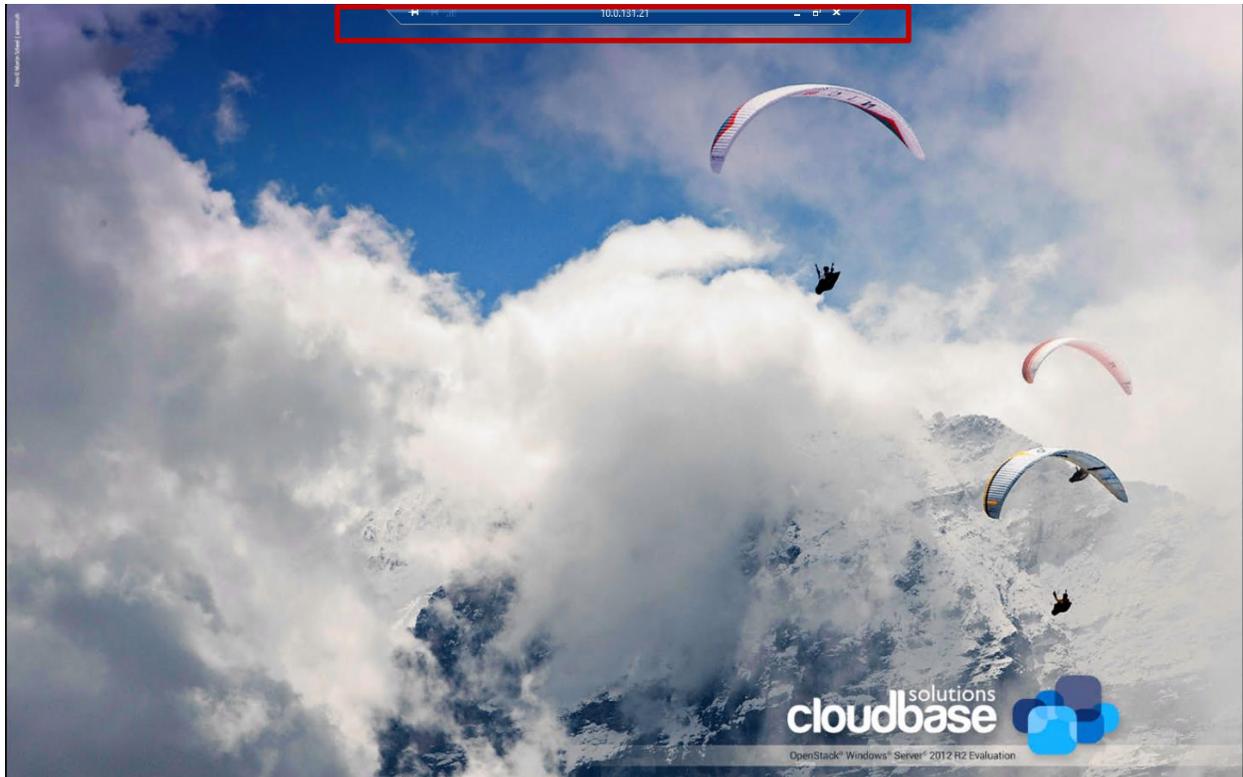
5. **Change the IP address to 10.220.0.12**, which you allocated to Server2012 in a previous step. **Click Connect**



6. Enter the credentials of **Administrator** and **P@ssword** and click OK.



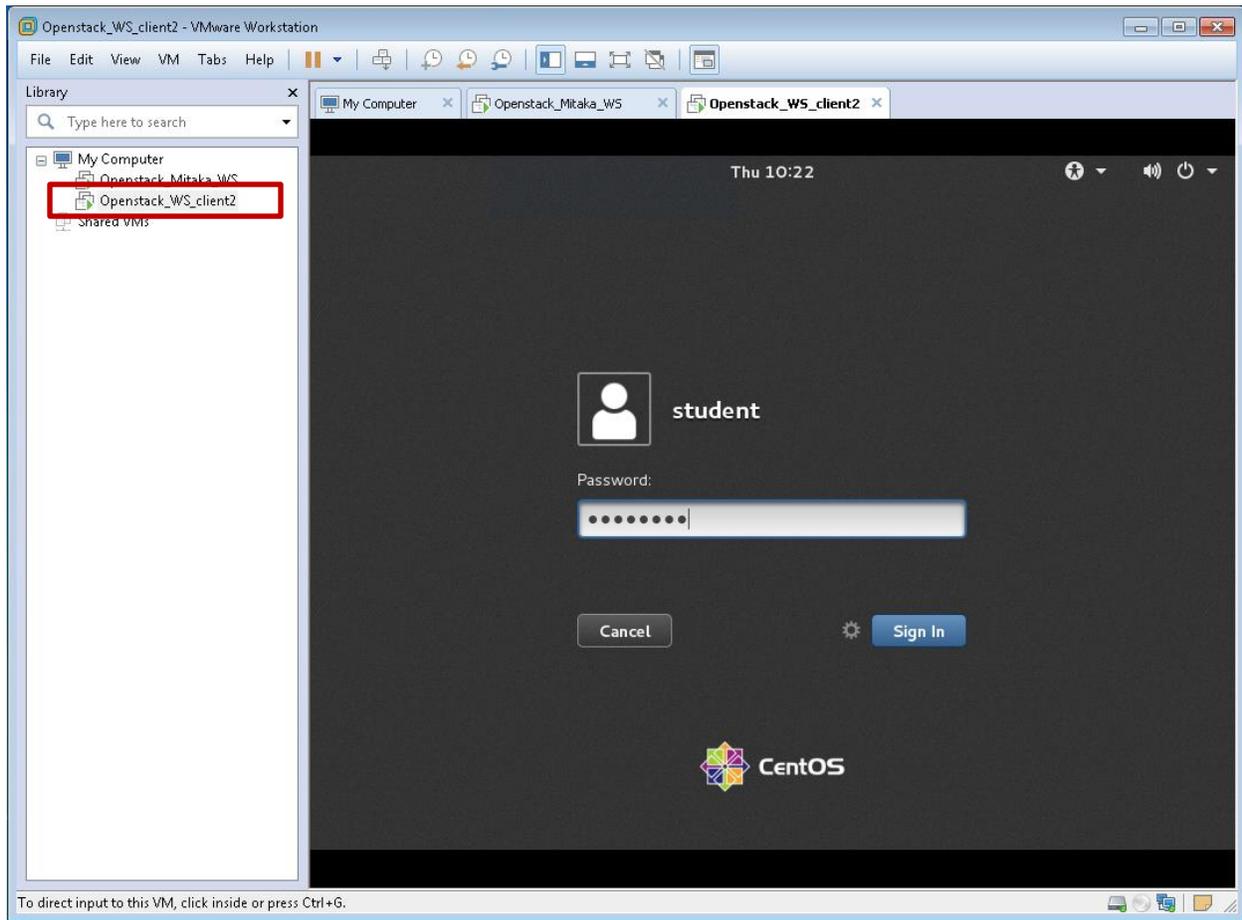
7. **Click Yes** to connect anyway. Optionally, you can select “Don’t ask me again for connections to this computer.”



8. You should see the Server2012 Desktop or the Server Manager Dashboard, depending on how it was configured post deployment. Additionally, you might see a black screen for a couple seconds before the Server2012 Desktop is visible. From here, the user can interact with the cloud instance just as they would on a physical machine. Close the remote desktop connection and continue to lab 19.

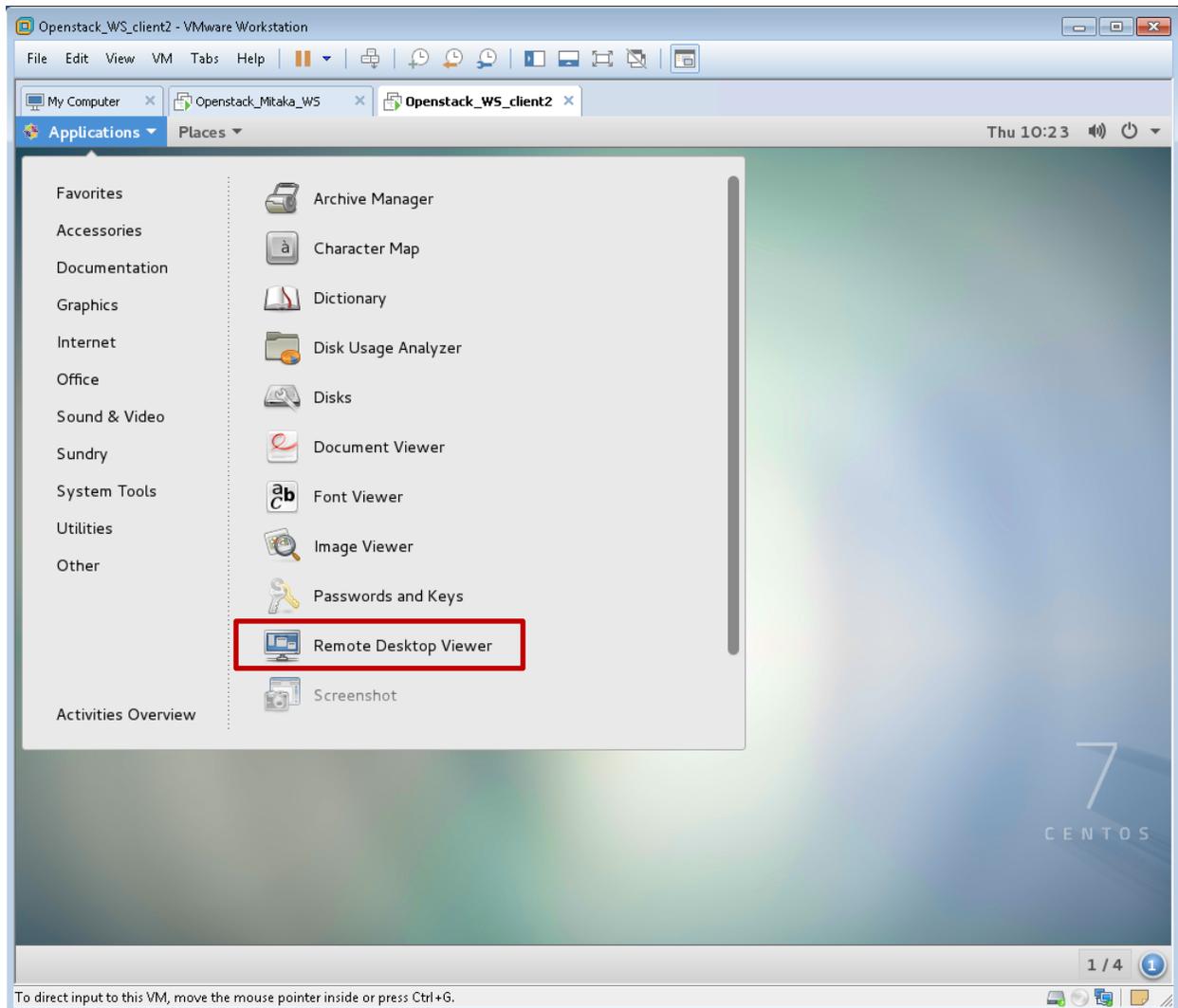
Note: The Remote Desktop Connection defaults to full screen. If you want to make the connection smaller or want to end the RDP connection, then use the toolbar at the top center of the desktop to minimized, resize or end the connection.

