Exercise 2. Install the Linux Data Science VM

In this exercise, you will

1. Create a password protected private and public key
2. Install and deploy the Linux DS VM using your public key
3. Download X2GO and use it to visit your VM
4. Run Jupyter on the VM through the jupyter hub

Step 1

You will need a public-private key pair.

If you have a mac or linux do this

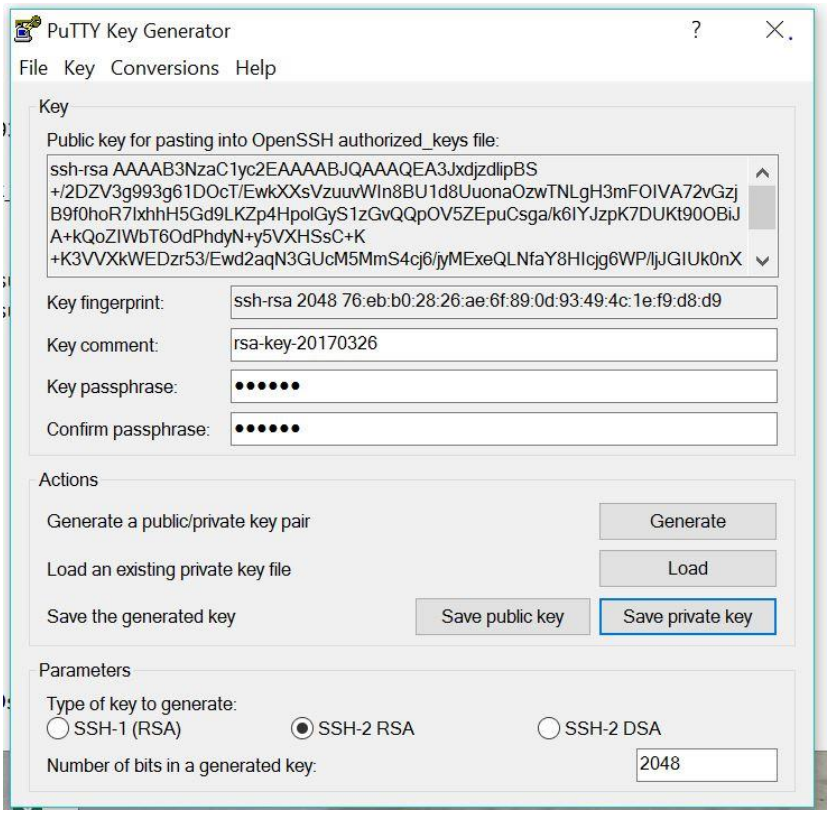
>ssh-keygen

And follow the instruction. This will generate two files. One is you private key and the other has the extension .pub. this is the public key you will upload to your VM.

If you are on a windows machine do this

Download and Install PuTTY. From www.putty.org

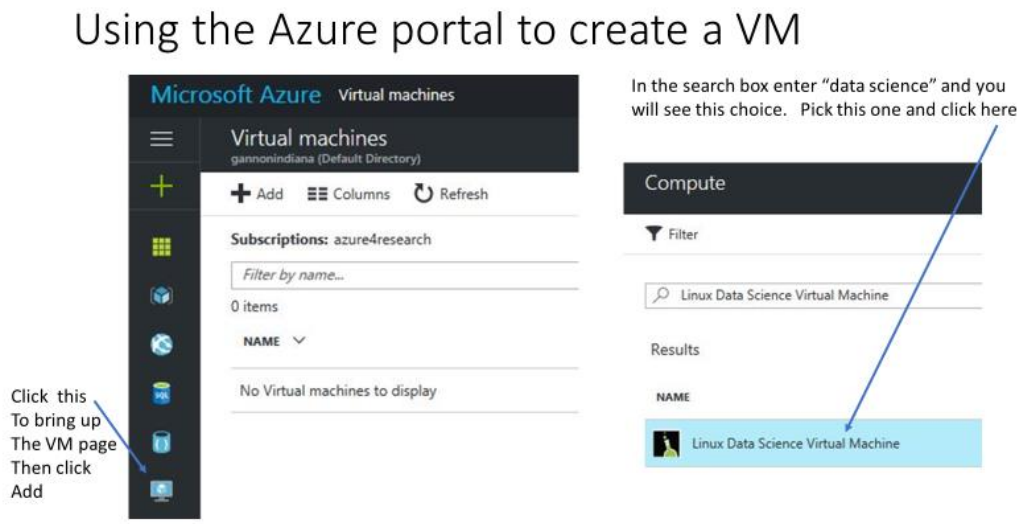
This should contain two programs. PuTTY and PuTTYgen. Run PuTTYgen. After a few mouse moves you will see



