Cygwin & Ubuntu Linux Machine

Lab 01b

by

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Deep Azure @McKesson

Steps

1. Set up Cygwin on your laptop (to remotely connect tour Linux VM in Azure cloud
2. Generate SSH Key Pair to connect to your Linux Ubuntu securely.
3. Create Linux Ubuntu VM in Azure.
   - Install Apache Web Server.
4. Connect remotely to your new Linux Ubuntu VM using Cygwin.
   - Test reaching your Home page from your browser.

I. SET UP CYGWIN
(OR YOU COULD USE PUTTY)

What is Cygwin?

- A windows terminal that allows you to use Linux/Unix commands from your Windows system.

- For Windows users, use Cygwin or PuTTY to connect to remote Linux / Unix systems in the Cloud. You can also use WinSCP or any other secure shell / secure copy utility.

- For Macintosh users, use Terminal window – “you don’t need to install a third-party client like PuTTY to connect to your cloud server via Secure Shell (SSH). Terminal is a terminal emulation program included with Mac OS X that you can use to run SSH.”[1]

Reference: [1]https://support.rackspace.com/how-to/connecting-to-linux-from-mac-os-x-by-using-terminal/

Where do you get Cygwin?

https://cygwin.com/index.html

This is the home of the Cygwin project

What...

...is it?

Cygwin is:

- a large collection of GNU and Open Source tools which provide functionality similar to a Linux distribution on Windows.
- a DLL (cygwin1.dll) which provides substantial POSIX API functionality.

...isn't it?

Cygwin is not:

- a way to run native Linux apps on Windows. You must rebuild your application *from source* if you want it to run on Windows.
- a way to magically make native Windows apps aware of UNIX® functionality like signals, ptys, etc. Again, you need to build your apps *from source* if you want to take advantage of Cygwin functionality.

The Cygwin DLL currently works with all recent, commercially released x86 32 bit and 64 bit versions of Windows, starting with Windows XP SP3.

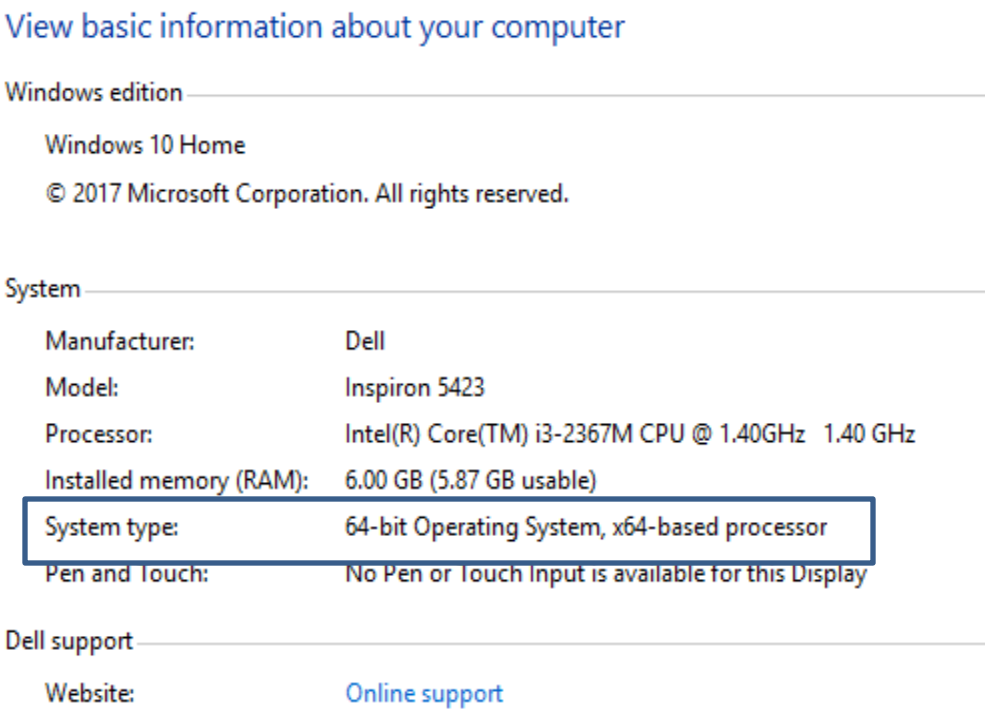
How to Install Cygwin (1 of 2)

Installing Cygwin (2 of 2)

- Select setup-x86_64.exe if you are on a 64 bit computer or setup-x86.exe if you are on a 32 bit computer.
- If you do not know which bit version your computer is follow steps on next slide.

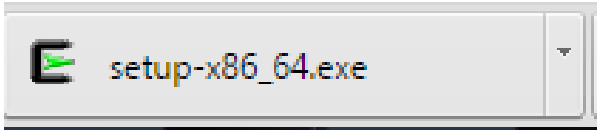
Check your computer's System Type

- Locate 'System' under your computers Control Panel
- If you have Win 7 this will be in: Control Panel -> System and Security -> System
- If you have Win 10 this will be in: Control Panel -> System

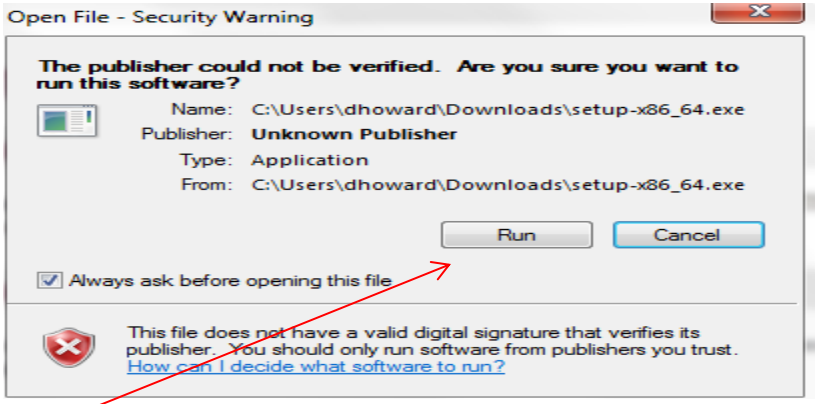


Setup.exe

1. **You will see setup.exe on bottom left of your browser. (the download is fast).**

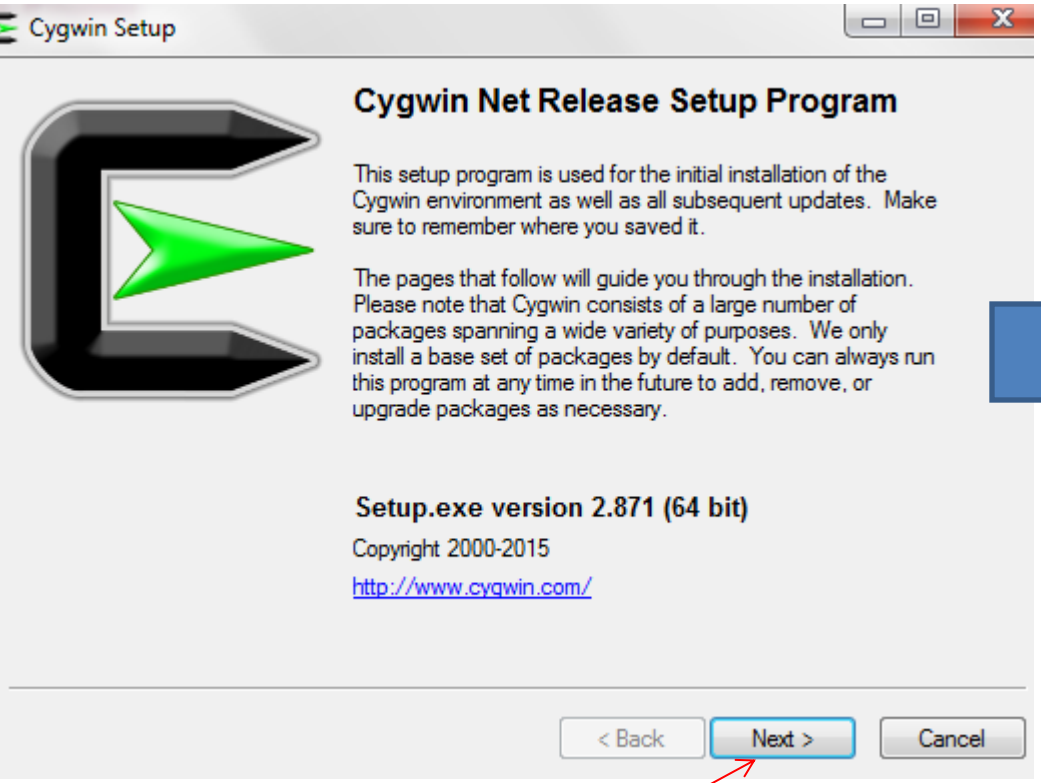


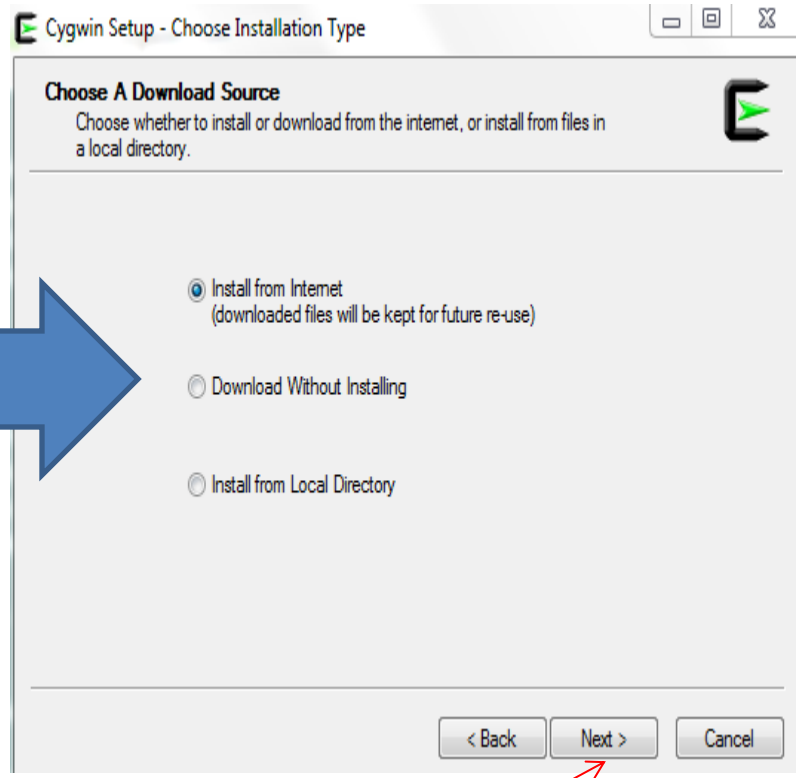
2. **Select setup.exe and the following message will appear:**



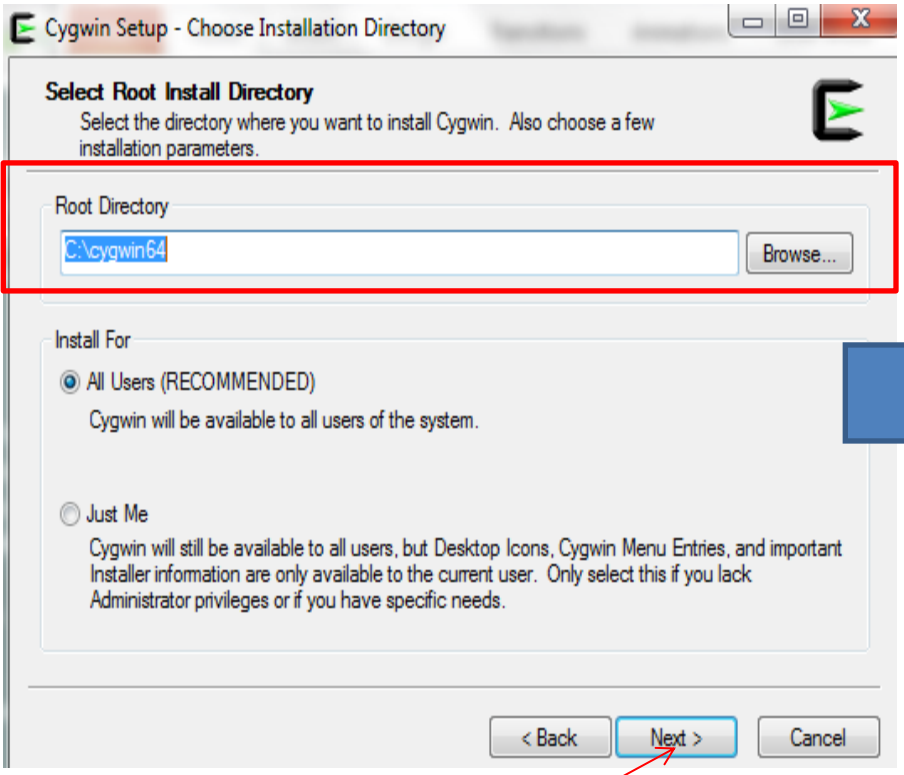
3. **Select Run then select Yes to continue.**