## Lab 19: Connect to Server 2012 instance using Linux



1. **Open the Openstack\_WS\_CentOS7 VM and log in as student with the password P@ssword.**

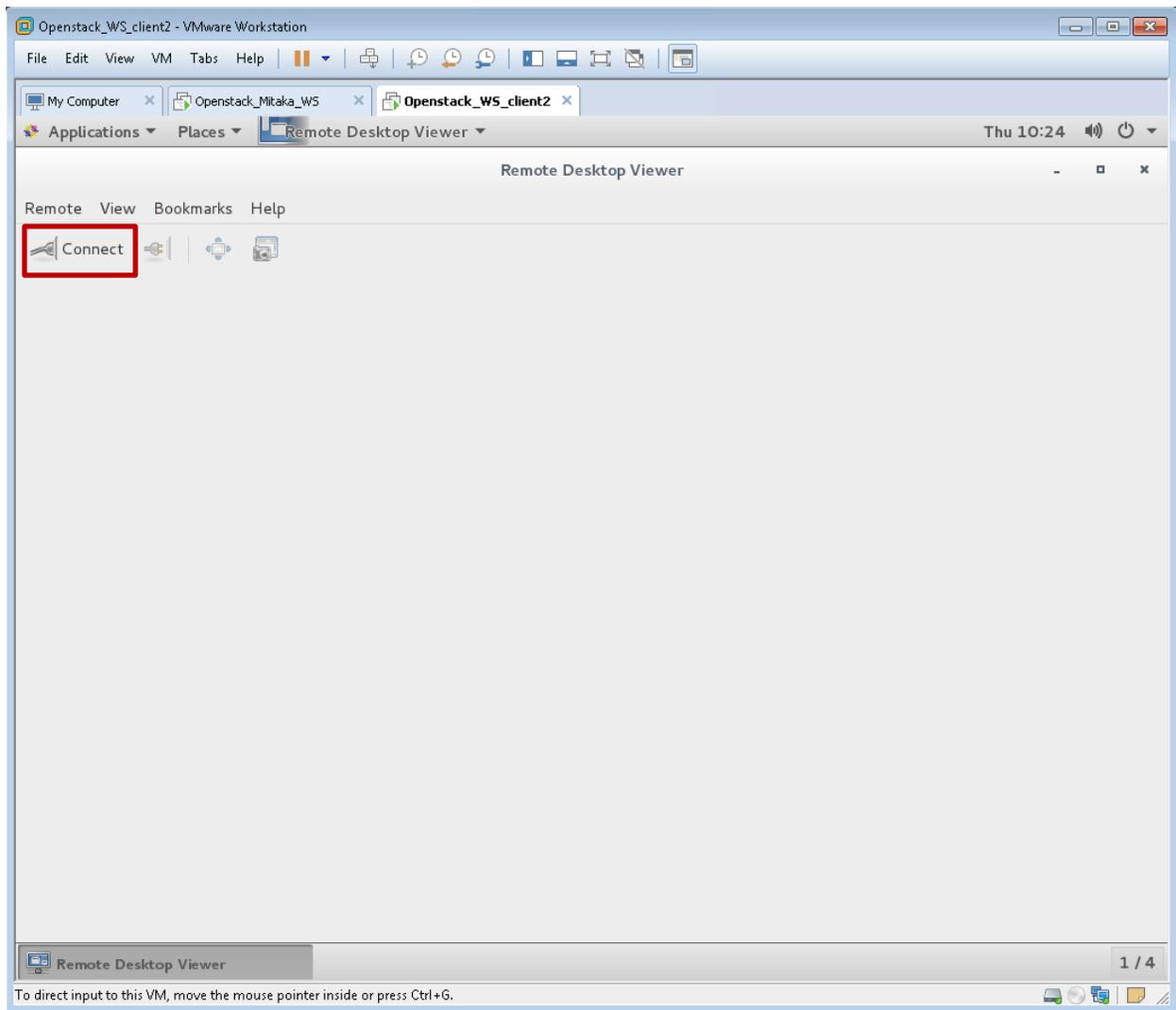
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



2. There are two ways to use Remote Desktop in a typical Linux Graphical User Interface (GUI) installation, first we'll use the GUI, and then we'll use the command line with the FreeRDP package installed. **Click on Applications>Utilities>Remote Desktop Viewer**



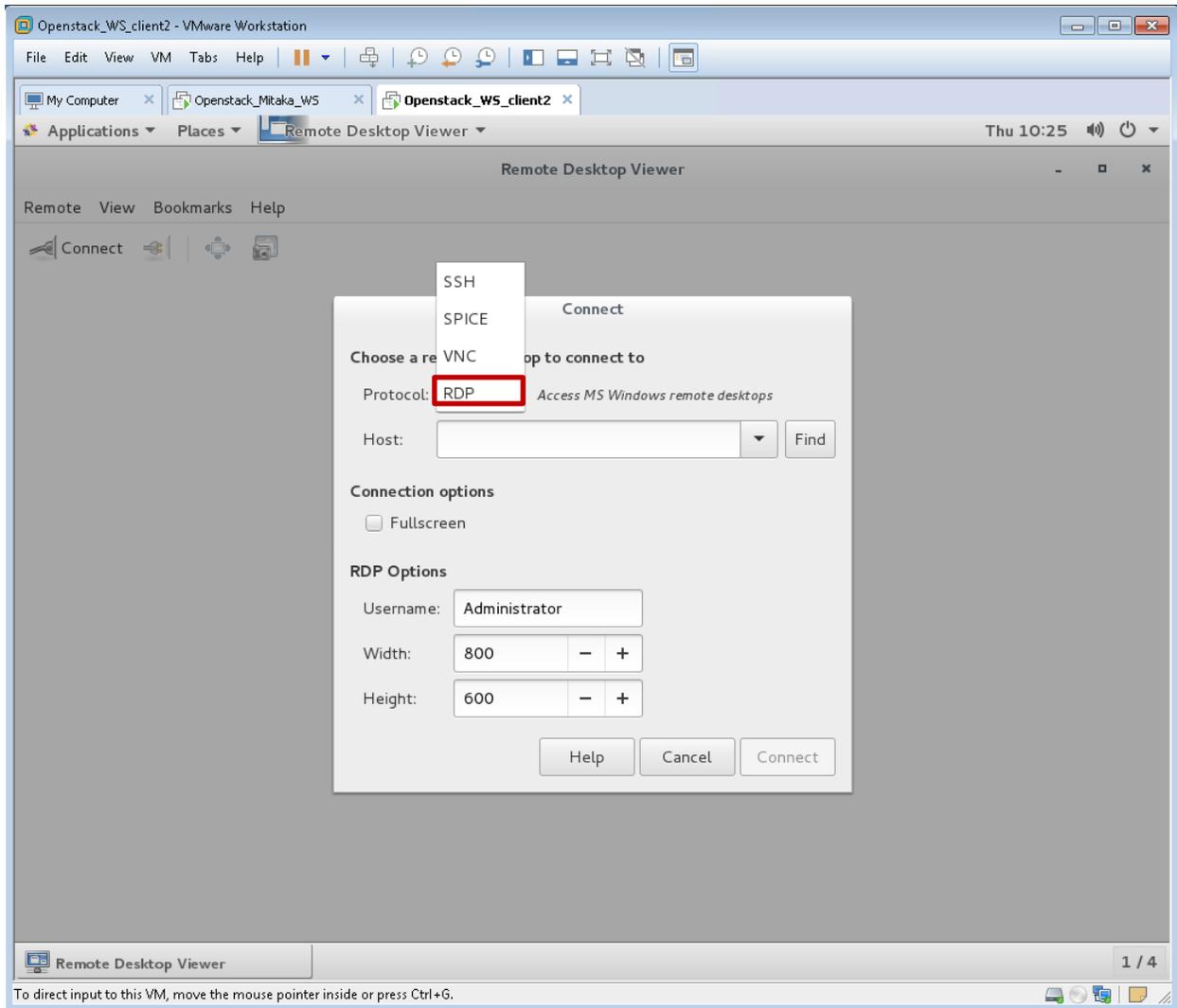
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