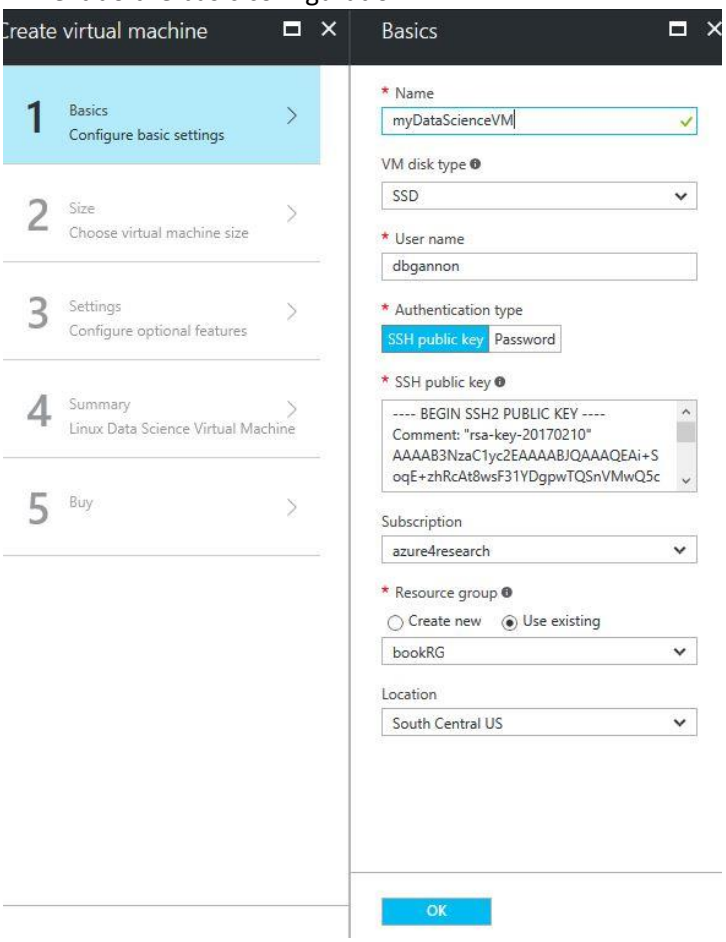
Give it a password (key passphrase) and save the public and private keys.

Step 2. Install the Linux Data Science VM

Using your Azure account connect to the portal and sign in. Hit the plus sign in the upper left corner and then the picture of the little monitor in the lower left.