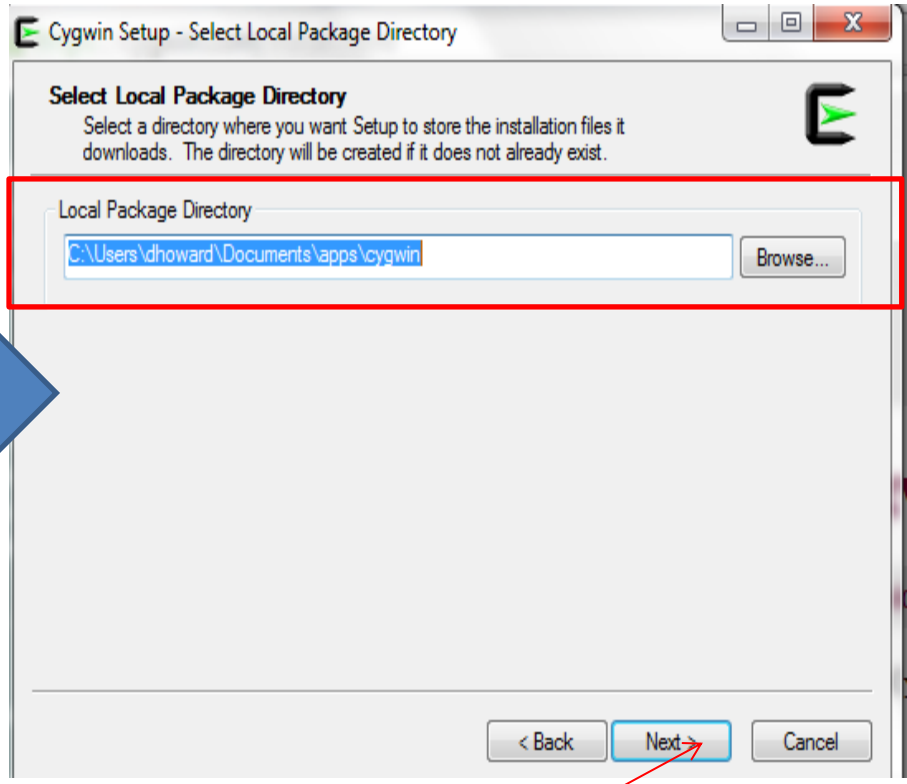
Continue with Installation…



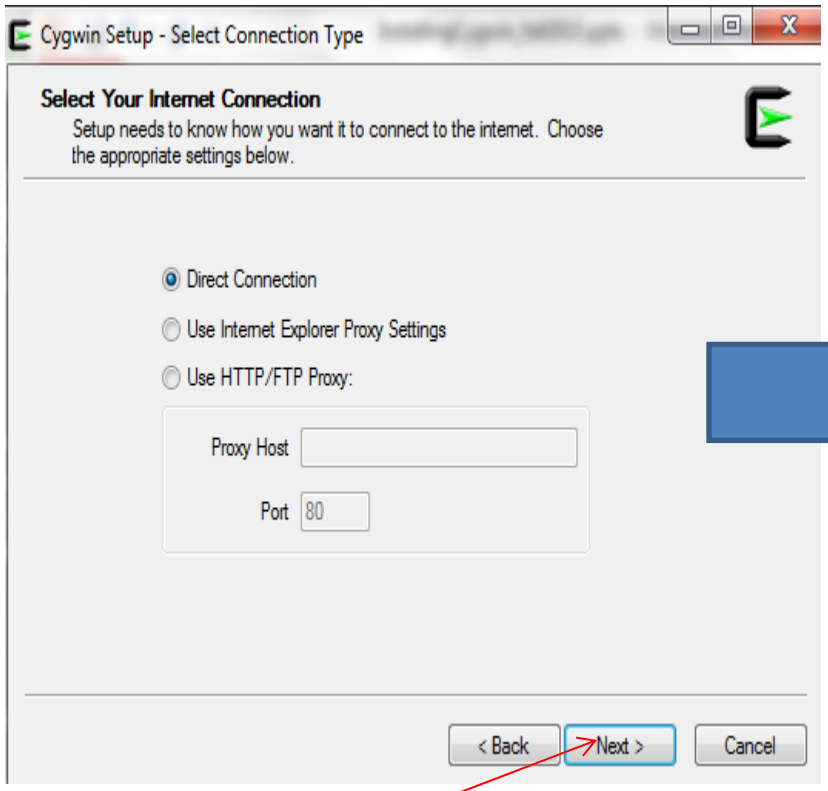


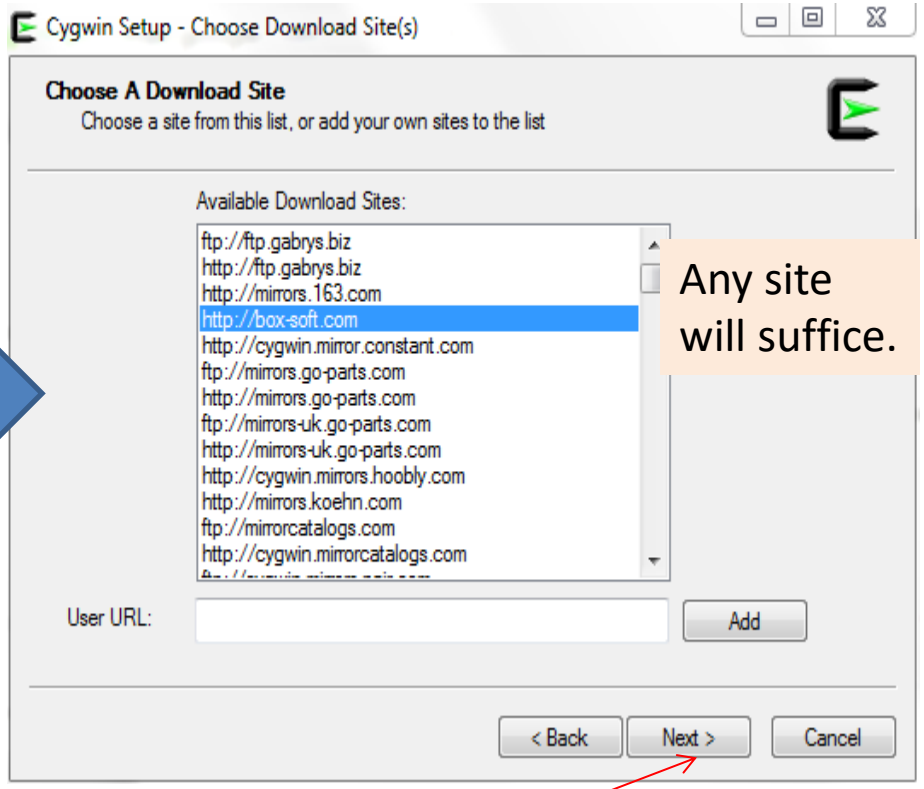
Choose your Cygwin installation and local package directory (default)





Select your connection to the Internet site to download Cygwin files

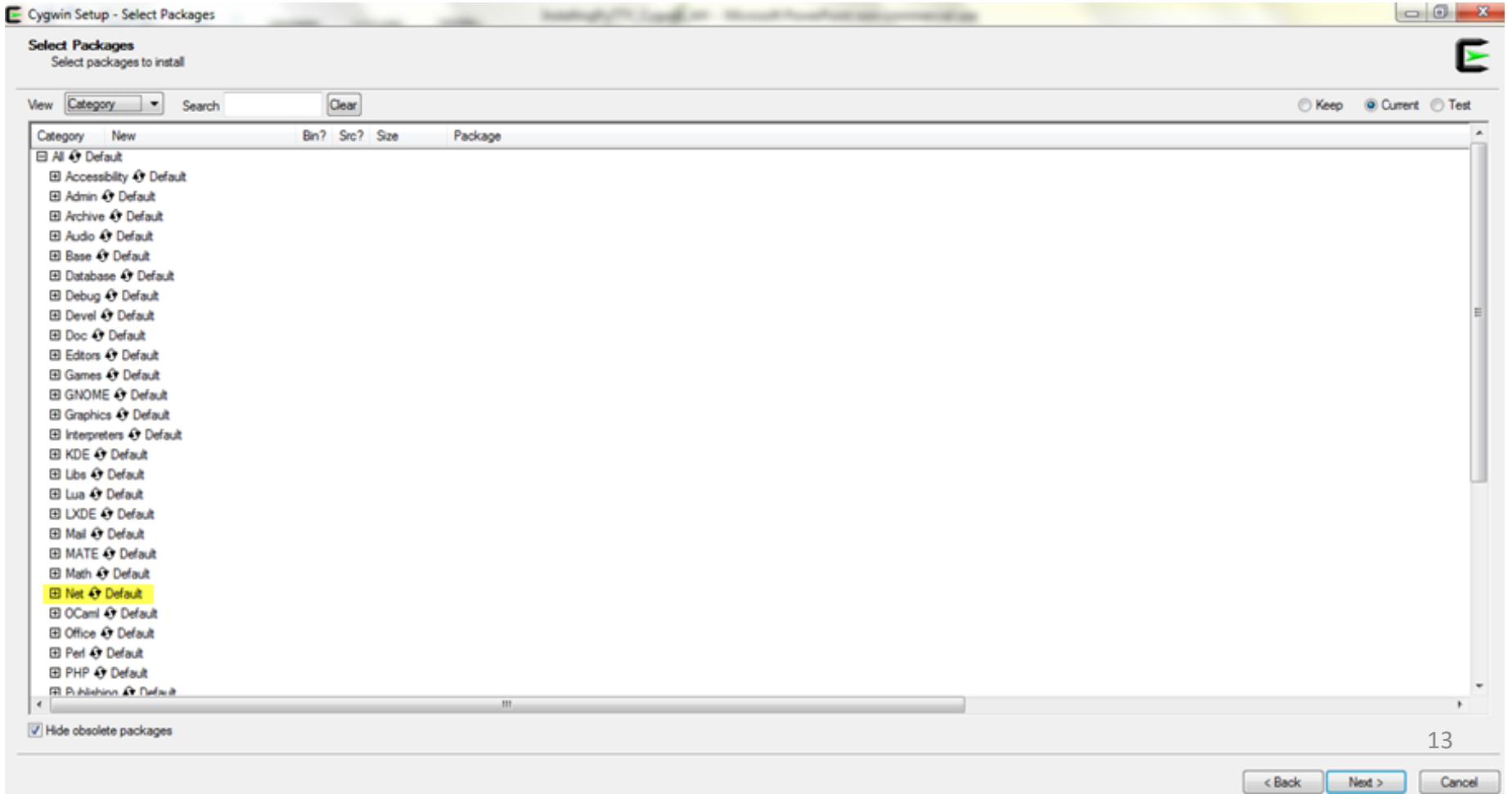




Any site will suffice.

Select Packages to Install

- Files will be downloaded then you will be asked what file(s) to select.
- **It is very important to follow these next steps**
- You need to expand the Net Category to download openSSH and openSSL

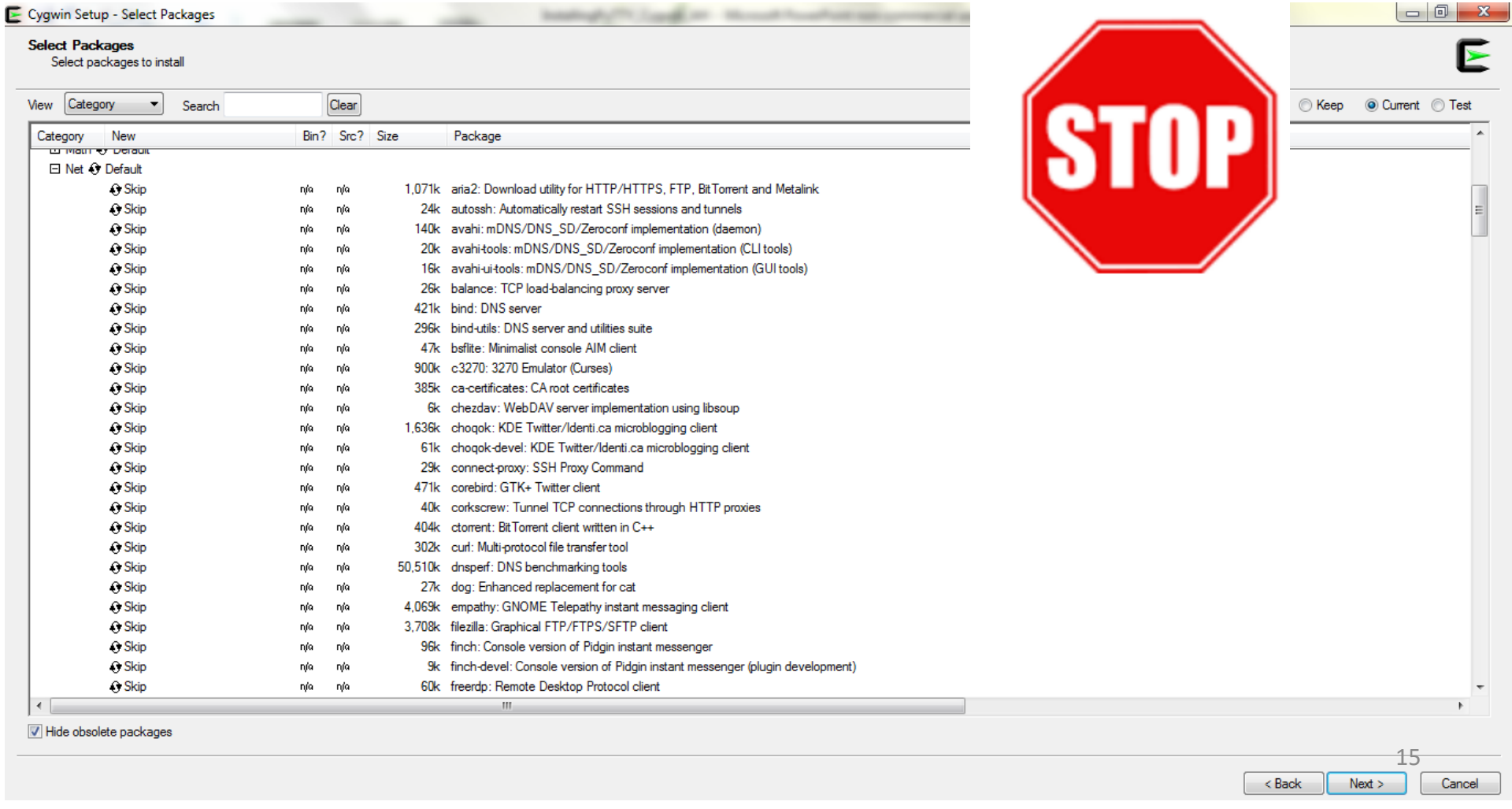


OpenSSH and OpenSSL

- You select Open SSH / Open SSL to allow secure logins and encrypted copying over the internet. The Open SSH and Open SSHL is located in the Net category. (see next slide for expansion of Net).