### 3. Click on Connect

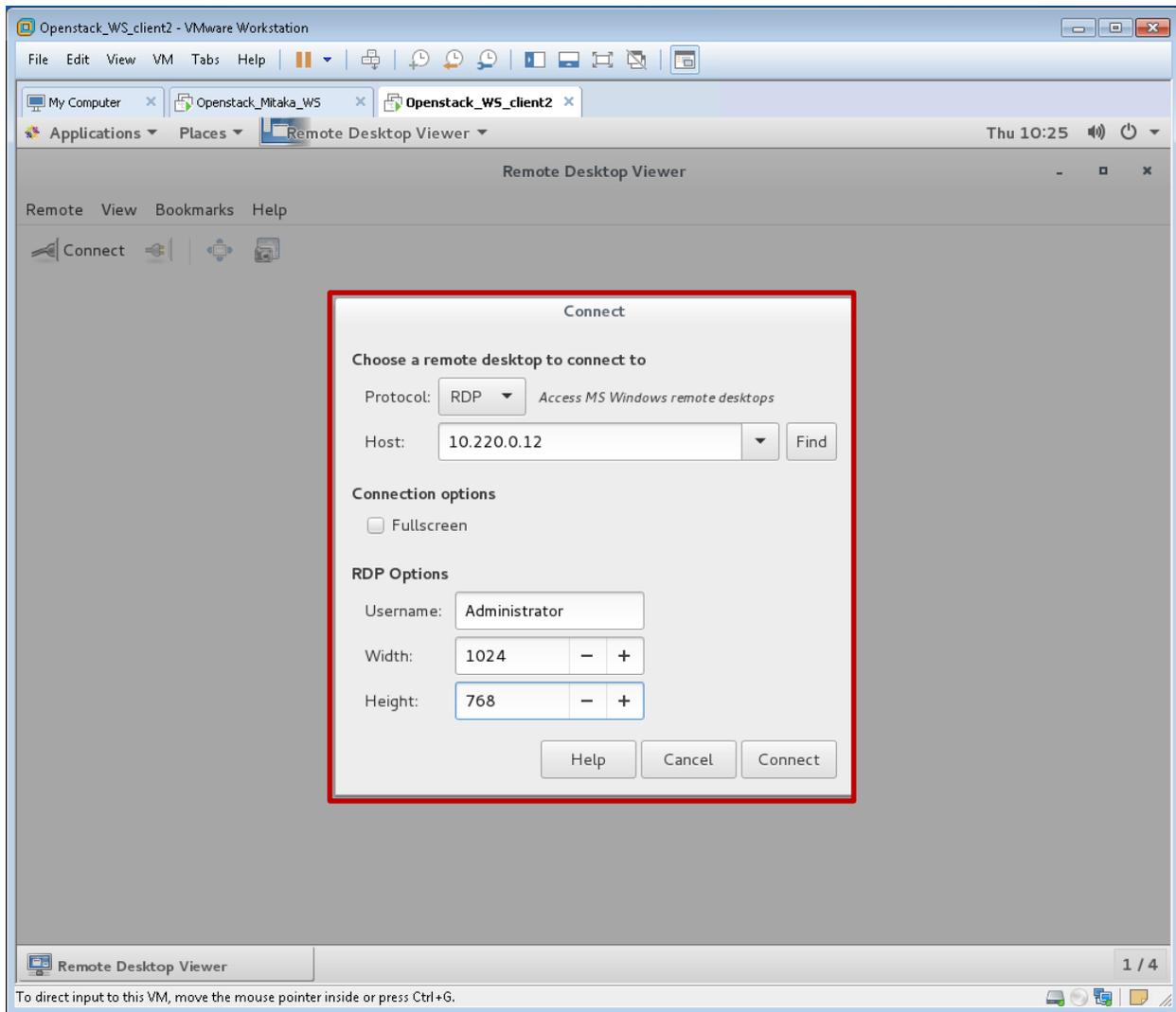


## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



### 4. Using the Dropdown menu for Protocol: **Select RDP**



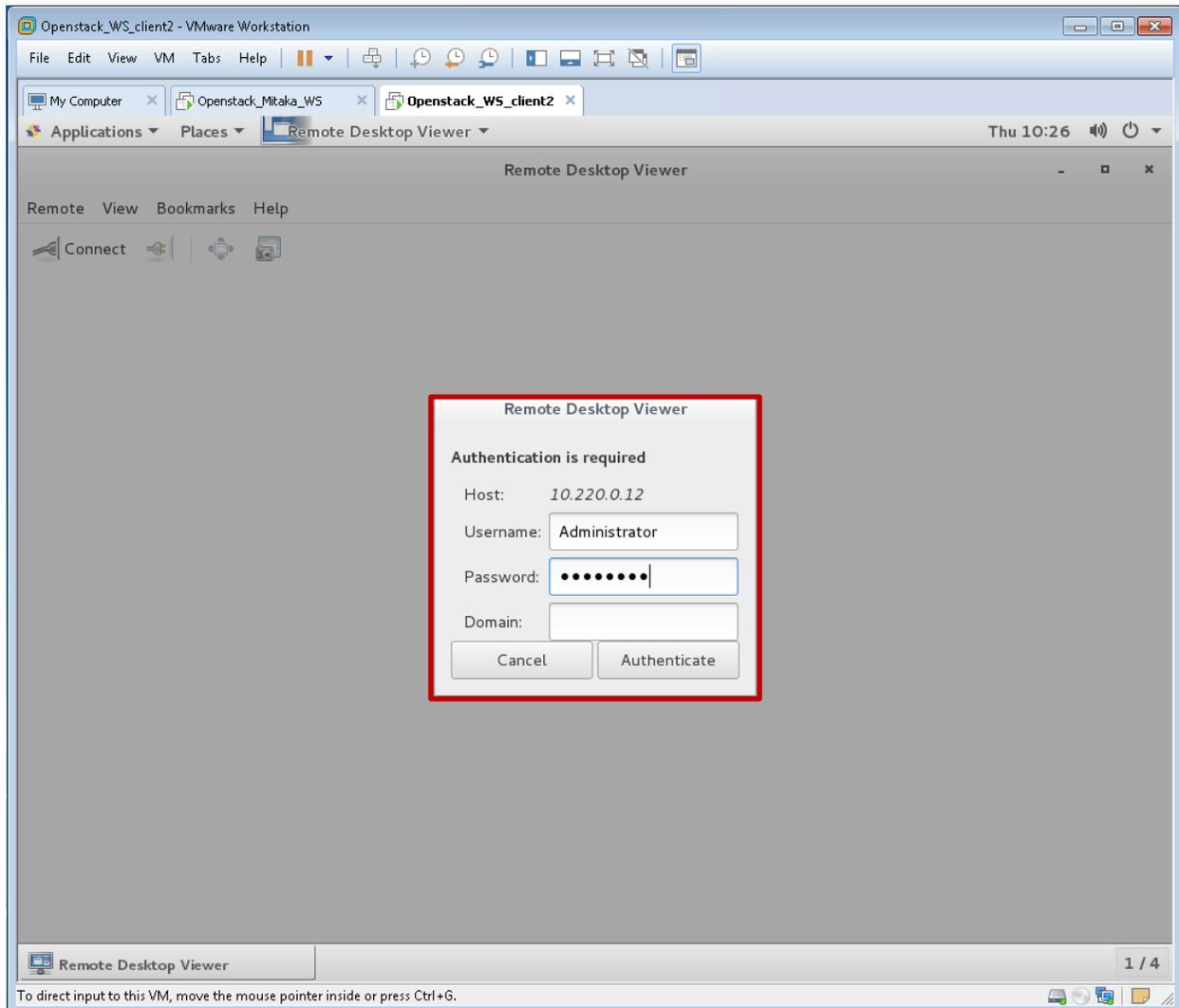


5. Enter the IP address **10.220.0.12**, the username **Administrator**, and change the desktop resolution to **1024x768**, which is the same resolution as the Linux desktop. Click Connect

Protocol	RDP
Host	10.220.0.12
Username	Administrator
Width	1024
Height	768

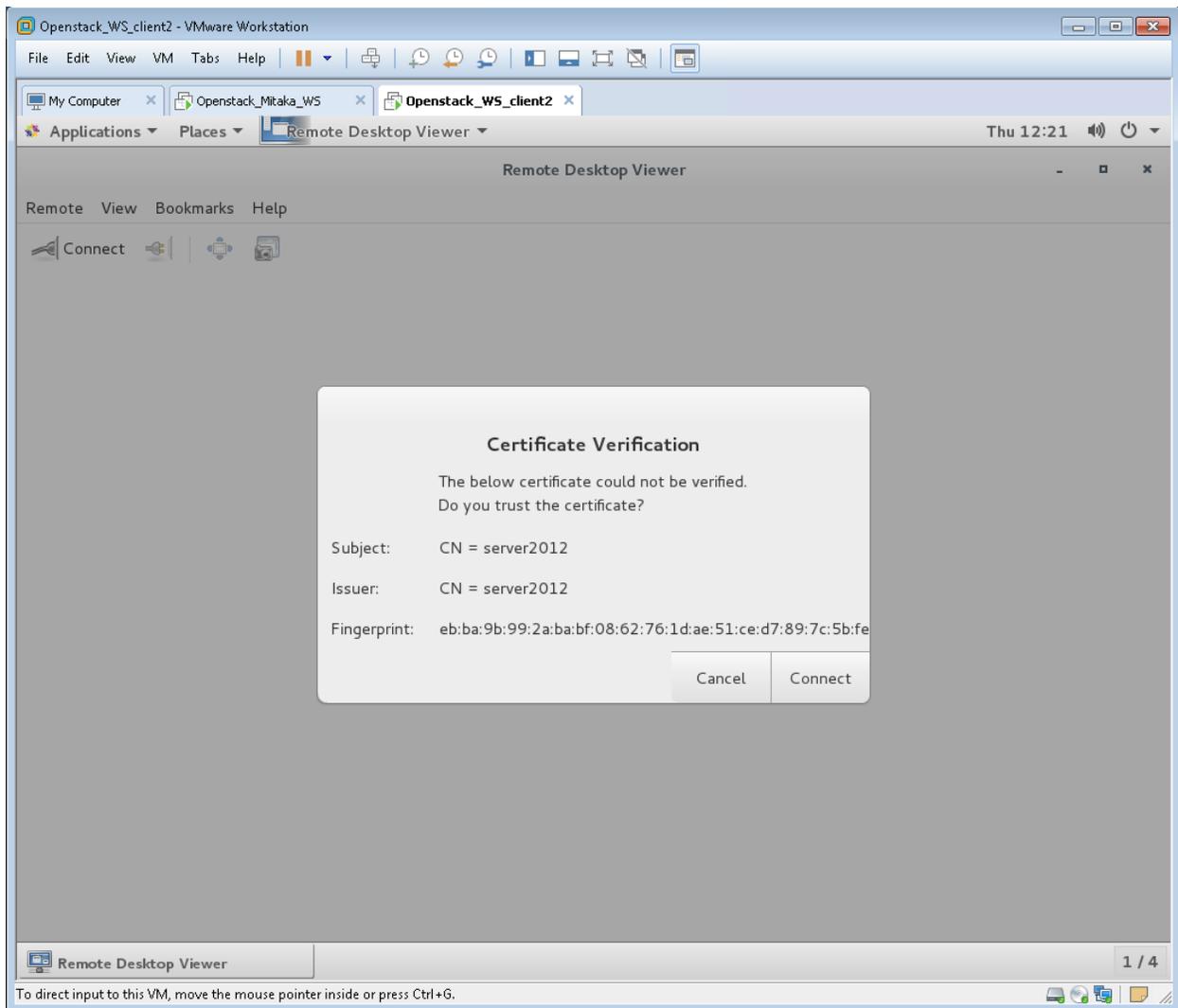
Note: If you leave the Username blank on this screen, then the next screen will prompt you for the username.

## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



6. Enter the password of **P@ssword** and press enter or click **Authenticate**.

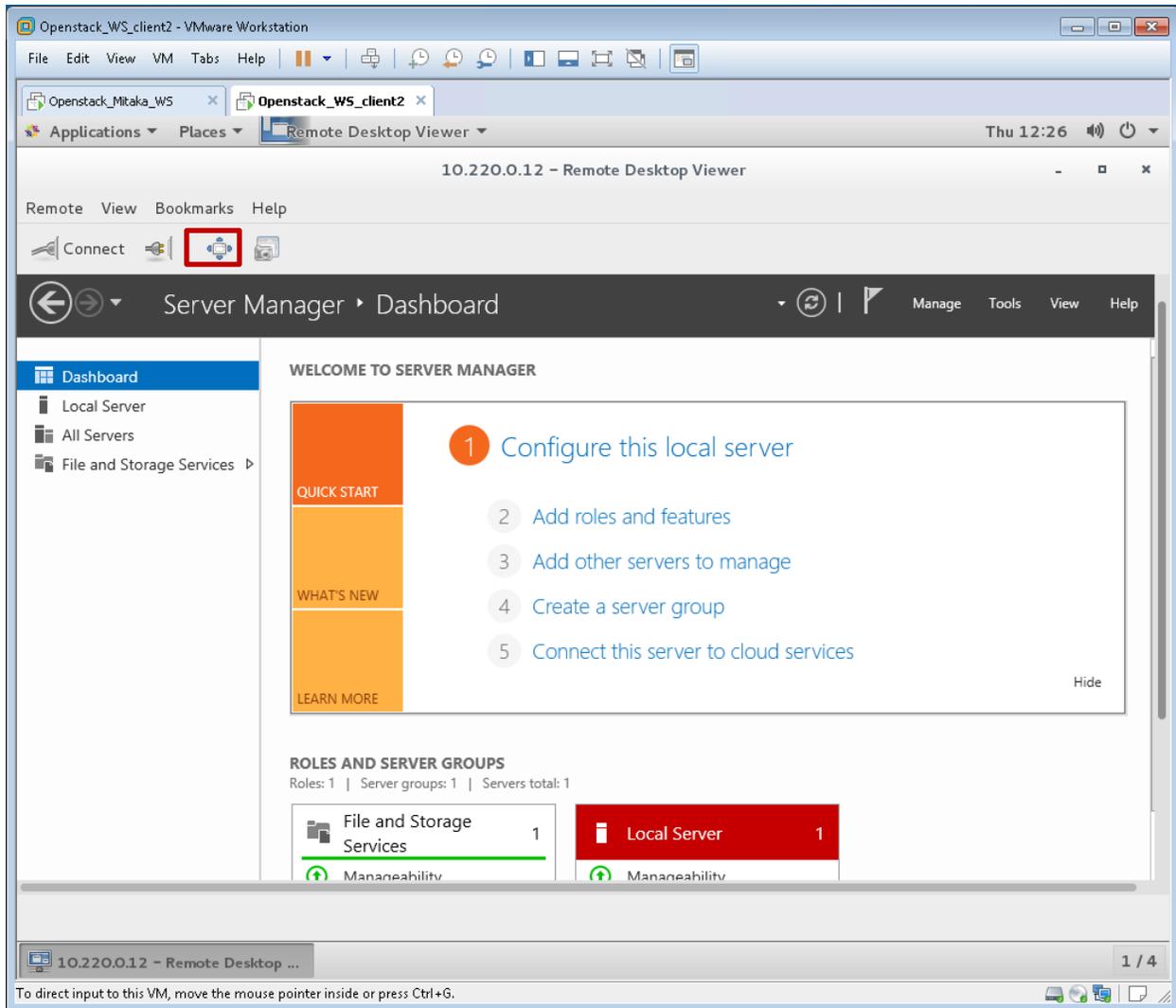
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



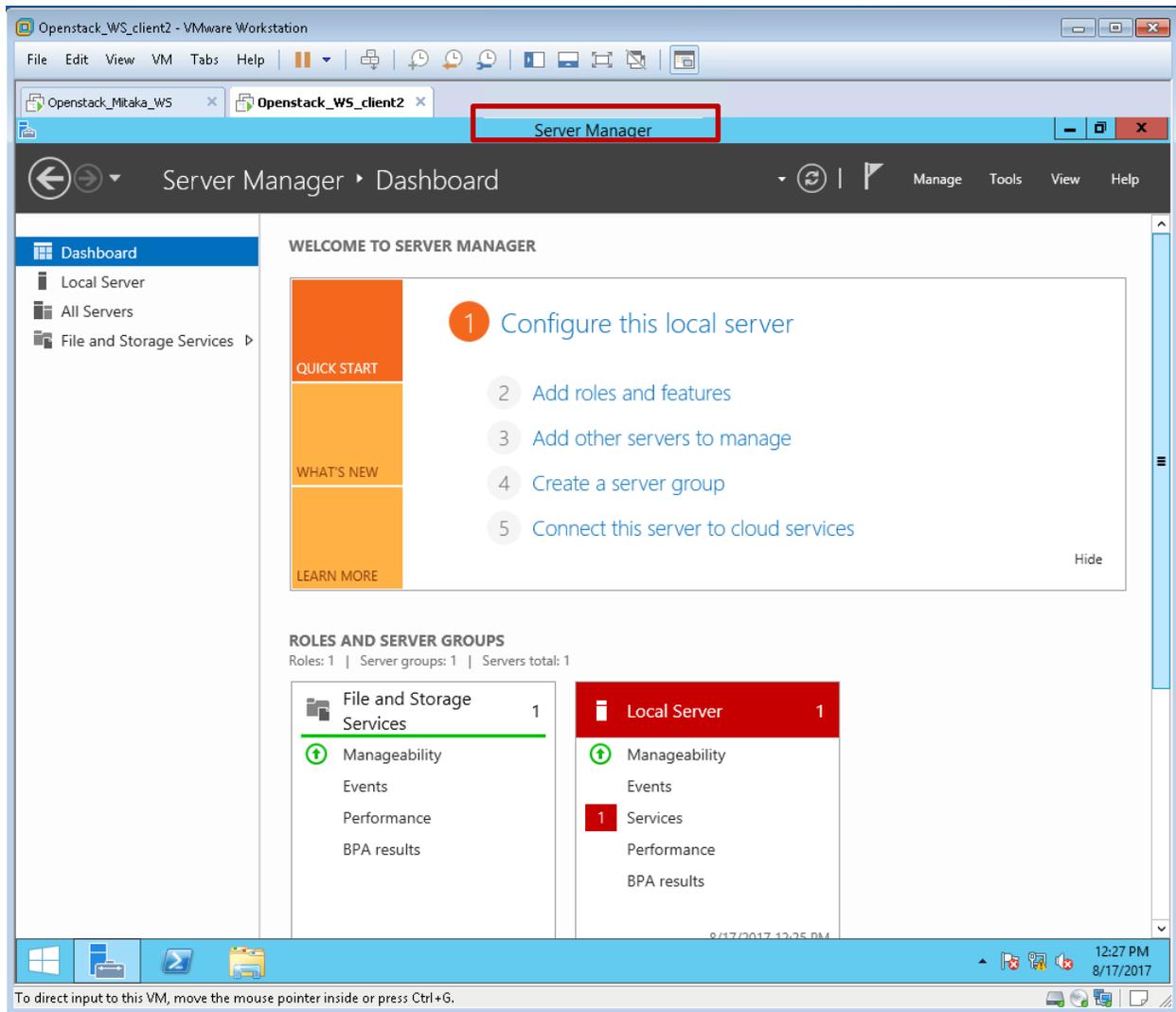
7. We do trust the Server2012 Certificate. **Click Connect.**



## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



8. Click on the full screen icon on the menu bar

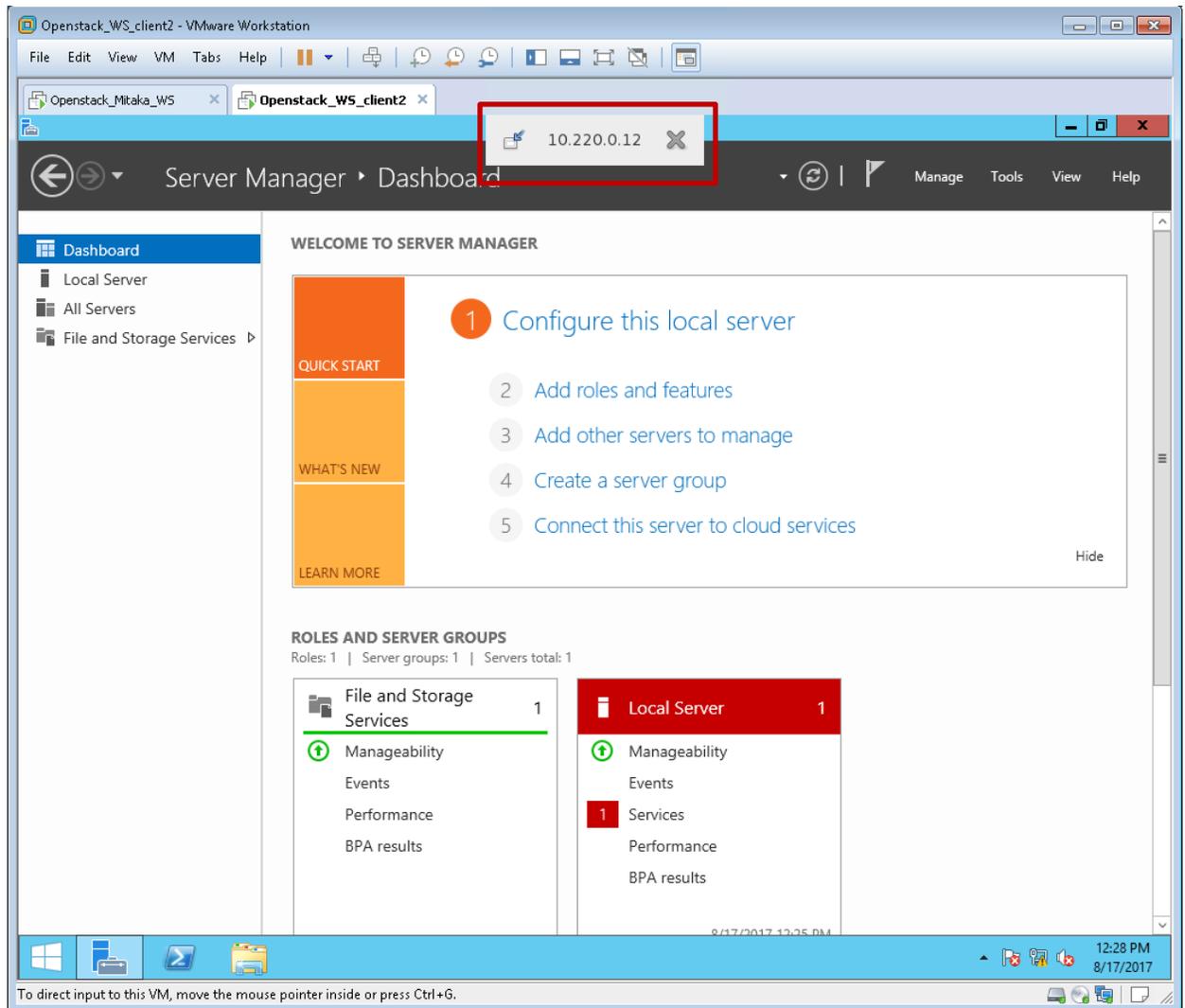


9. Just like using Remote Desktop Connection in the Windows VM, the user can interact with instance just like they would with a physical machine.

Note: In the top center of the remote desktop connection, you should see that there is a tab just visible at the top of the desktop, hover your mouse over this to open the controls (shown on next page).



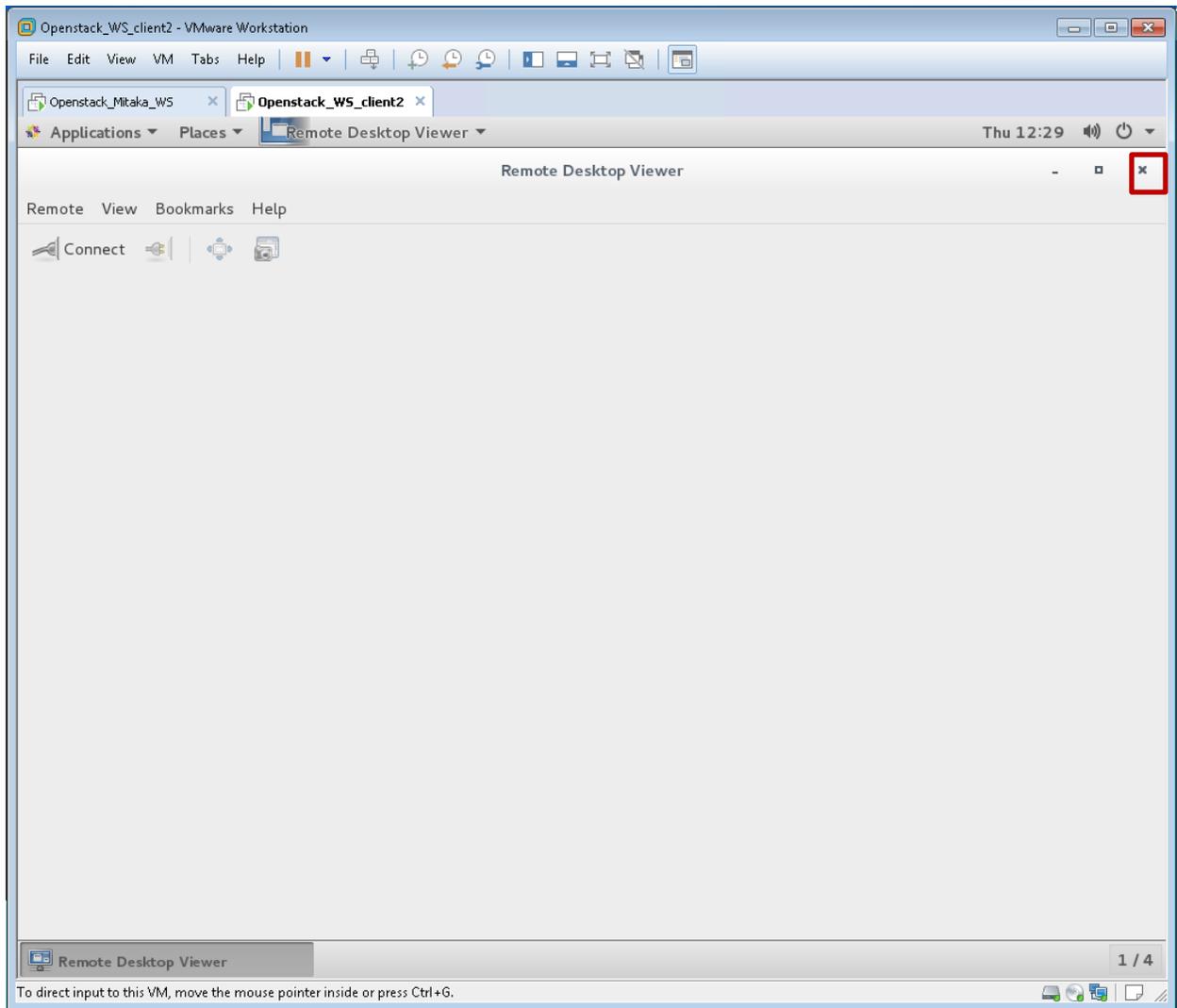
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



10. You can use this control tab to either minimize the remote desktop (left side) or close the remote desktop (X). Close the remote desktop



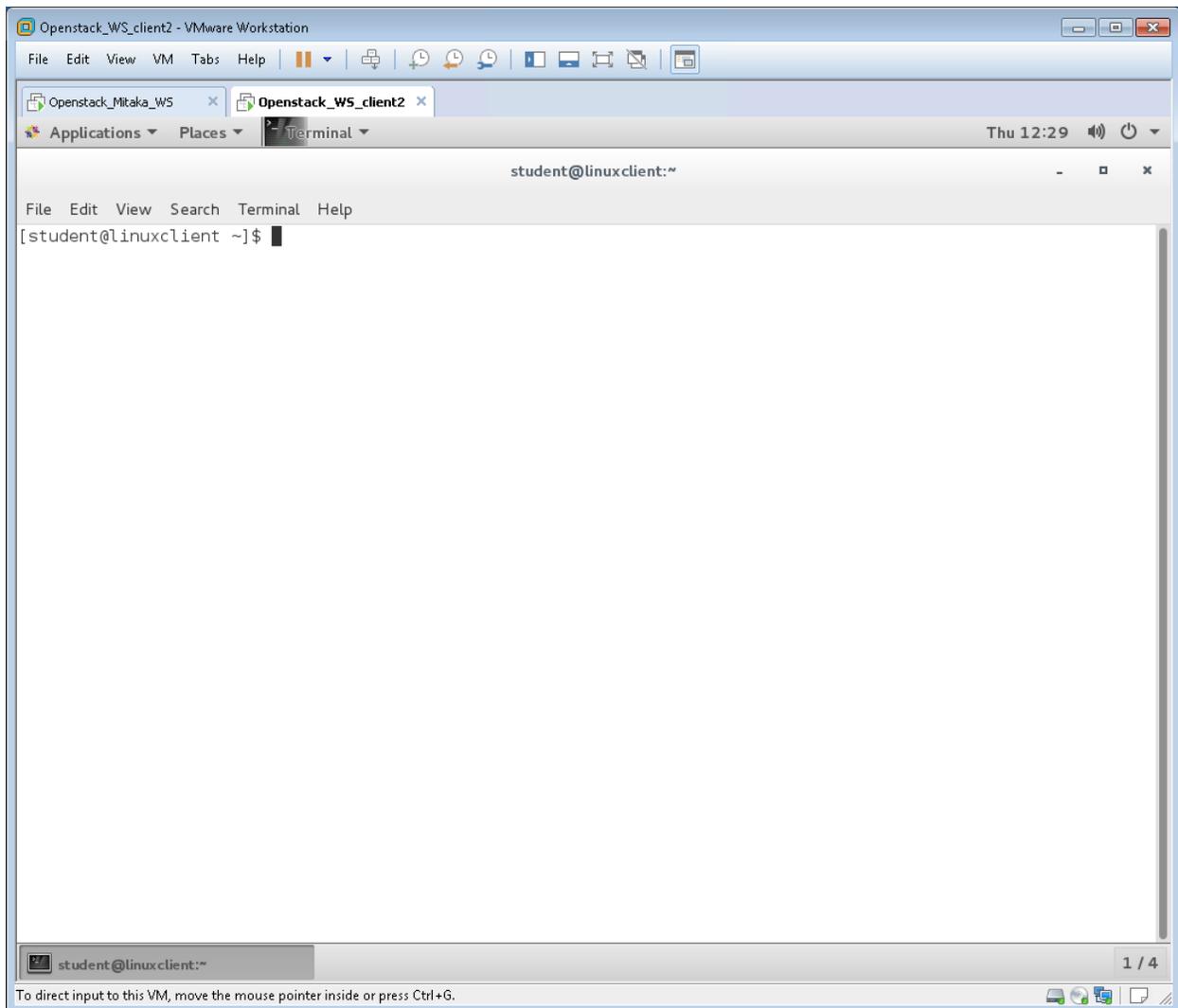
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