Next do the basic configuration



Give your vm a name
←

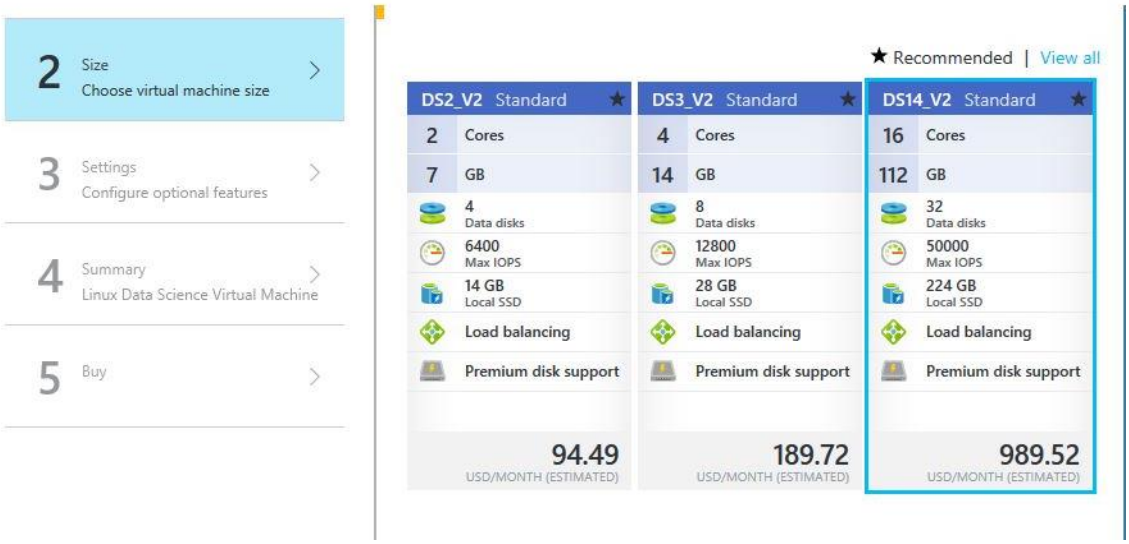
Give yourself a user ID
←

Copy and paste your public key here
←

You probably don't have a resource group, so select "create new"
←
South Central US works for me. It will tell you which regions you are allowed to use.

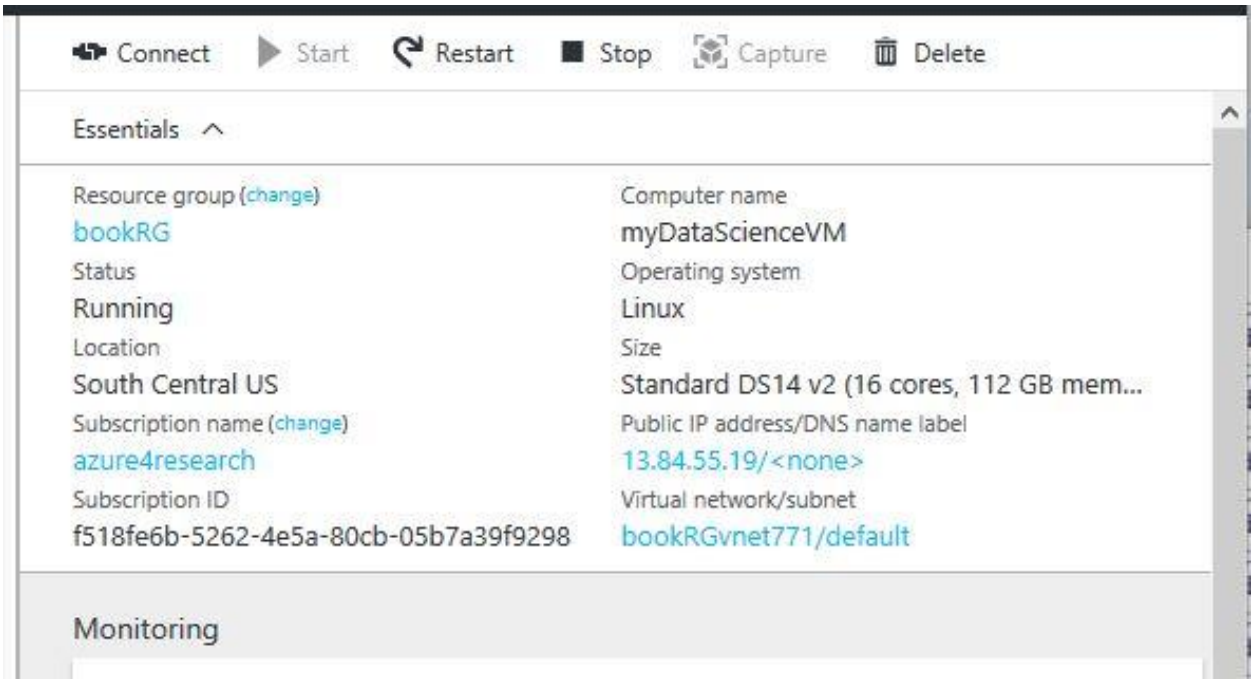
IF everything has a green check mark then click OK

You next must select a server type for this VM. You will get three choices



Pick the one you can "afford". Then go to the next step. Just click OK to accept all the defaults. And finally click "Buy".