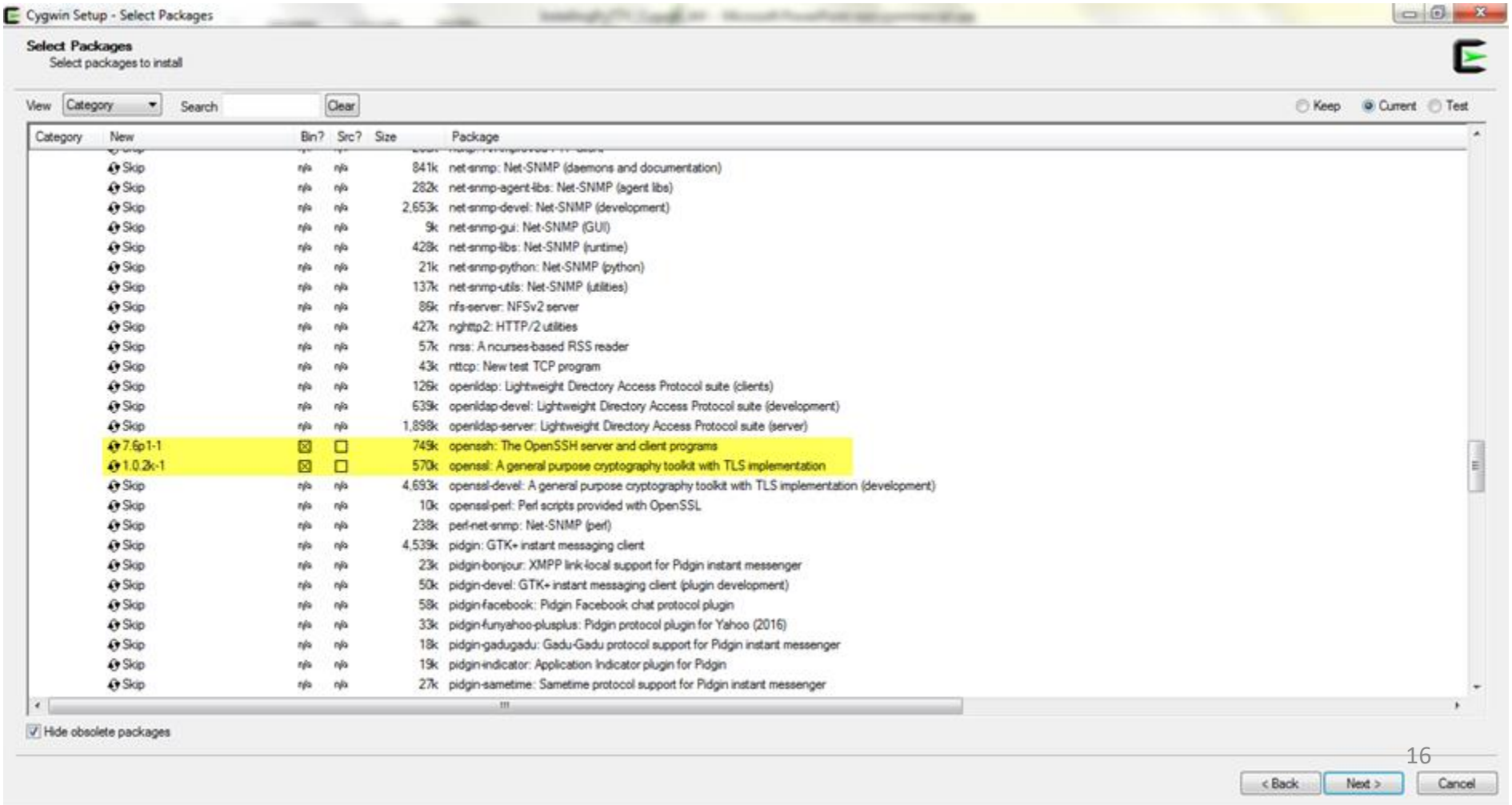
Scroll thru Net category…

- Here's what Net looks like when expanded. Note: You must scroll down to find the Net Category. **(Don't touch that Next button just yet!)**



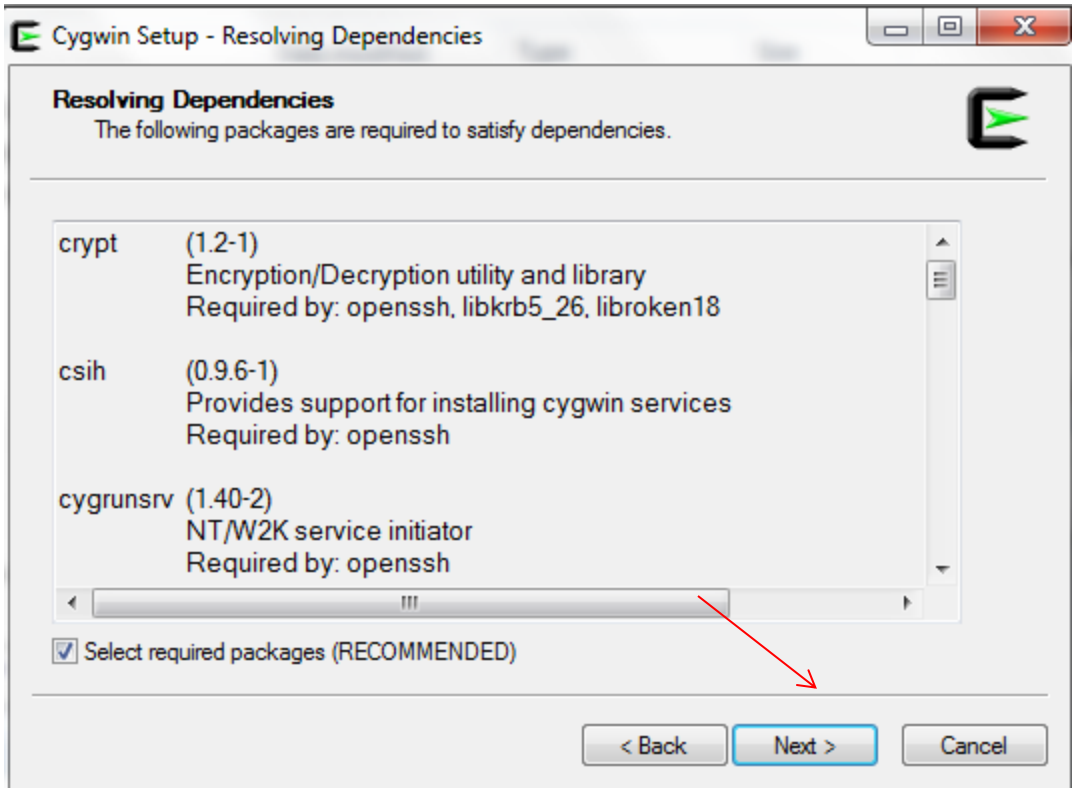
Select Open SSH and Open SSL packages

- Click on Skip next to openSSH and OpenSSL until the latest versions appear (See below) and then select Next



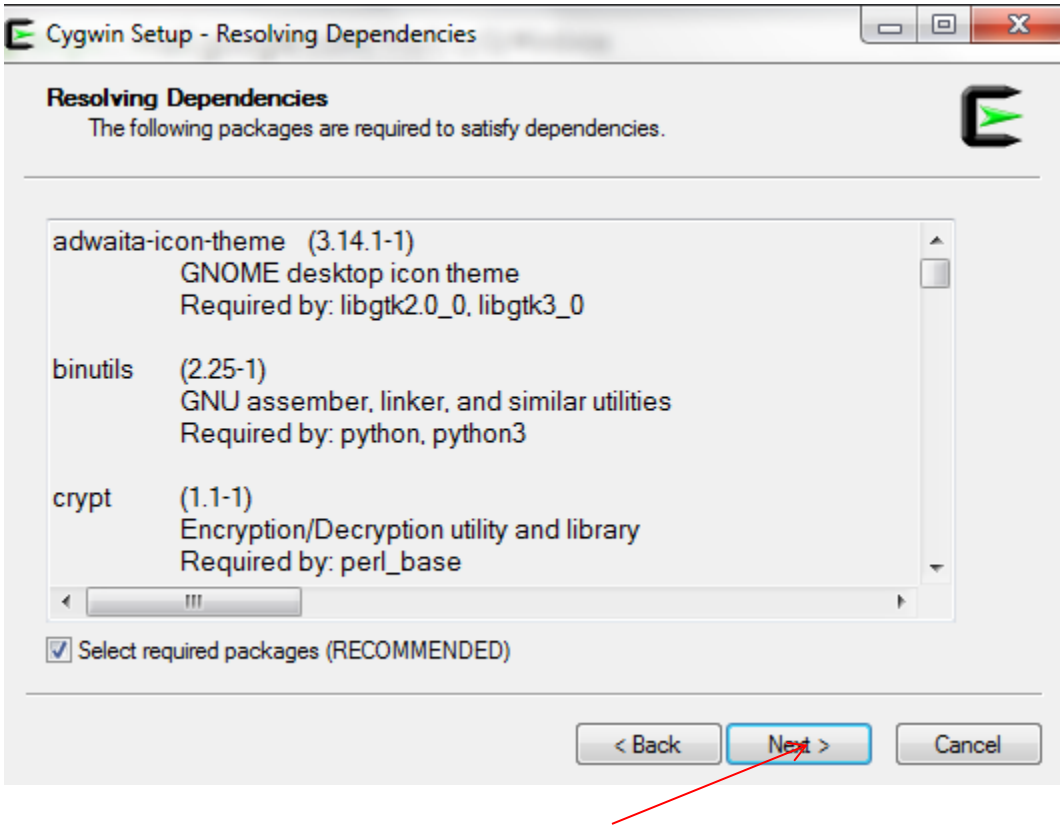
Resolve Dependencies

- Select the defaults provided.



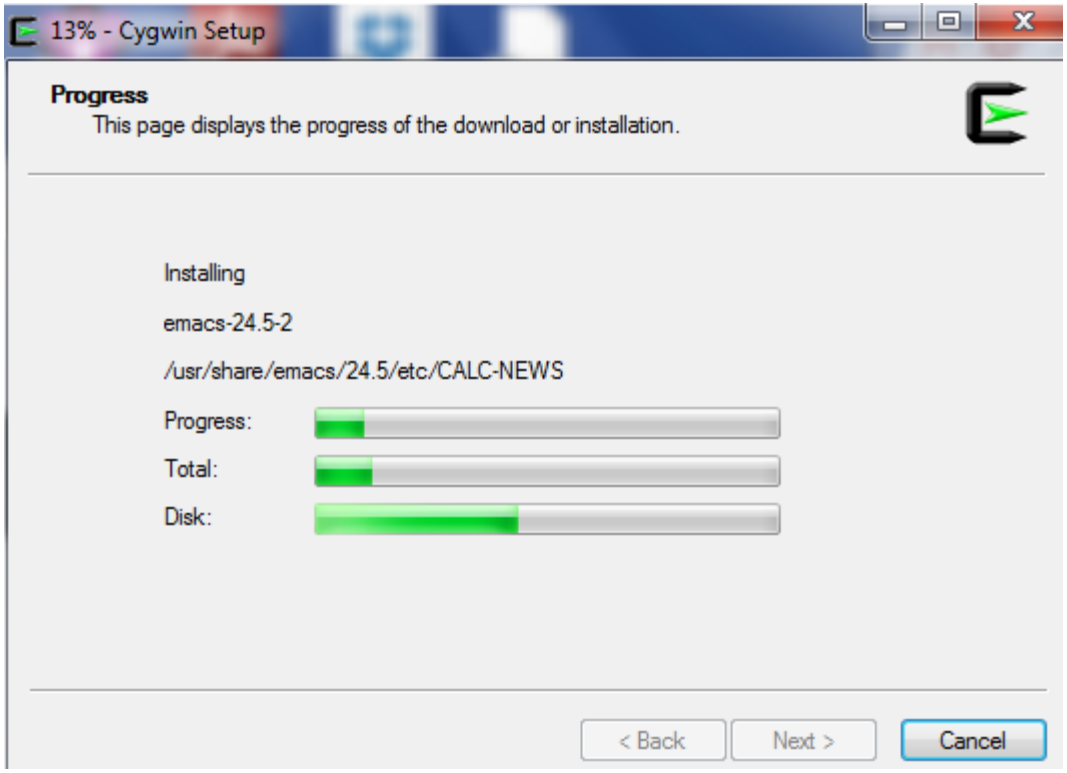
Select Packages to install

- Select the dependencies.

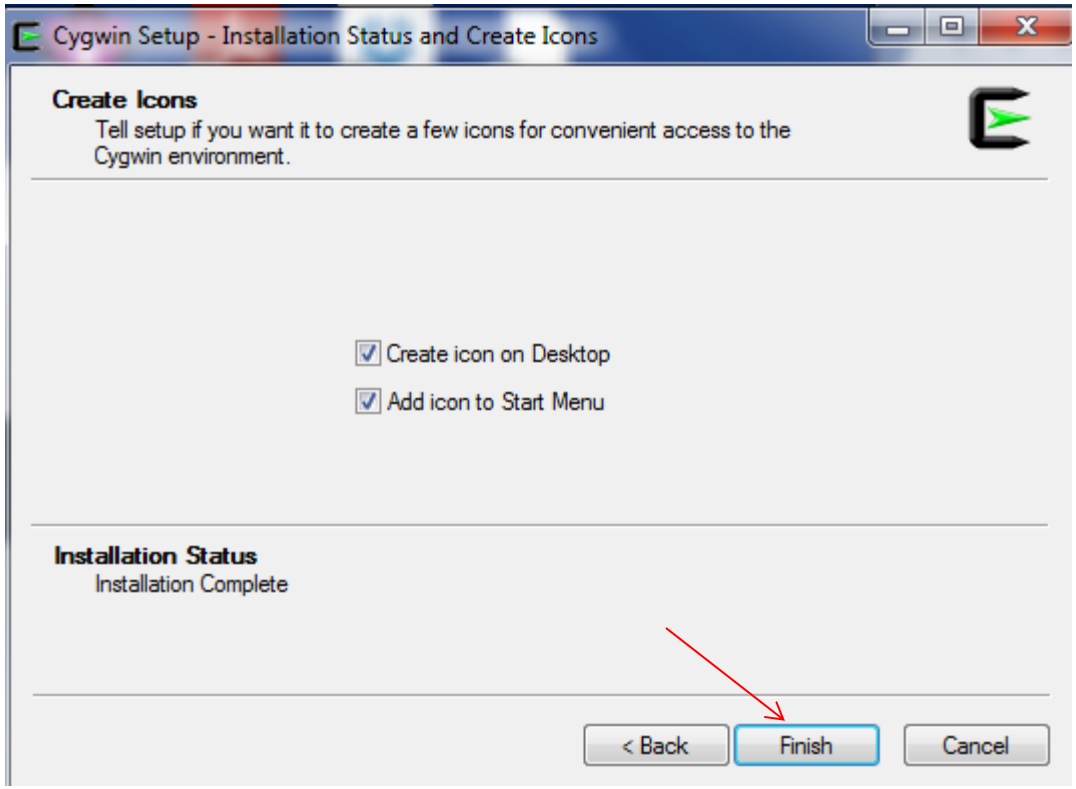


Download and Setup…

- This may be quick or may take 40-60 minutes or more…!