### 11. Close the Remote Desktop Viewer.



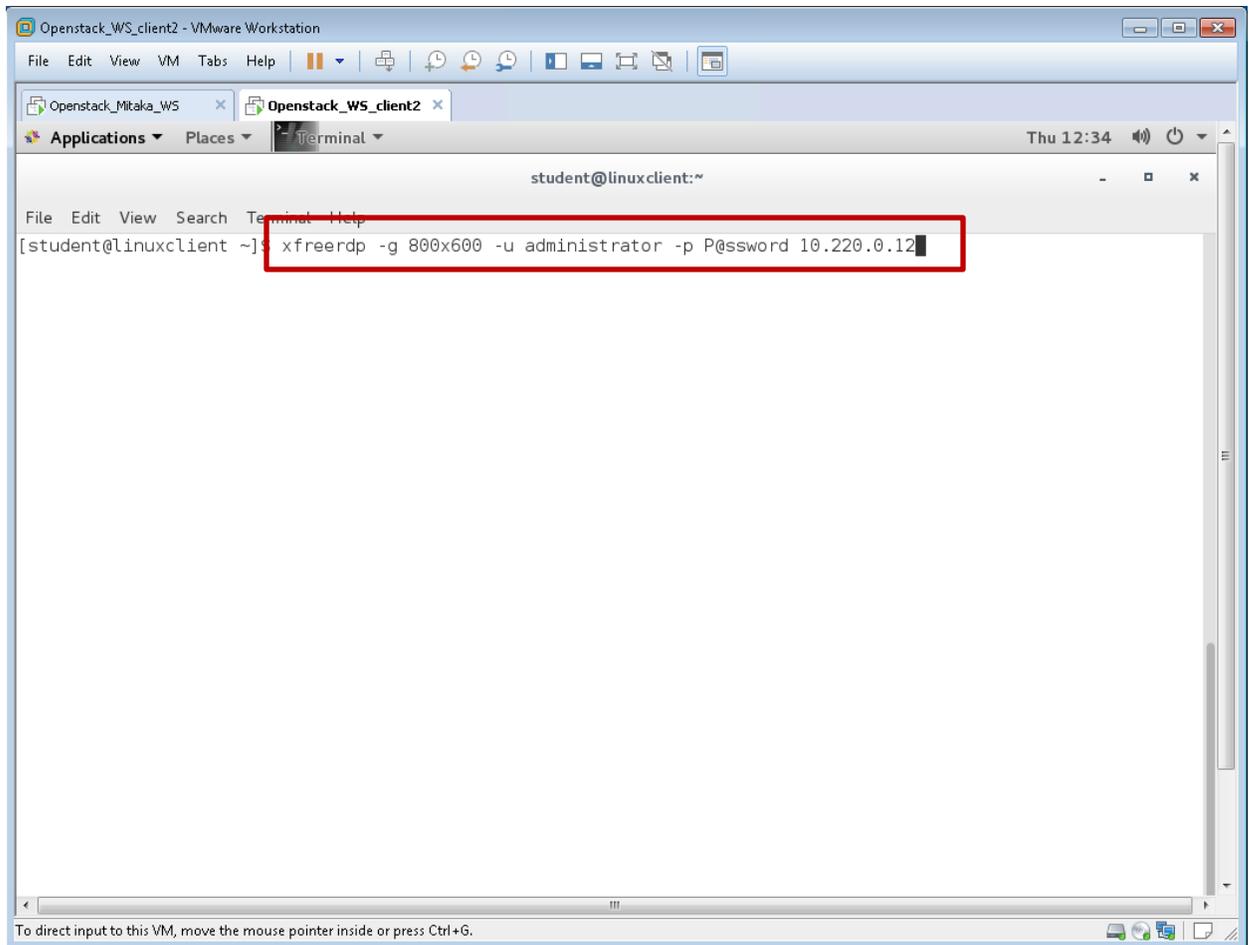
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



12. **Open a terminal session, Applications>Favorites>Terminal, and maximize the window (optional).**



## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



13. Use the FreeRDP command and options shown: **xfreerdp -g 800x600 -u Administrator -p P@ssword** and the Server2012 IP address of **10.220.0.12**.

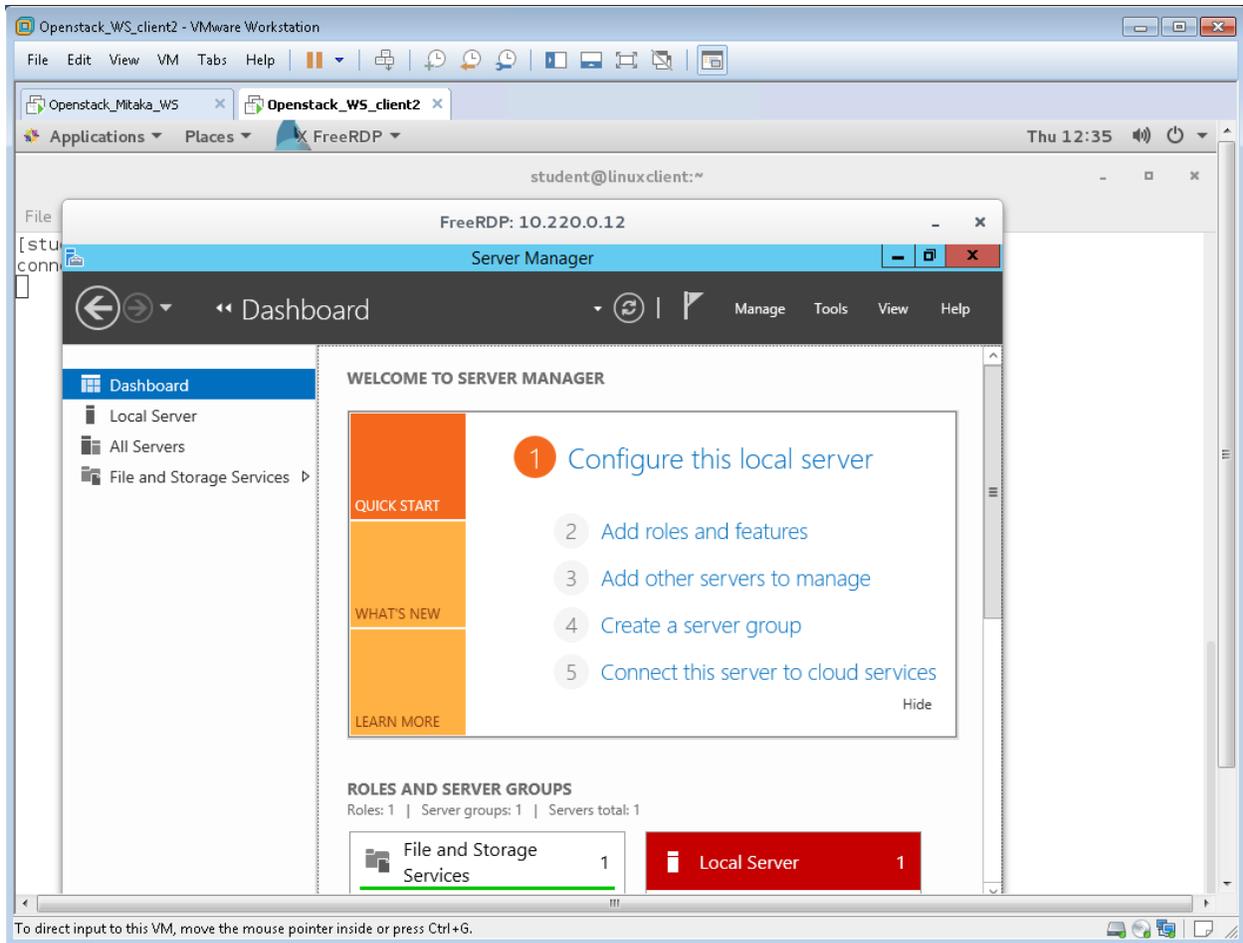
Command	xfreerdp
-g (screen resolution option)	800x600
-u (username option)	Administrator
-p (password option)	P@ssword
IP address	10.220.0.12

Note: In this lab environment, using a screen resolution greater than 800x600 will limit what you can see on the remote desktop, for example: With the resolution set at 1024x768, the entire bottom of the Server 2012 desktop is not visible and therefore, unusable.

Note: The FreeRDP package is installed on the Linux machine in this lab, you can use the yum command to download and install the package on a Linux installation outside of the Workstation environment.