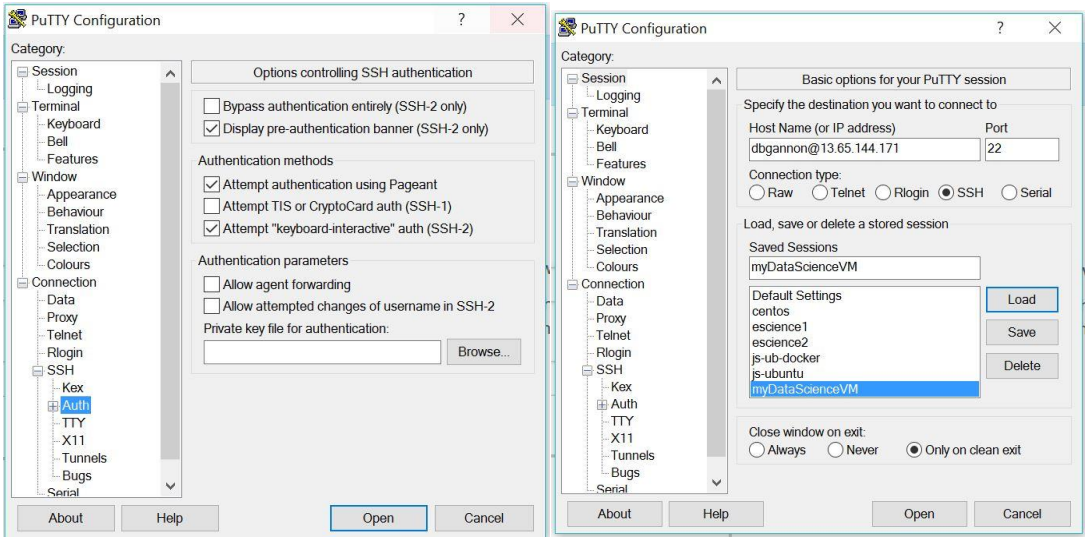
When the VM starts you should be able to see it in the portal on your dashboard (which you get to by clicking on the big Microsoft Azure in the upper left corner. You should see:



Make note of the IP address. You should be able to log into your VM with your private key as follows.

For the Mac or Linux type
>ssh –i path-to-your-privatekey userid@ipaddress

For Windows run Putty. You will need to upload your private key into the putty client



Then return to the session tab and enter your userid@yourVM-IP-address. You can give it a name and select “save”. This will save the configuration for next time. Next select “open”.

While you are logged into the vm, you should also set your local password. Type

> sudo passwd userid

>enter your password twice

We will use this to run jupyter.

Step 3. Run jupyter

The system is already running a tool called jupyter hub that will allow you to log in and start a jupyter session in your browser. Go to https://youvm-IP:8000. Login with your userid and password.

In the upper right of the page is a tab called “new”. Pull down that tab and select “terminal”. This gives you a bash shell where you can down load or manage files. Do this

$ cd notebooks
$ wget https://sciengcloud.github.io/jupyter.ipyn jupyter.ipynb

Now go back to the jupyter home page and you should see jupyter.ipynb. this is a tiny intro to jupyter. Run it.