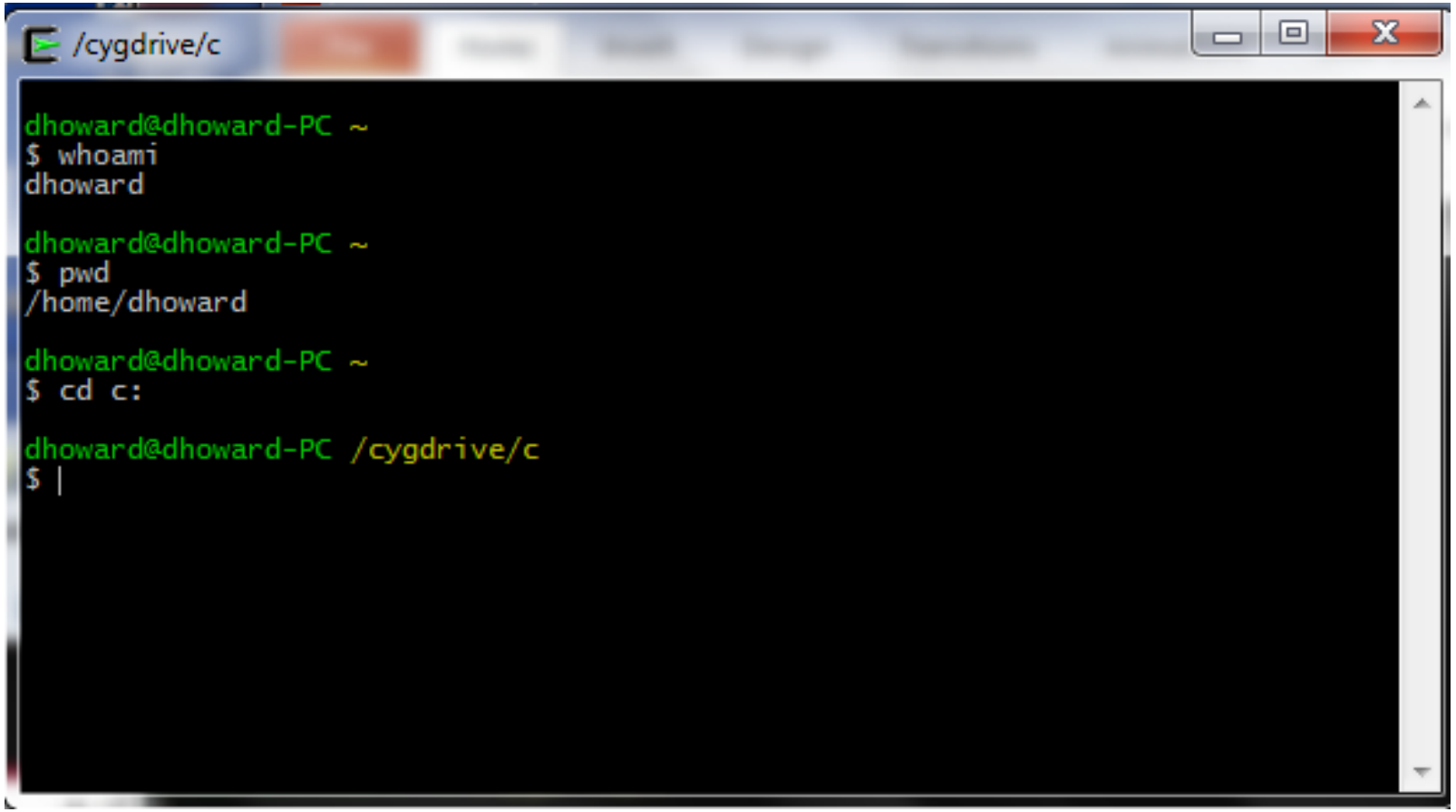


Final Step


Cygwin Setup - Installation Status and Create Icons
Create Icons
Tell setup if you want it to create a few icons for convenient access to the Cygwin environment.
Create icon on Desktop
Add icon to Start Menu
Installation Status
Installation Complete
< Back
Finish
Cancel

Cygwin Terminal Window looks like:

- Now you can run Linux / Unix commands (whoami, pwd, …)



Helpful Linux Commands

http://linoxide.com/linux-command/essential-linux-basic-commands/

```
dhoward@dhoward-PC ~/.ssh
$ pwd
/home/dhoward/.ssh

dhoward@dhoward-PC ~/.ssh
$ whoami
dhoward

dhoward@dhoward-PC ~/.ssh
$ ls -l
total 17
-rw------- 1 dhoward None  1679 Oct 11 22:08 id_rsa
-rw-r--r-- 1 dhoward None   400 Oct 11 22:08 id_rsa.pub
-rw-r--r-- 1 dhoward None 10448 Oct 11 23:33 known_hosts
```

Linux commands for homework 1

$ls –l
$ls -la
$sudo
$pwd
$whoami
$cat filename
$scp
$cp
$mv
$cd
$ssh
$ssh-keygen

- It is important to take the time to understand Linux commands for homeworks.

Summary

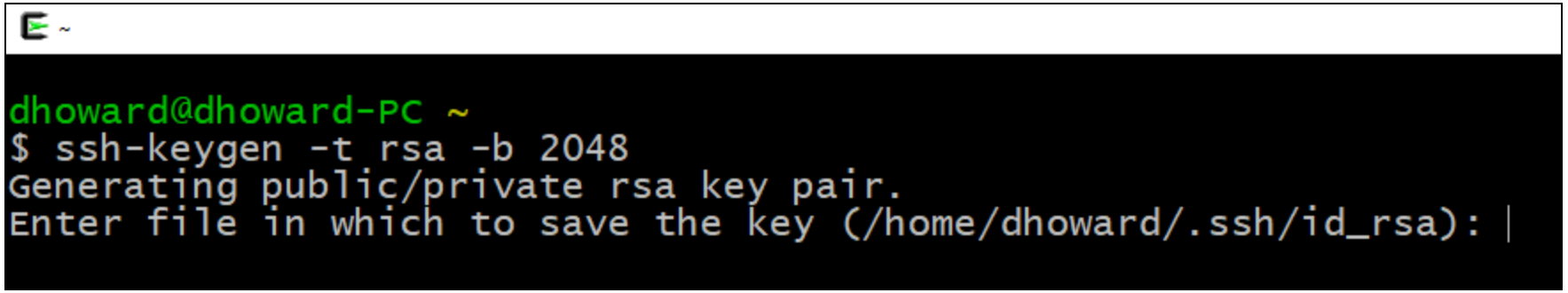
- You are using Cygwin or some other app from your laptop to connect to a remote Linux VM server.
- You use Linux Commands to work in your Linux VM.
- Security keys are important when connecting to remote cloud resources. Keys are saved locally as well as in the cloud for authentication. Never destroy your key files if you have VMs or resources dependent on them. You could always regenerate keys anytime and new cloud resources.

II. GENERATE SSH KEY PAIR

Generate an SSH Key Pair

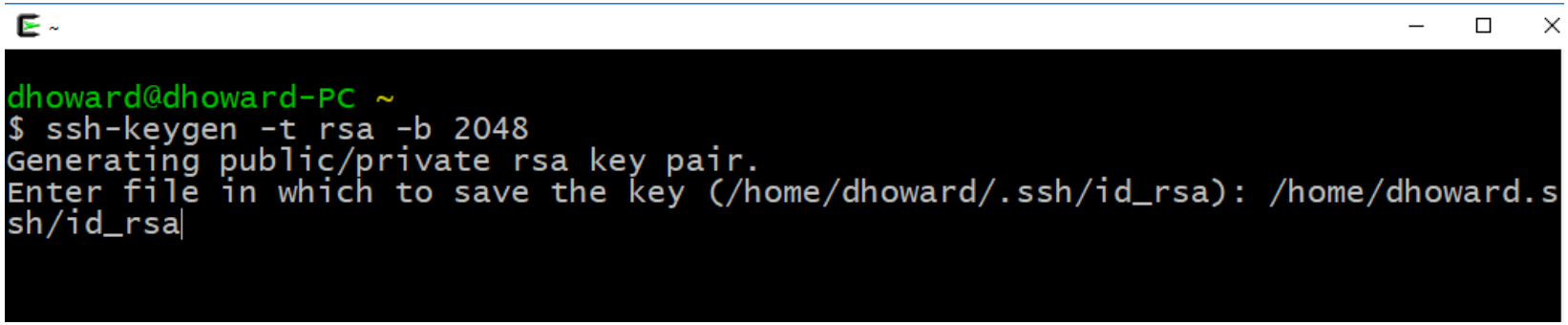
- Open your Cygwin terminal window and type:

$ssh-keygen –t rsa –b 2048



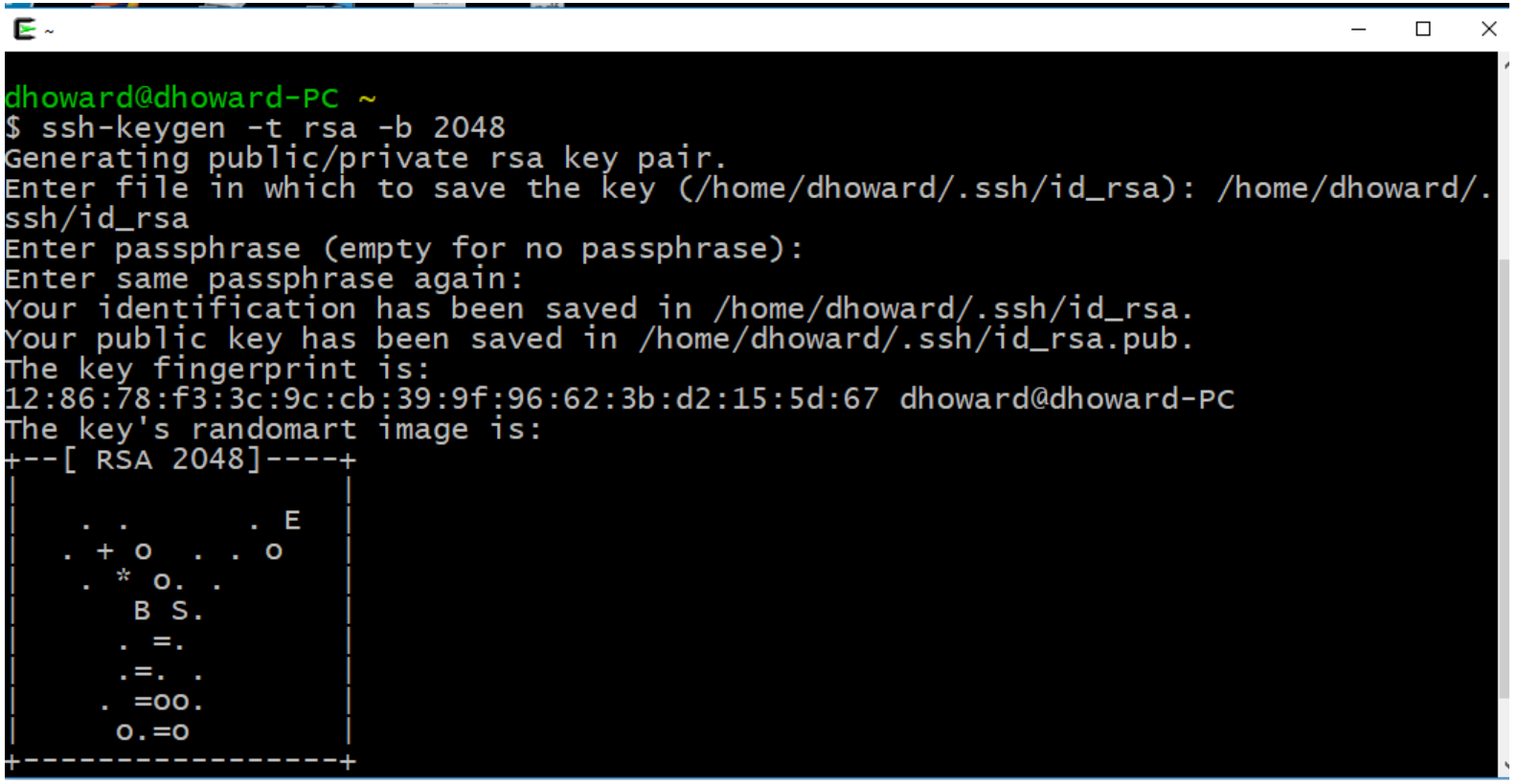
Generate an SSH Key Pair cont…

- You will then need to enter the file name to save the key. Enter it exactly as shown in your prompt. /home/dhoward/.ssh/id_rsa



Generate an SSH Key Pair cont…

- You will be asked to enter a passphrase.
- Click enter to leave it blank. Your SSH Key Pair is now created and saved in 2 files (a pubic and private key file).



Viewing the SSH Key Pair

- In Cygwin type the location where you stored your key.

Example:

$cd /home/dhoward/.ssh

- You can then view your two key files:

$ ls –l

```
dhoward@dhoward-PC ~
$ pwd
/home/dhoward

dhoward@dhoward-PC ~
$ pwd
/home/dhoward

dhoward@dhoward-PC ~
$ cd .ssh

dhoward@dhoward-PC ~/.ssh
$ ls -l
total 17
-rw------- 1 dhoward None  1679 Oct 11 22:08 id_rsa
-rw-r--r-- 1 dhoward None   400 Oct 11 22:08 id_rsa.pub
-rw-r--r-- 1 dhoward None 10273 Oct  4 00:40 known_hosts
```