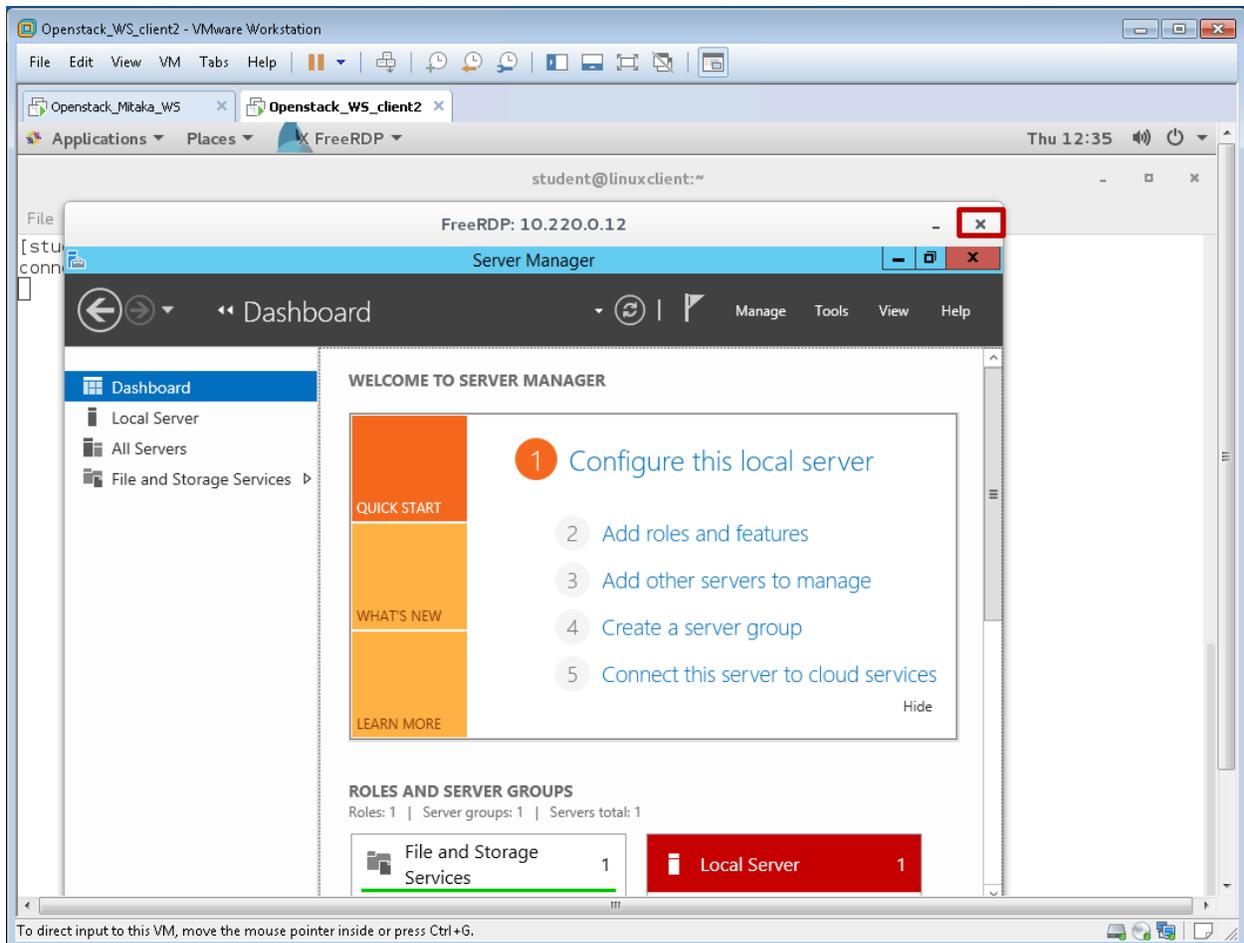
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



14. The connection should open as shown in the screen capture above.



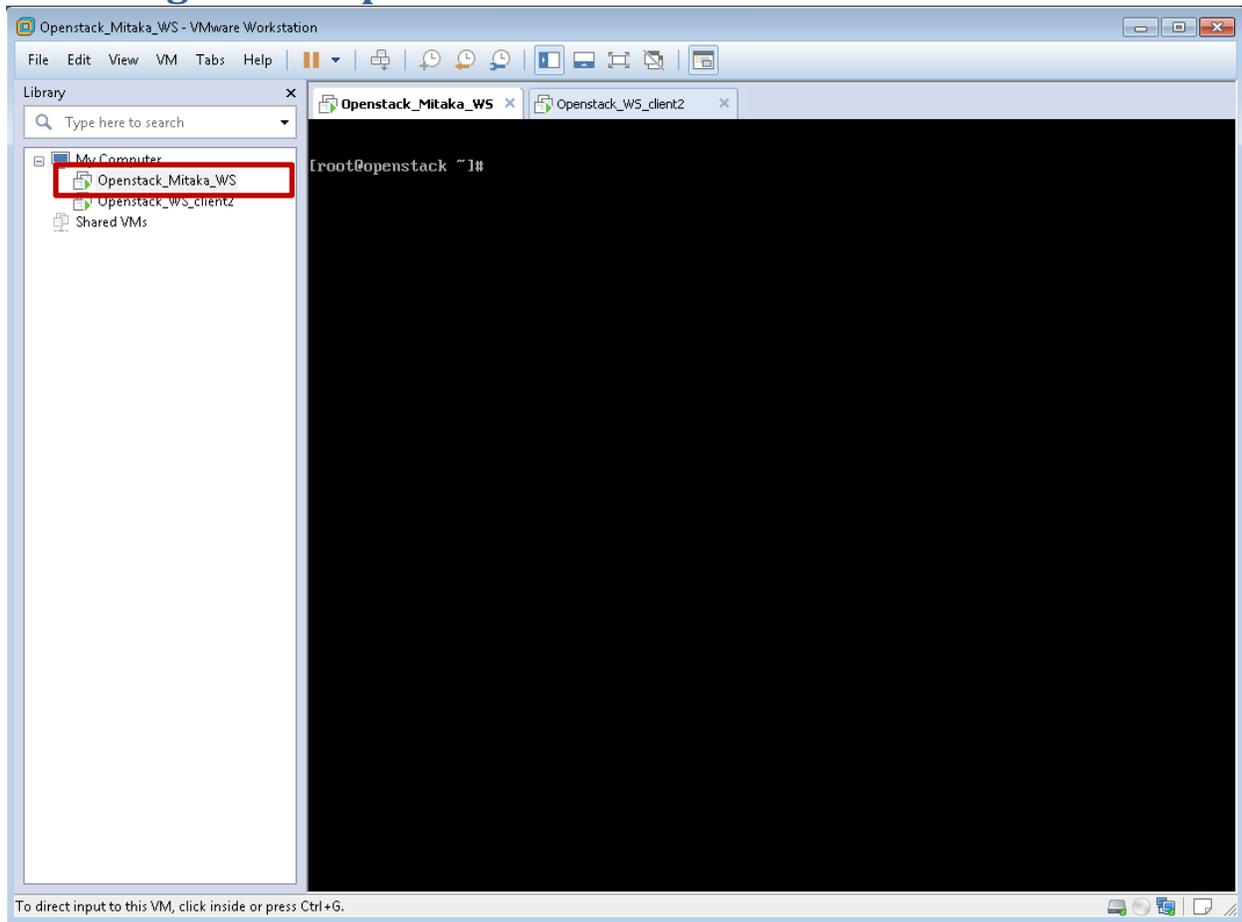
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