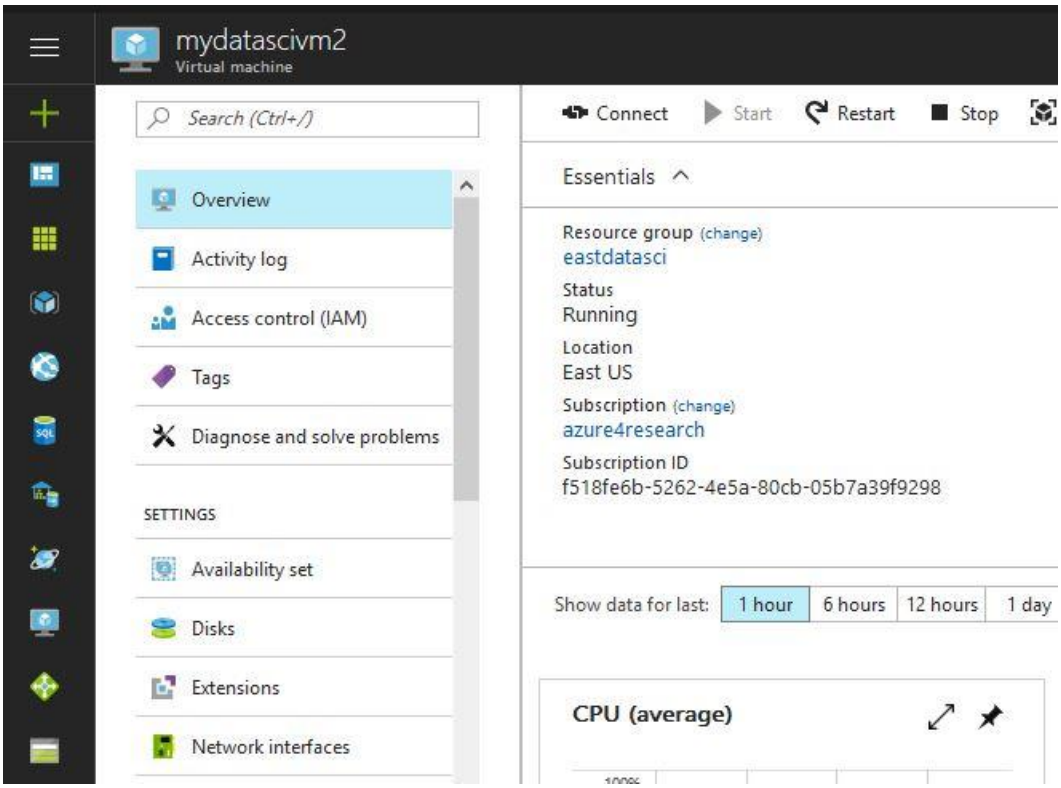
There are many other great examples here already here. For a deeper intro to jupyter and python.

Load IntroToJupyterPython.ipynb and step through it.

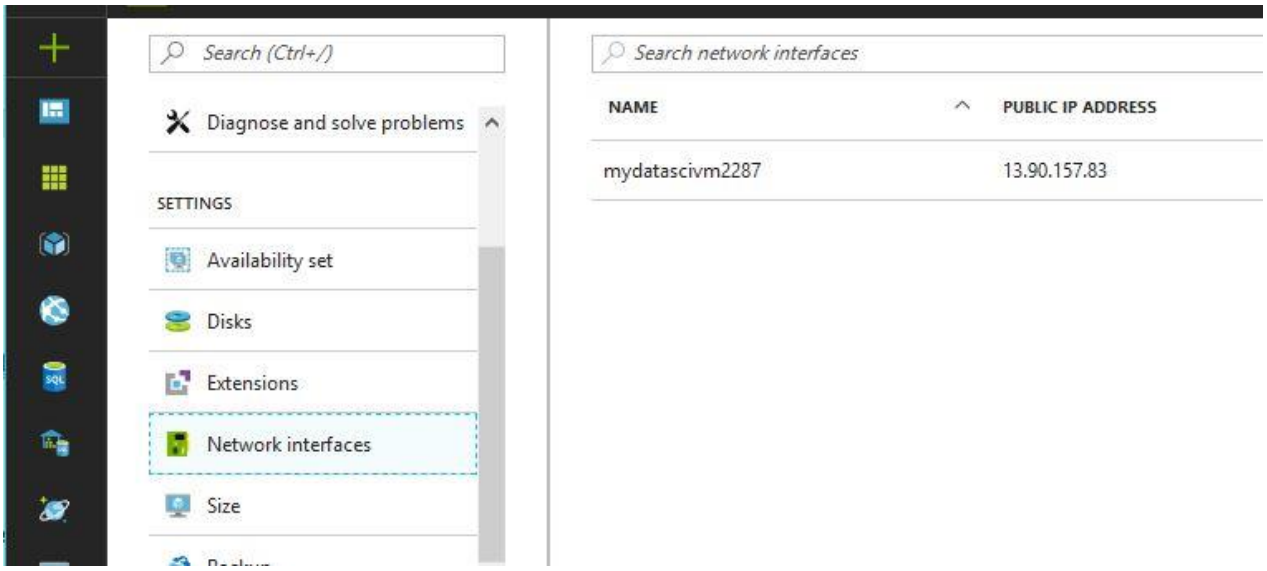
Step 4. Open TCP port 8888 for the docker tutorial package

In order to access additional services running on your VM we need to open another external IP port.