View your Public Key

- You can view your public key by typing

$cat id_rsa.pub

- Select the entire public key and then right click and copy it

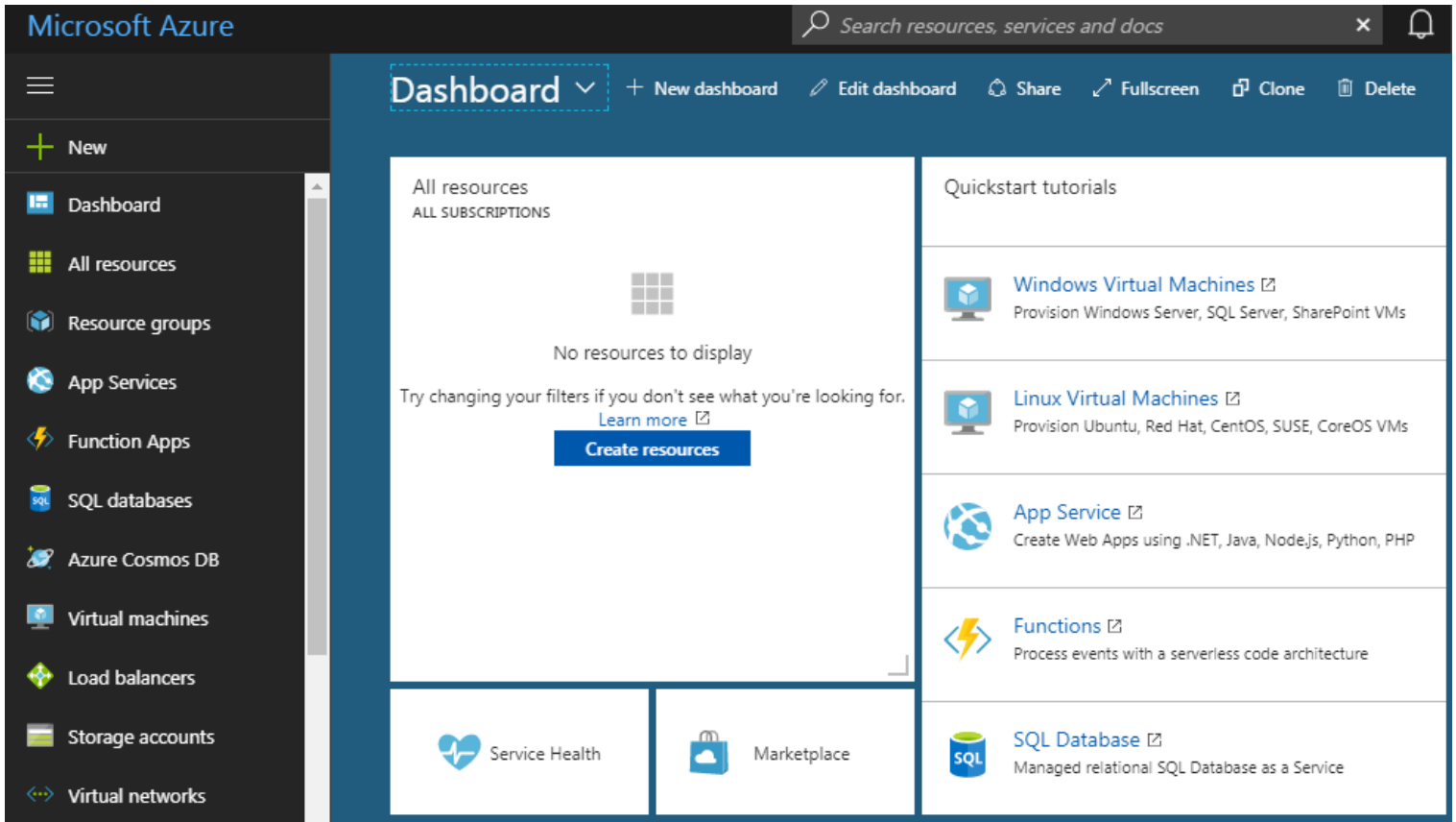
```
dhoward@dhoward-PC ~/.ssh
$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQCirdabFqXMYeMJ8dTh7NqLzR+OIfMsNero
wiRW5U3t7dDCm7vEIZ7ANY9mhgMZ8GcYTdd1Opjou5W1bGE1wiUl/FmiW6jbwz4piNvsUgv+
fnFEBjLoGF4RVdea1FG7KNIJ8+hZRsXj2ICzL9pXHIx41OXQVQhrsug9JzU5H/tfFtvFA8zs
tAgg3Orvwnf3flizD4Ss2vr1kguanlvOtvN7wiRl4Wm1HK5O7O6iDgg8GU+dORgFOInMvQq0
                                                              M8sMdn3k
BltDXzH683LDodXuazK9 dhoward@dhoward-PC
```

Note: the name of your pc is here.

III. CREATE A LINUX VM IN AZURE

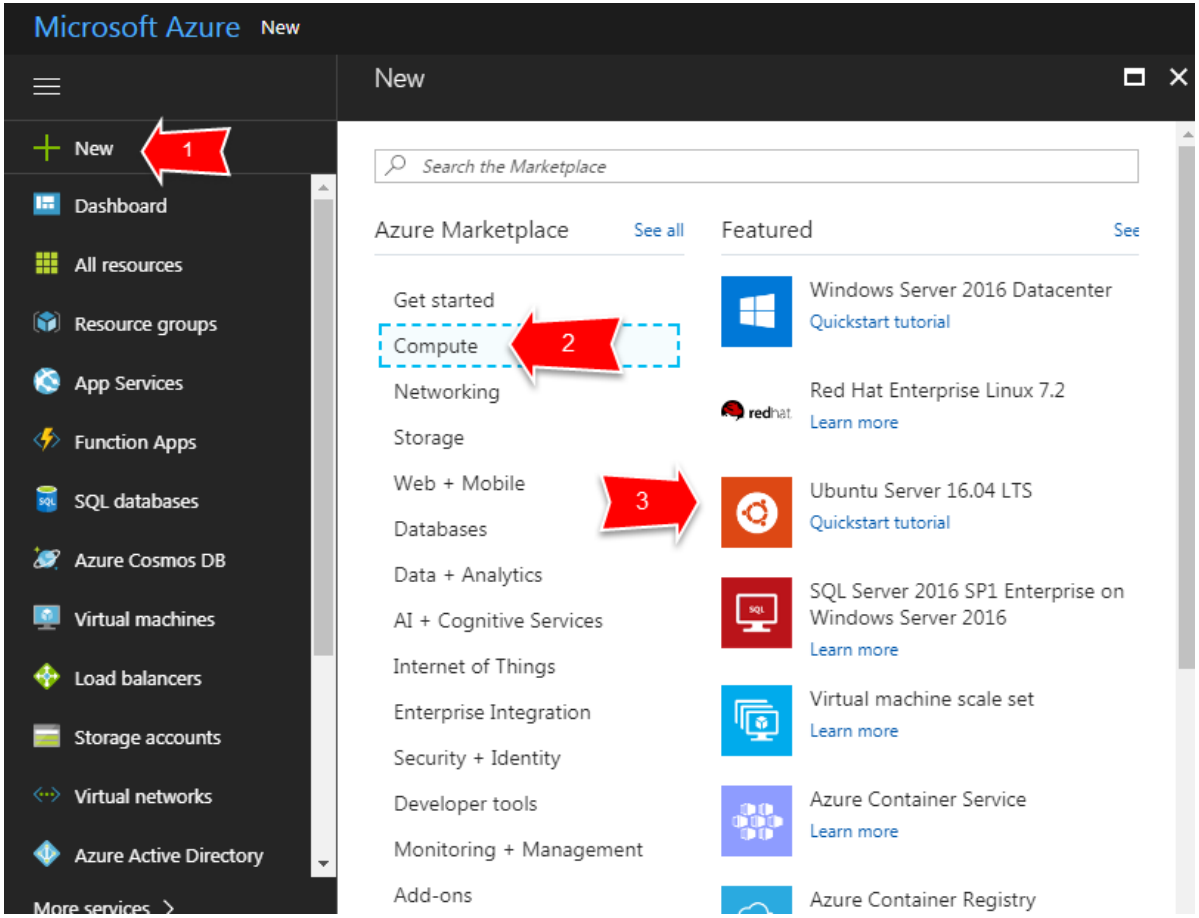
Create a new Linux Machine in the Dashboard

- Log in to your Azure account (portal.azure.com) and go to your Dashboard



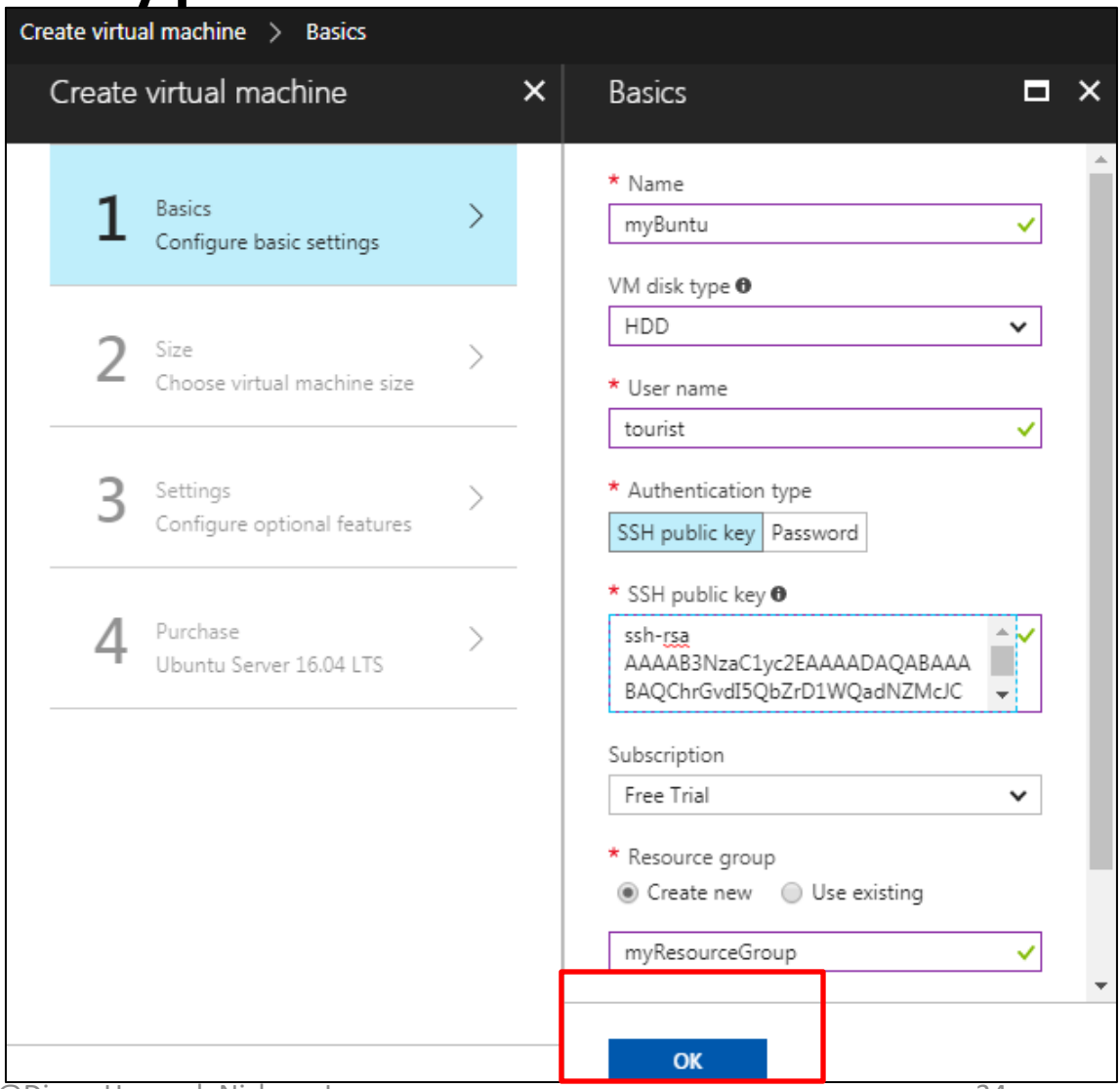
Create a new Linux Machine in the Dashboard

- Select ‘NEW’ on the left and then select ‘Compute’ and then select Ubuntu Server 16.04 LTS
- Note: If you want to learn more about Ubuntu there is a quickstart tutorial link you can also select.



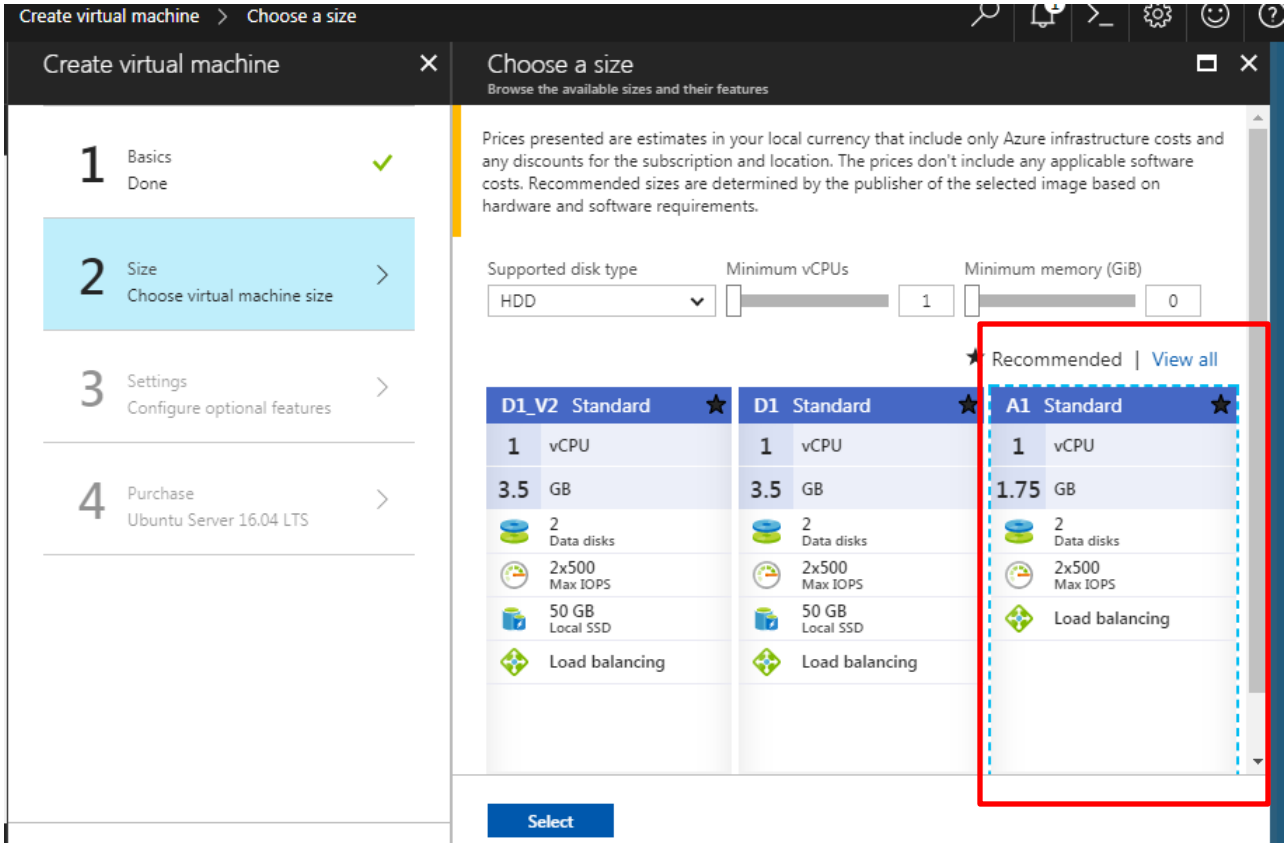
Add your SSH public key and VM Disk type

- Select HDD or SDD.
- You will need to enter your Public Key that you generated.