15. Close the **FreeRDP connection**. Continue to run the grade script



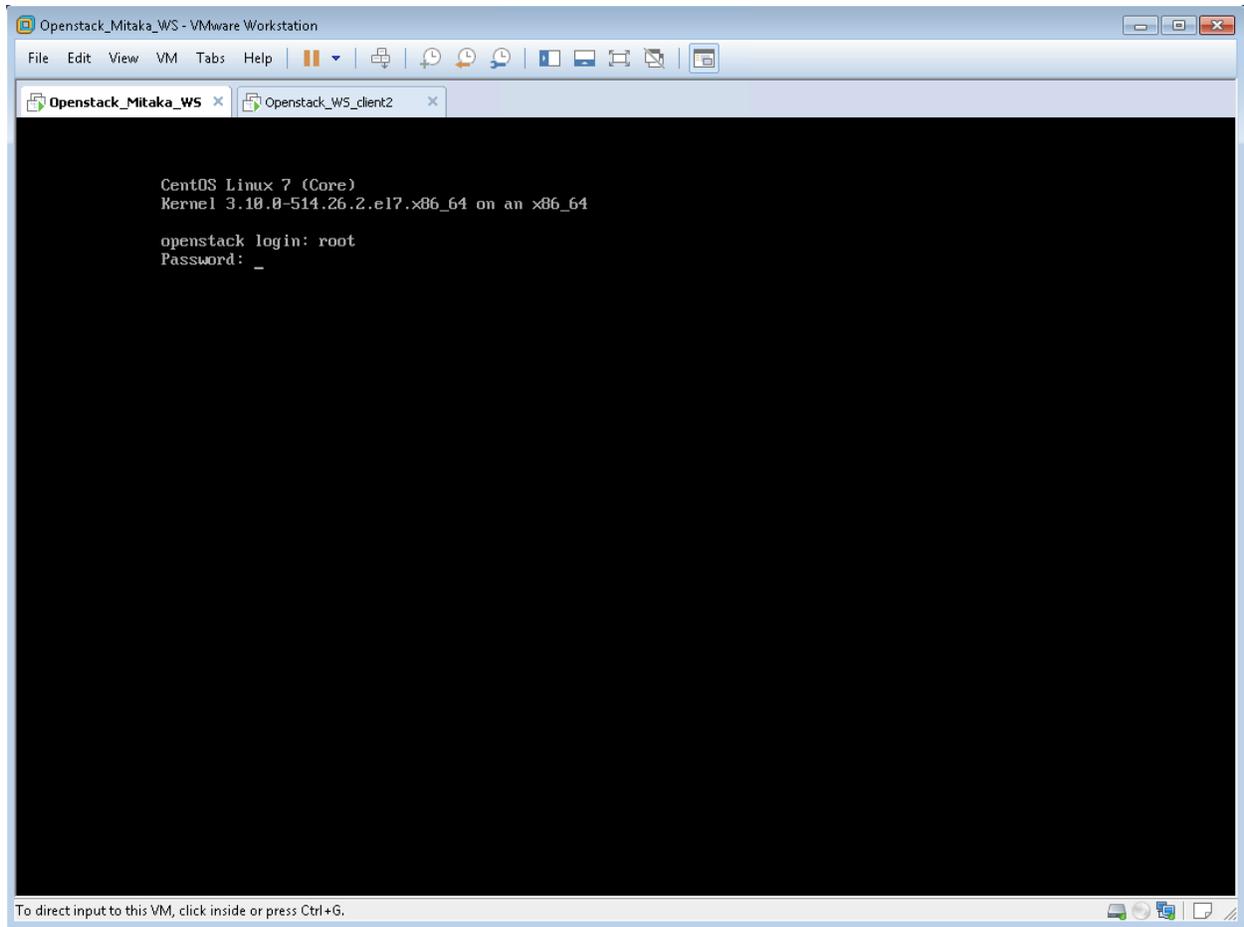
## Run the grade script



1. Return to Workstation and **Click on OpenStack\_WS VM**

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

## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs

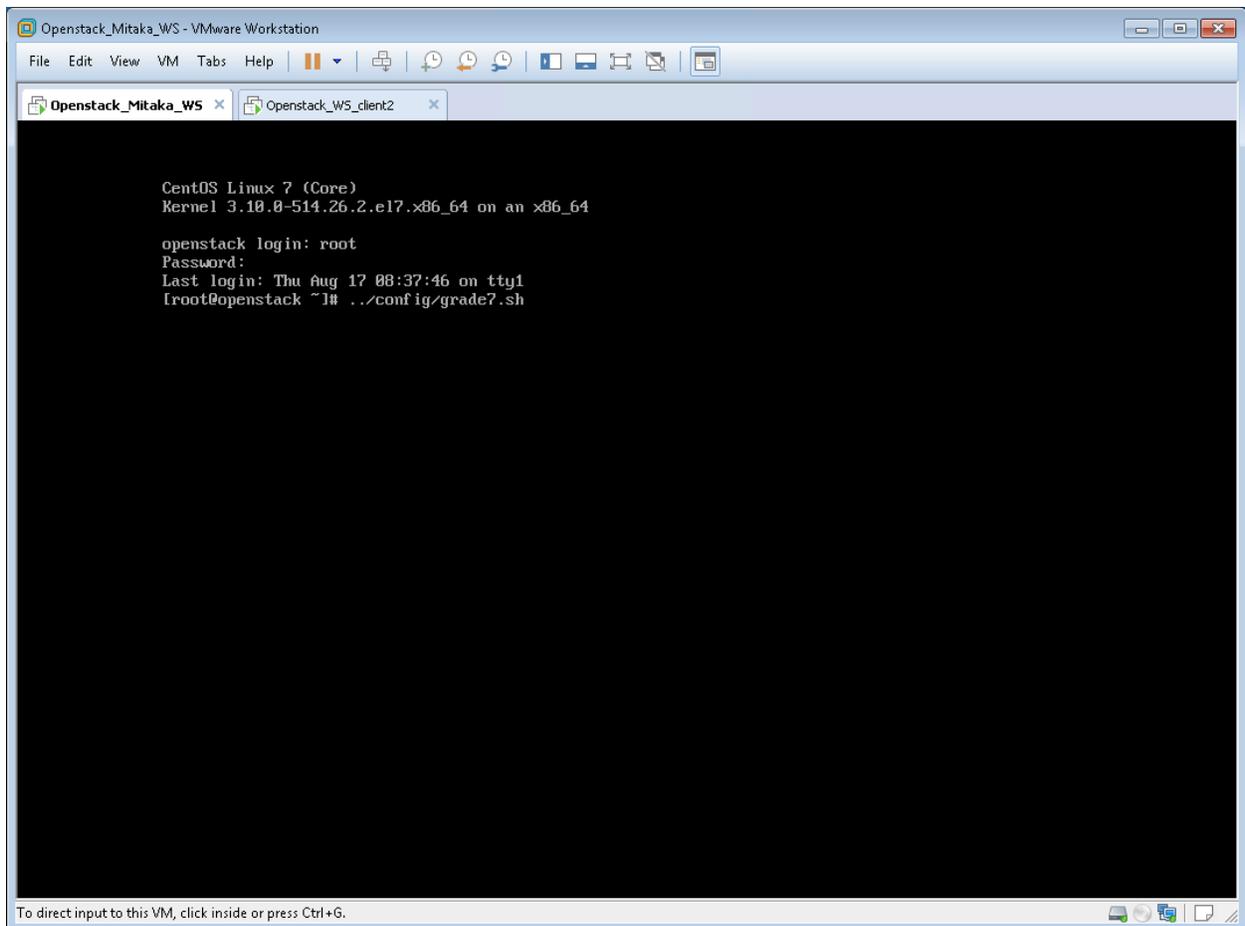


### 2. Log in as root with the Password: P@ssword

Note: The password is NOT visible as you type it



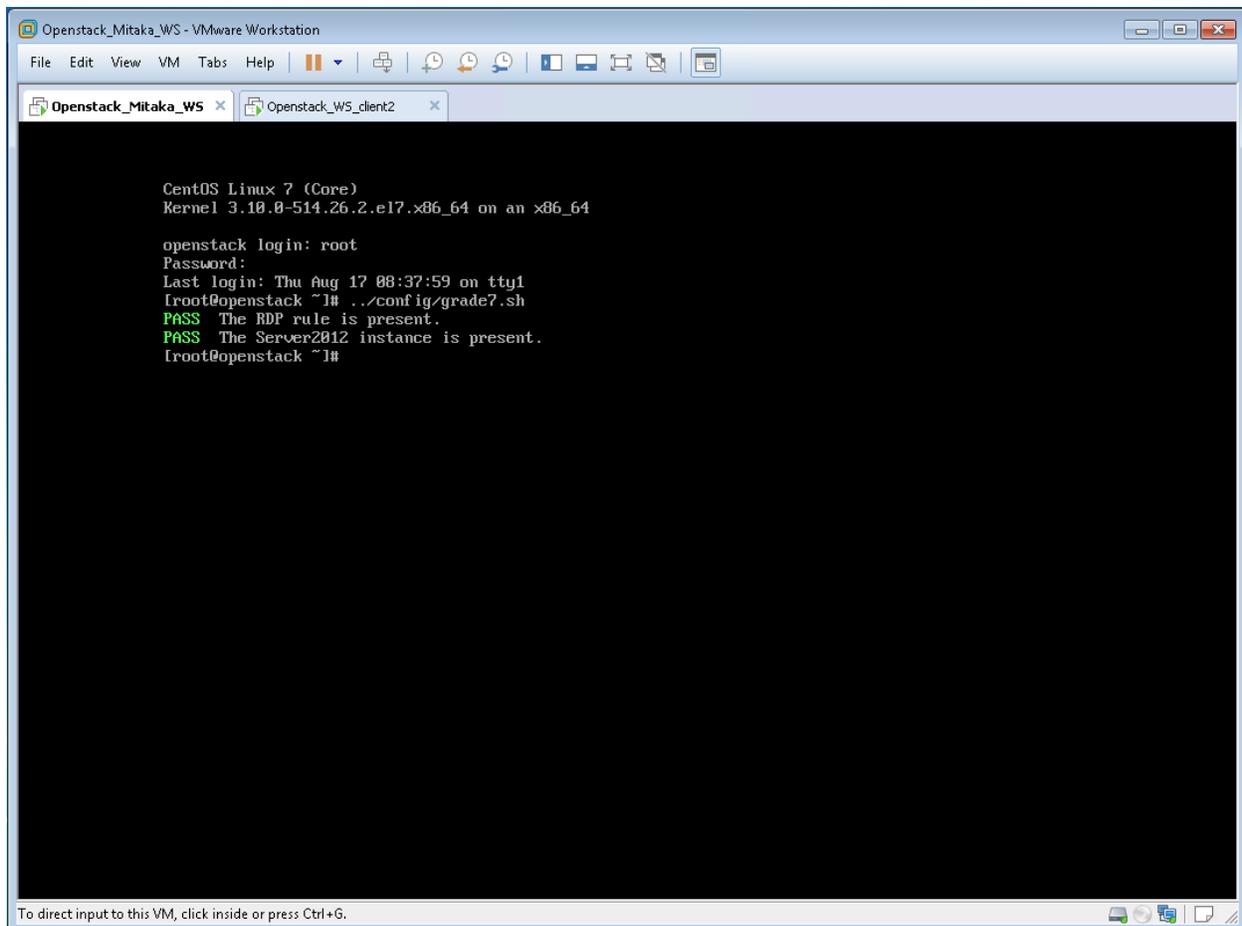
## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



3. Enter the command; `../config/grade7.sh` and **press Enter**



## Module 7: Launch a Server 2012 instance and connect with RDP from Windows and Linux VMs



```
Openstack_Mitaka_WS - VMware Workstation
File Edit View VM Tabs Help
Openstack_Mitaka_WS x Openstack_WS_client2 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: Thu Aug 17 08:37:59 on tty1
root@openstack ~]# ./config/grade7.sh
PASS The RDP rule is present.
PASS The Server2012 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\_WS VM to the base snapshot and start over again.

This completes Module 7, continue to conclusion



## Conclusion:

You have successfully assisted the customer in connecting to their Server2012 instance using Remote Desktop Connection from a Windows VM, using Remote Desktop Viewer from a Linux Desktop with GUI and from the Linux command line using FreeRDP. Your next field visit to XYZ Company will be to show the user how to inject packages and attach an additional drive in a Linux installation.