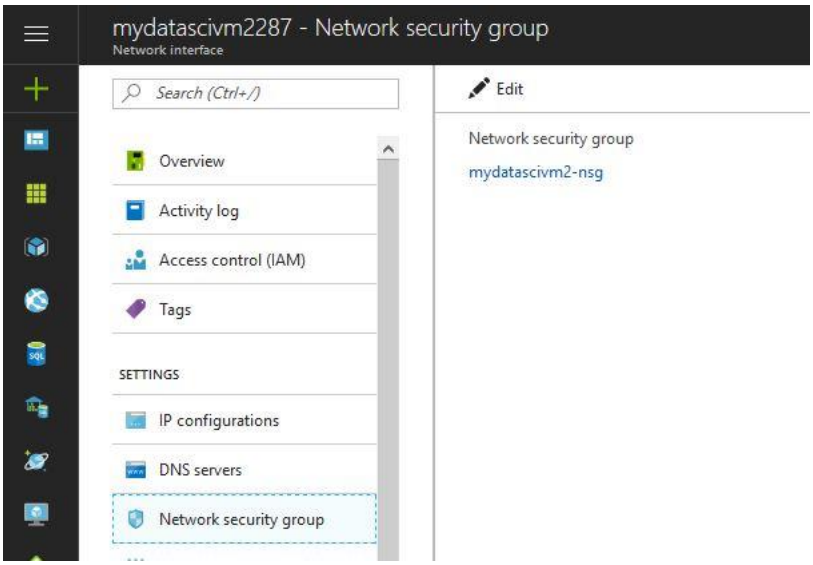
Go to the portal page for your VM. Look on the left column. Click on the tab labeled “Network interfaces”.



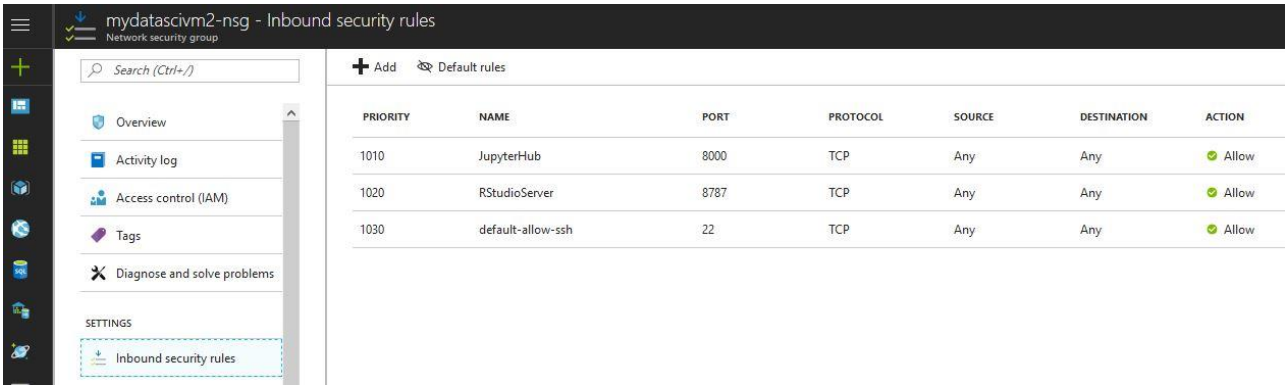
From there click on the interface name shown on the right side.



From there click on the security group tab on the left and then on the name of the security group on the right.



This finally gets us to something we need. Select “inbound security rules”. We see the ports that are currently open. We want to add one more. Click on the “+ Add”.



Fill in the port range as 8888 and give it a name. then click o.k.