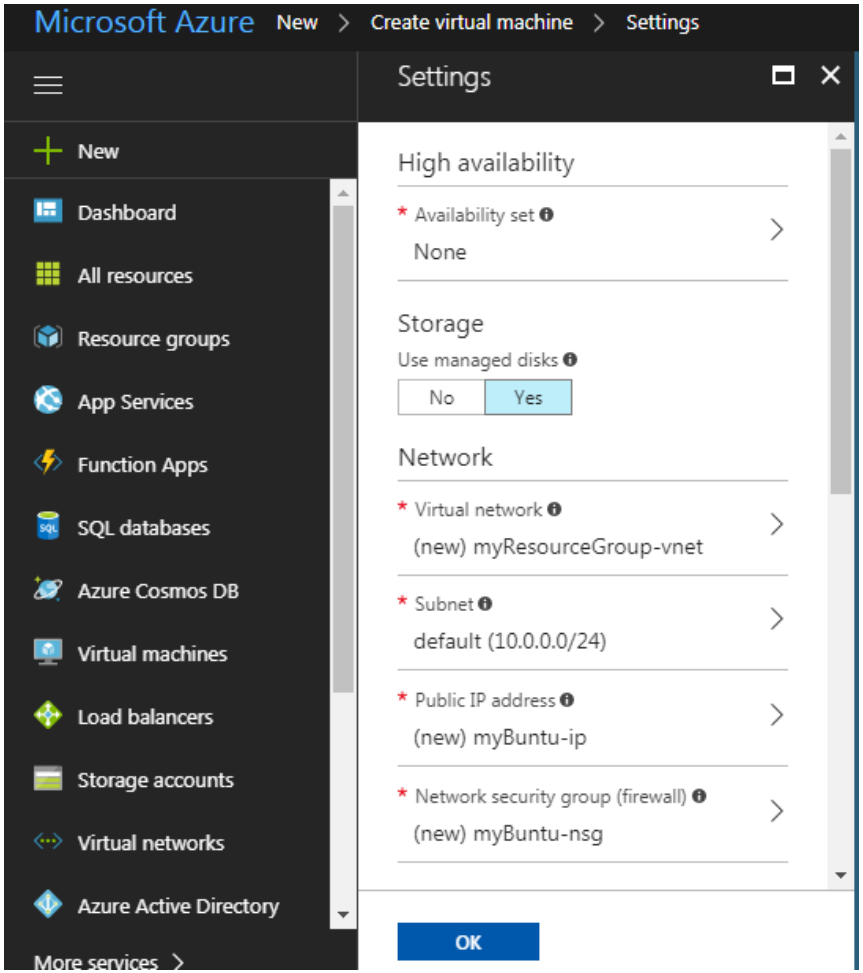
Select a Size for your VM

- Select a smaller VM size.



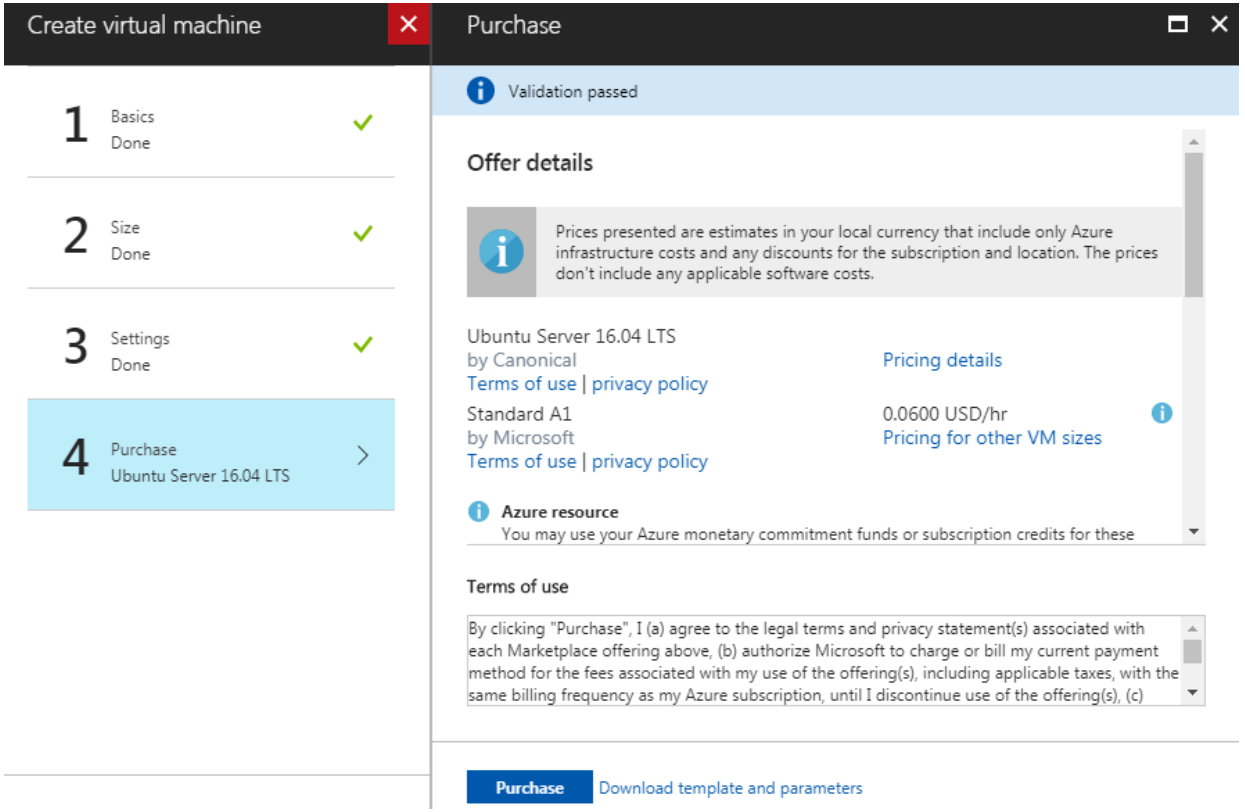
Continue with Default Settings

- You can keep the Default Settings and click ‘ok’.



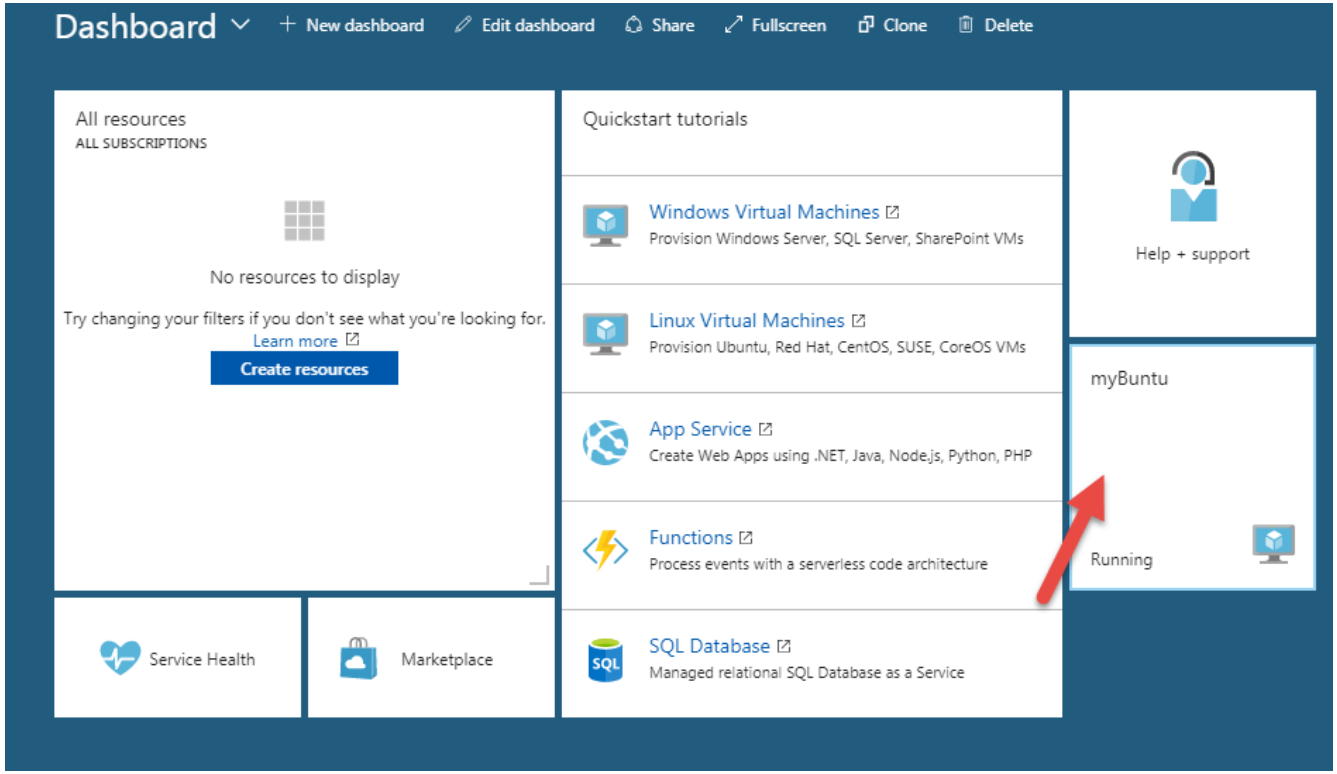
‘Purchase’ your new VM

- Note: you won’t be charged...
- You will need to click ‘Purchase’ to create your VM.



View your Linux Machine in the Dashboard

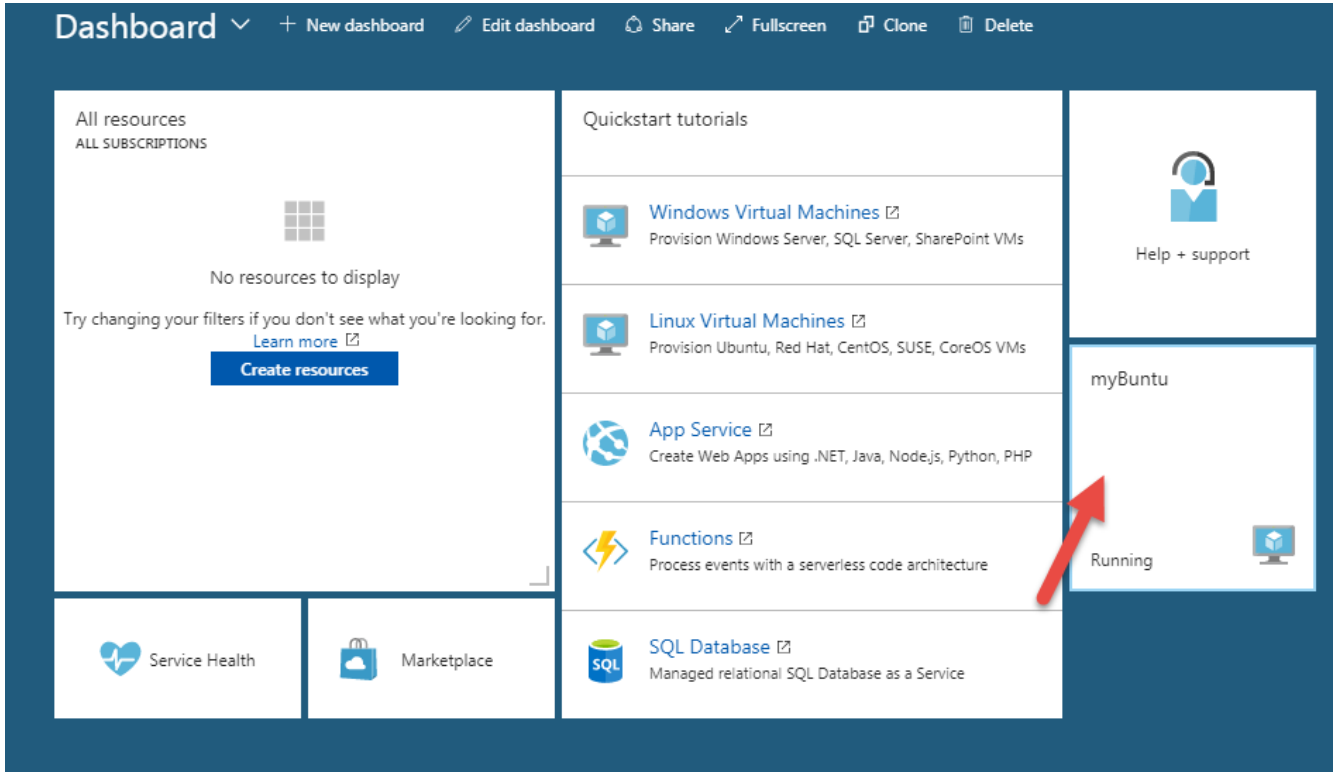
- Once the deployment is started, your new VM will show up as deploying and then running once it is ready.



IV. CONNECT TO YOUR NEW LINUX MACHINE USING CYGWIN

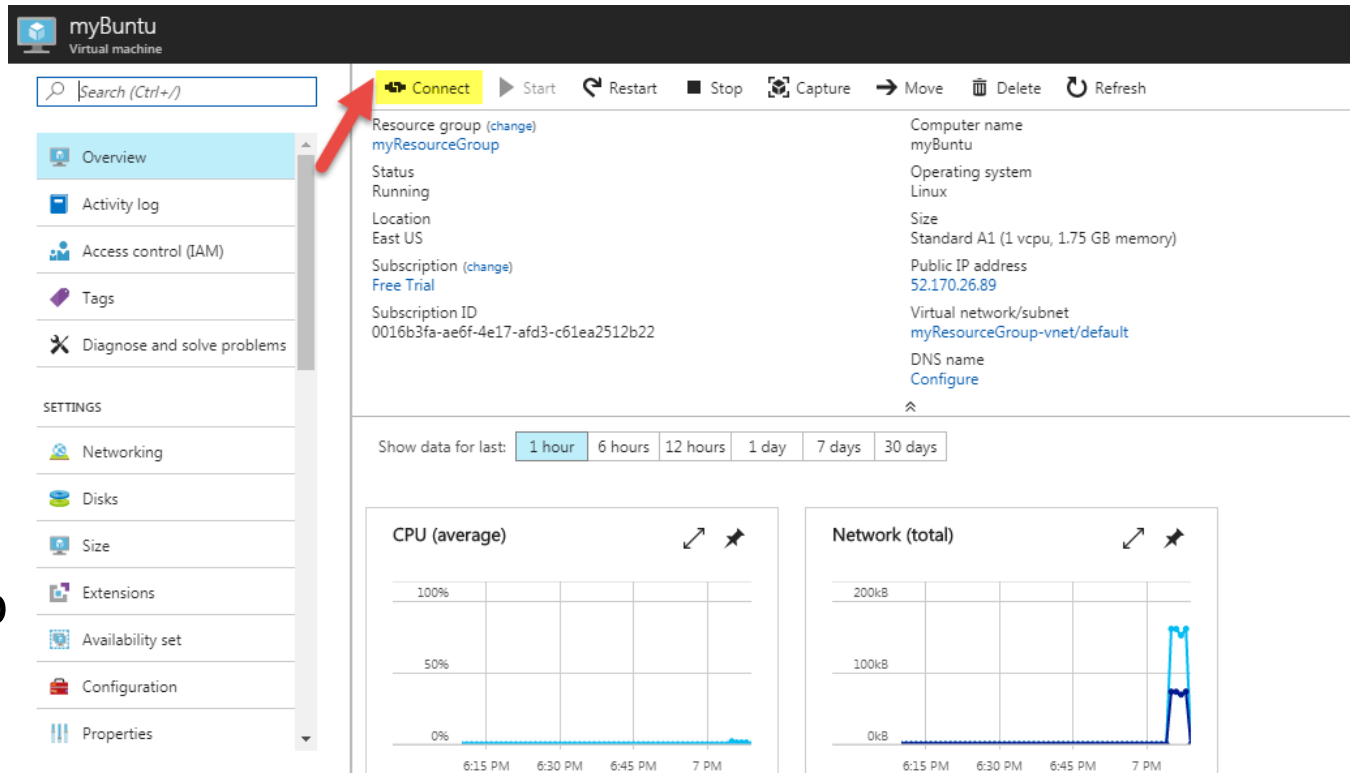
Select your VM

- On the Portal select your VM



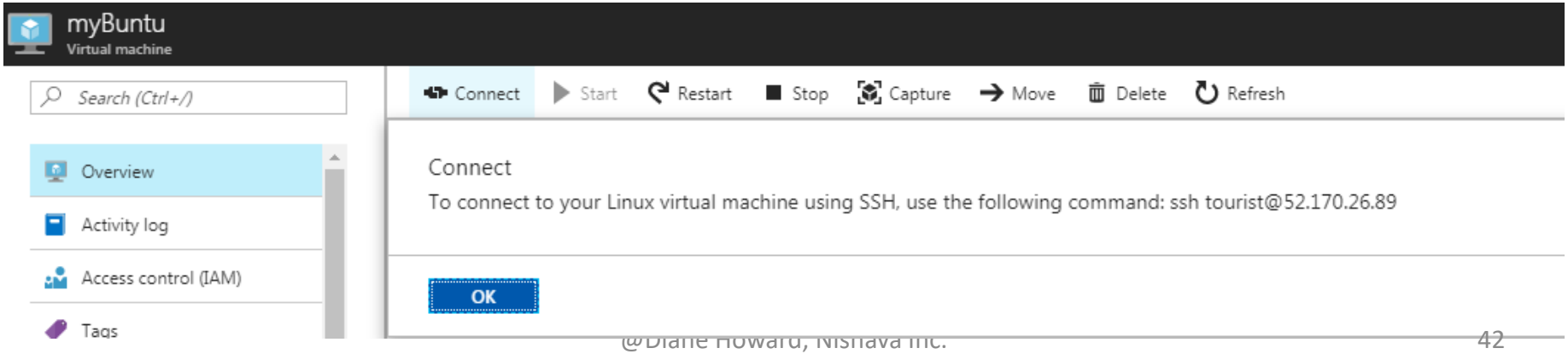
Select Connect to obtain SSH

- Select the ‘Connect’ button for your VM to view the ssh connection string
- This is how we connect to the particular VM remotely in Cygwin.



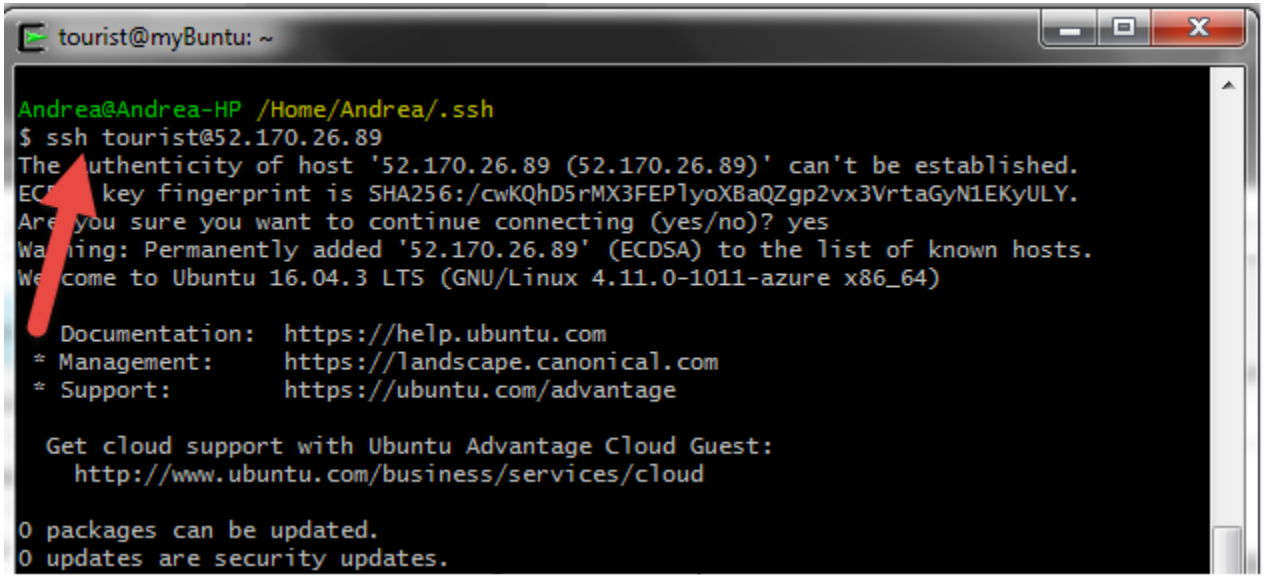
Copy your SSH

- A dialog box will pop up with your connection address
- Ex: mine is ssh tourist@52.170.26.89
- Yours will have different numbers as this is your public ip address of your machine



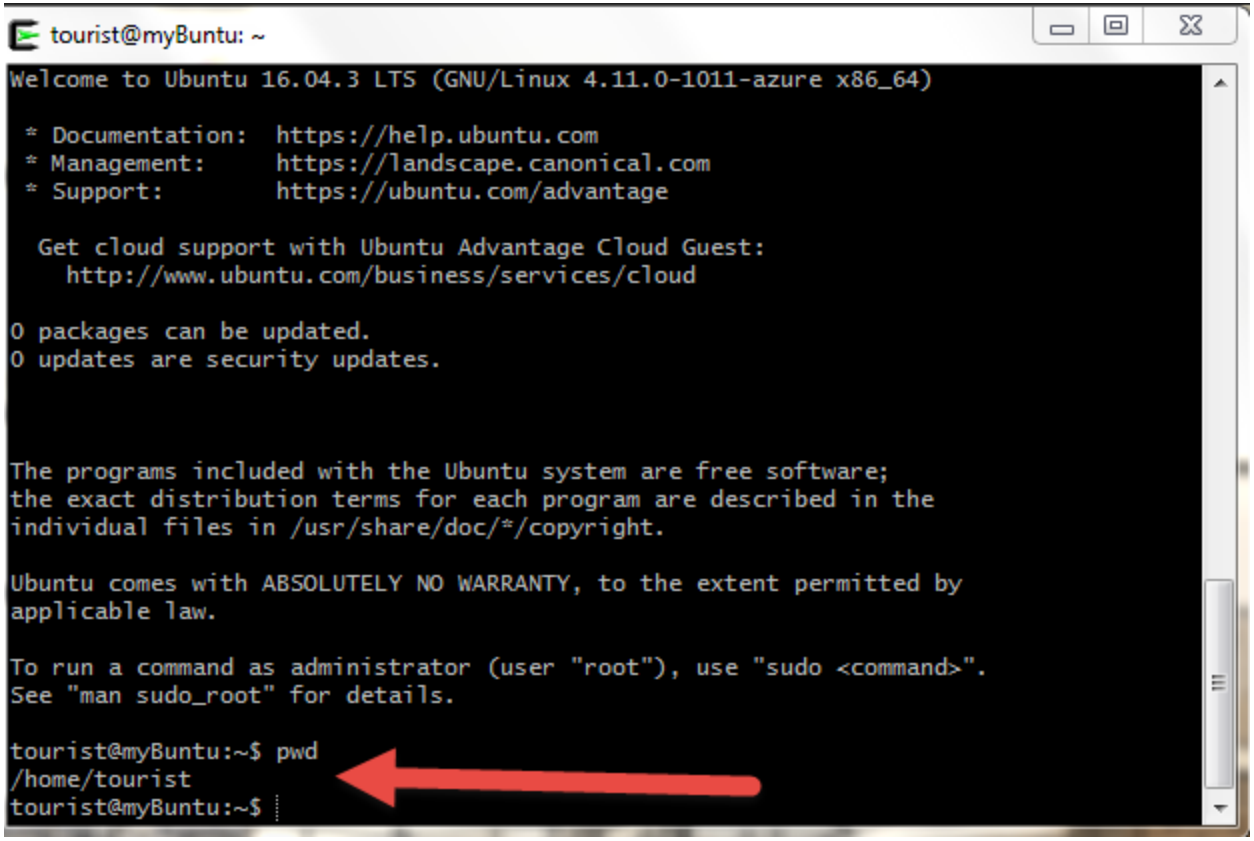
Connect to your VM from Cygwin

- Go to Cygwin and type your new connection address in
- Ex: mine is ssh tourist@52.170.26.89
- Type yes when you are asked if you would like to continue connecting.



Connect to your VM

- You are in your VM if you see Welcome to Ubuntu !
- Type pwd to see the path of the directory that you are now in.

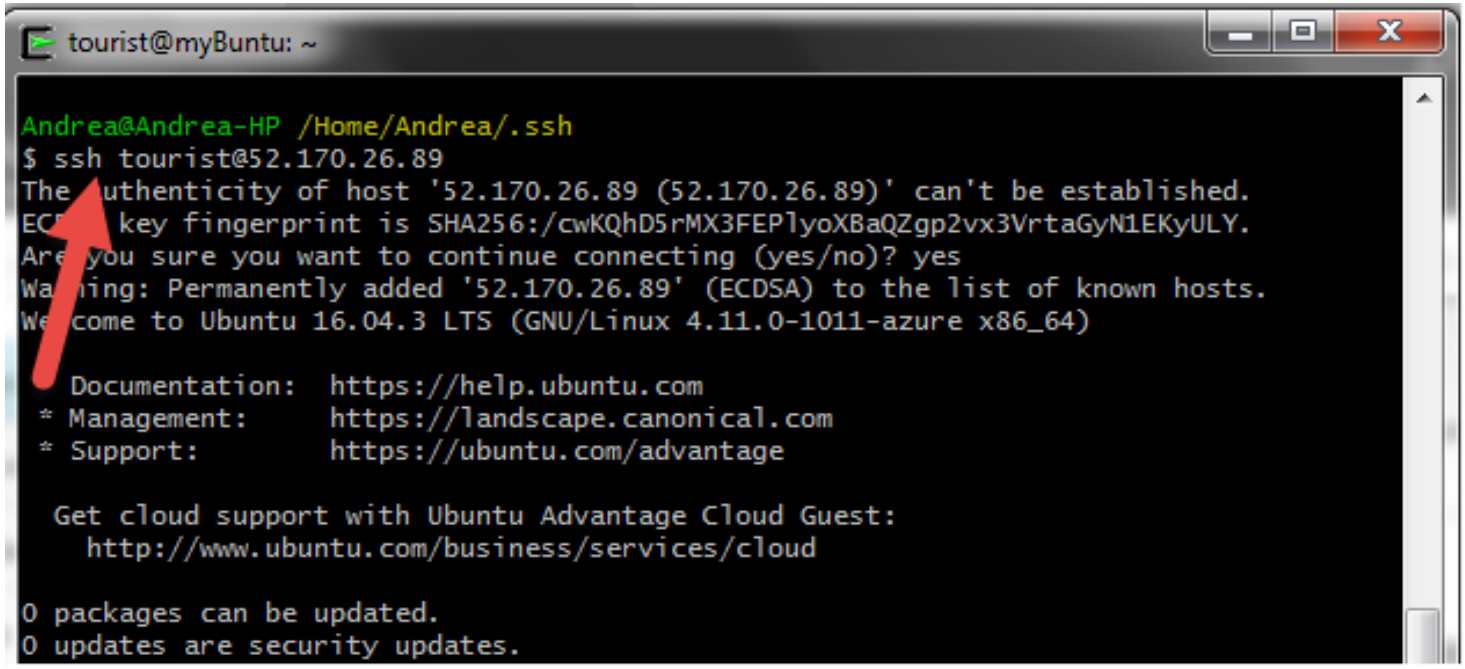


- You could update your Linux RedHat Packages but it is not necessary now for this example.
$sudo yum –y update

INSTALL APACHE TO YOUR LINUX VM

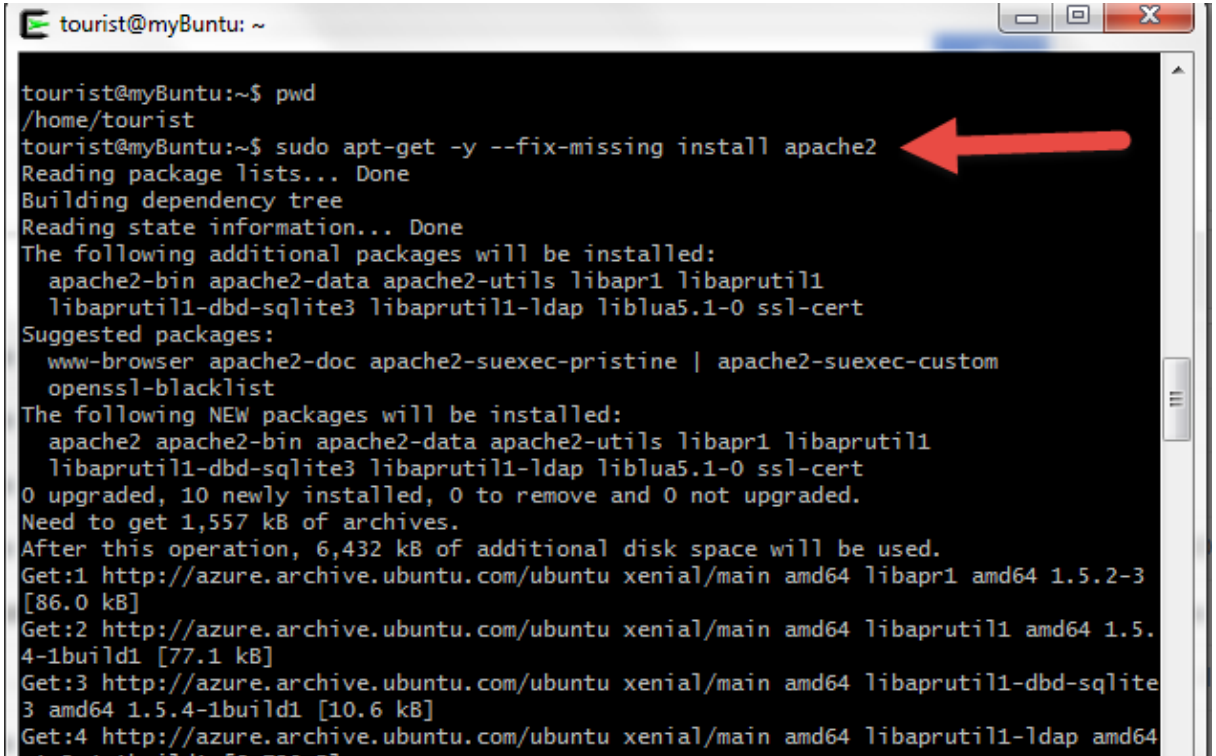
Install Apache

- You will download Apache in Cygwin to your new Linux host.
- Make sure you are still connected to your VM. If you are not follow steps in previous slides to reconnect by typing your connection address (ex. ssh tourist@52.170.26.89)