Refresh the view and you will see your now port. Next go back to your shell on the VM and type

$ sudo docker run -it -p 8888:8888 dbgannon/tutorial

This will take a while to down load the tutorial container. About 10 minutes. After that when you run this docker command again it will take only seconds because the image will be cached.

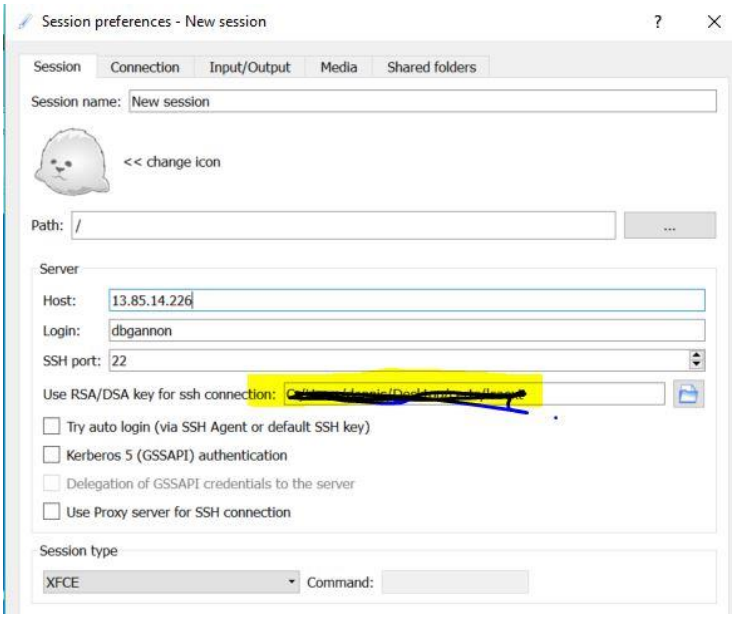
When it is done go to

https://ipaddressOfYourVM:8888

and login with password “tutorial”. The notebook directory contains examples for Azure, Amazon and Google. Obviously we will do the Azure ones today, but if you have an AWS account or a Google account you can try those out there too.

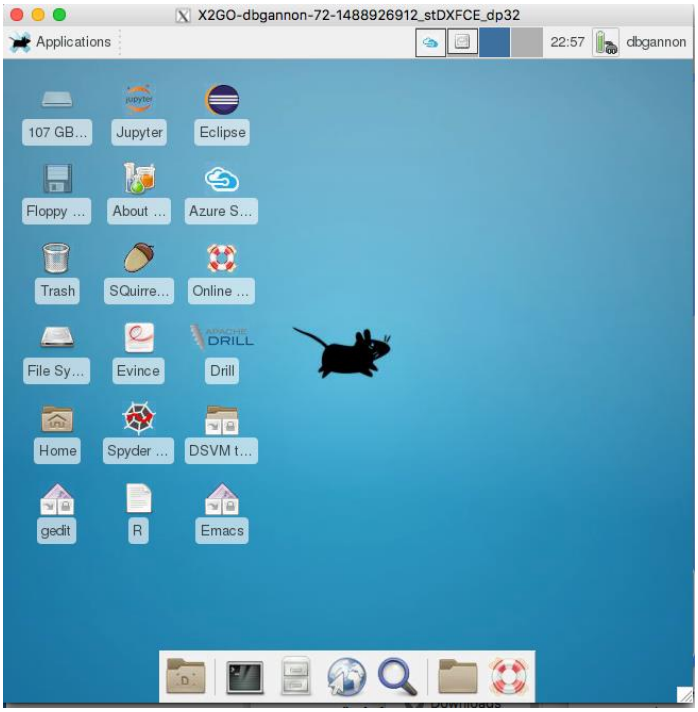
Step 5. X2Go

This step is not essential, but fun. Download X2Go. http://wiki.x2go.org install it. Create a new session.



You will need your ip address and login id and the path to your secret key. And set the session type XFCE

You will need to give it the password to unlock your secret key. If you are running windows it may protest but just wait. It should come up with the desktop.



From here you can launch a terminal window, file manage, web browser by looking in the bottom row of icons. There are many other tools.