Install Apache

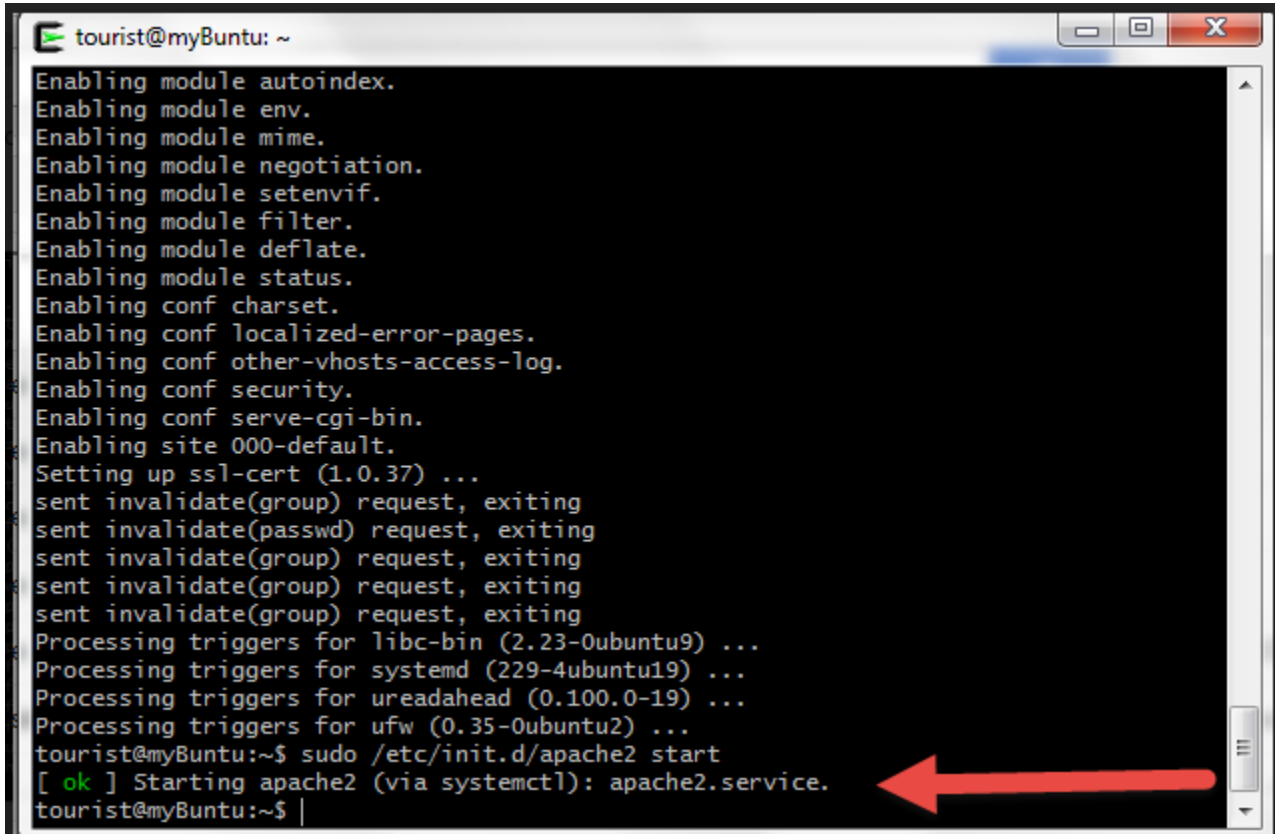
- Install Apache on Cygwin by typing the following on your Cygwin command prompt:
- $sudo apt-get –y --fix-missing install apache2



Start Apache

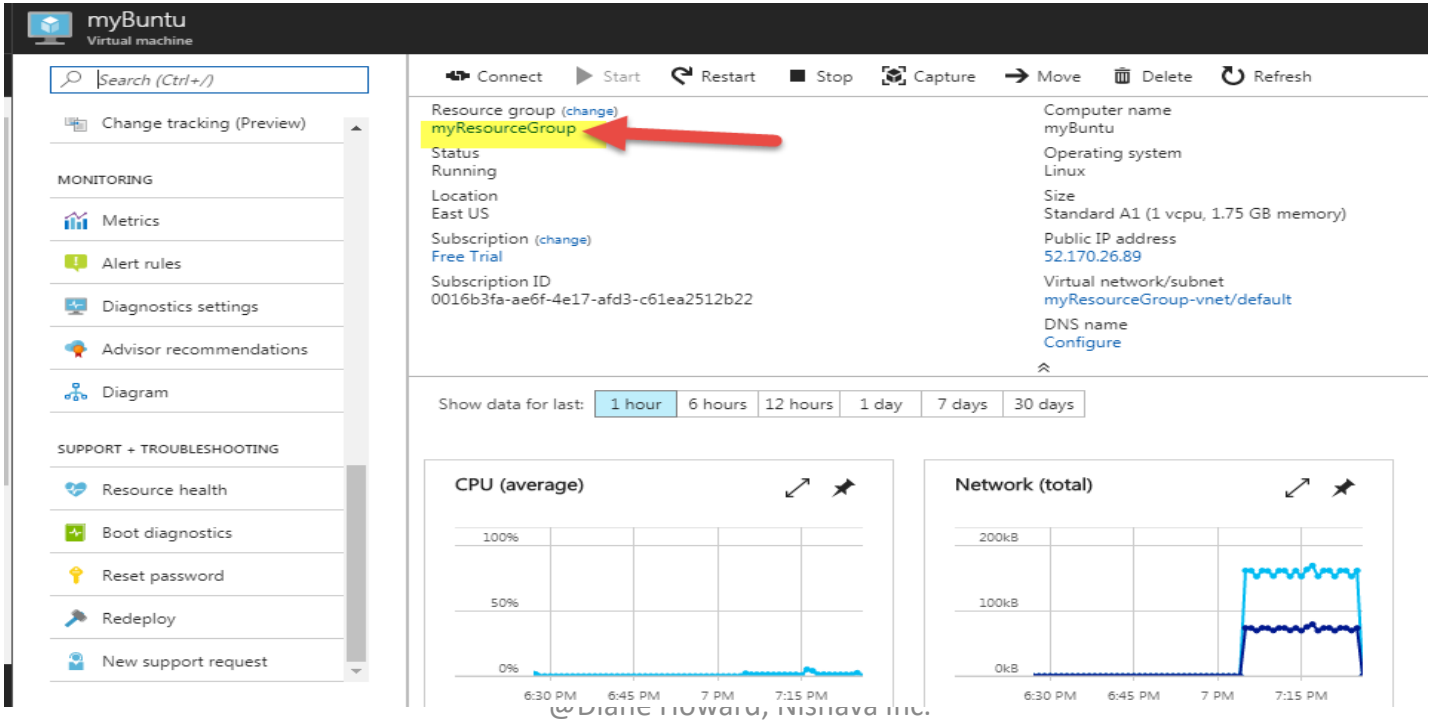
- Start Apache on Cygwin by typing the following in your Cygwin command prompt:

  $sudo /etc/init.d/apache2 start



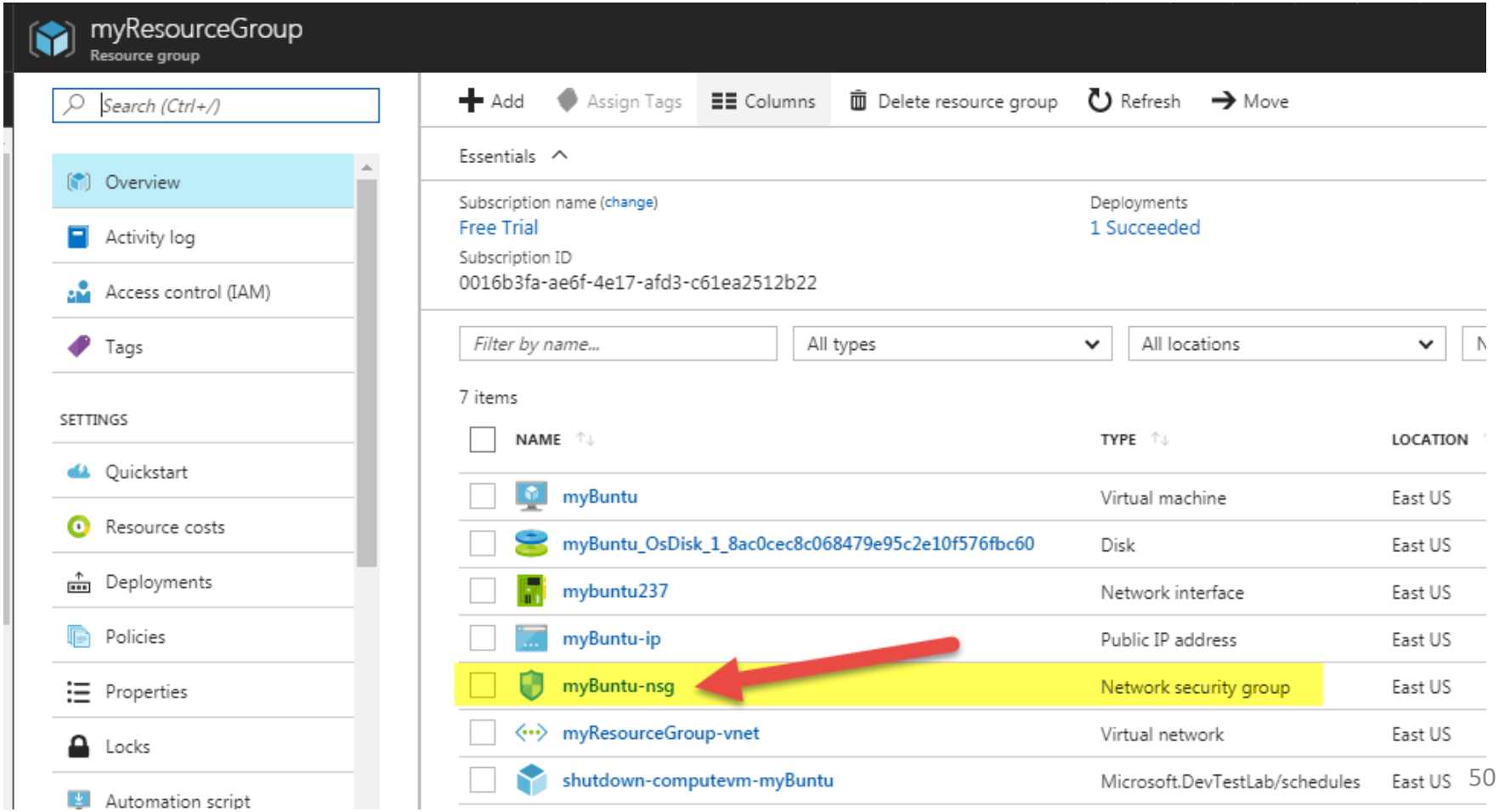
Details of your Linux Vm

- This page shows the details of your new Linux VM.
- Because this VM now hosts a webserver (from our Apache install), a Network Security Group (NSG) “rule” needs to be created for port 80 in your resource group to access the home page from your browser.



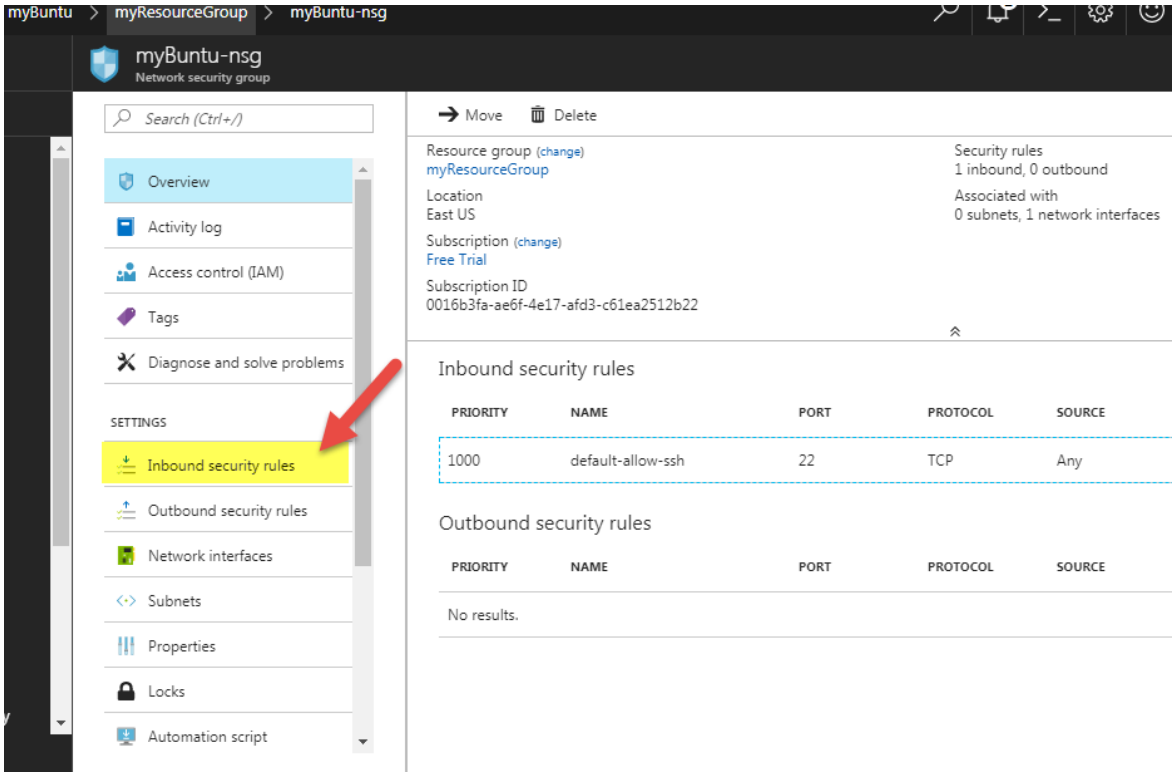
Select the Network Security group

- Locate the Network Security Group noted in the type column



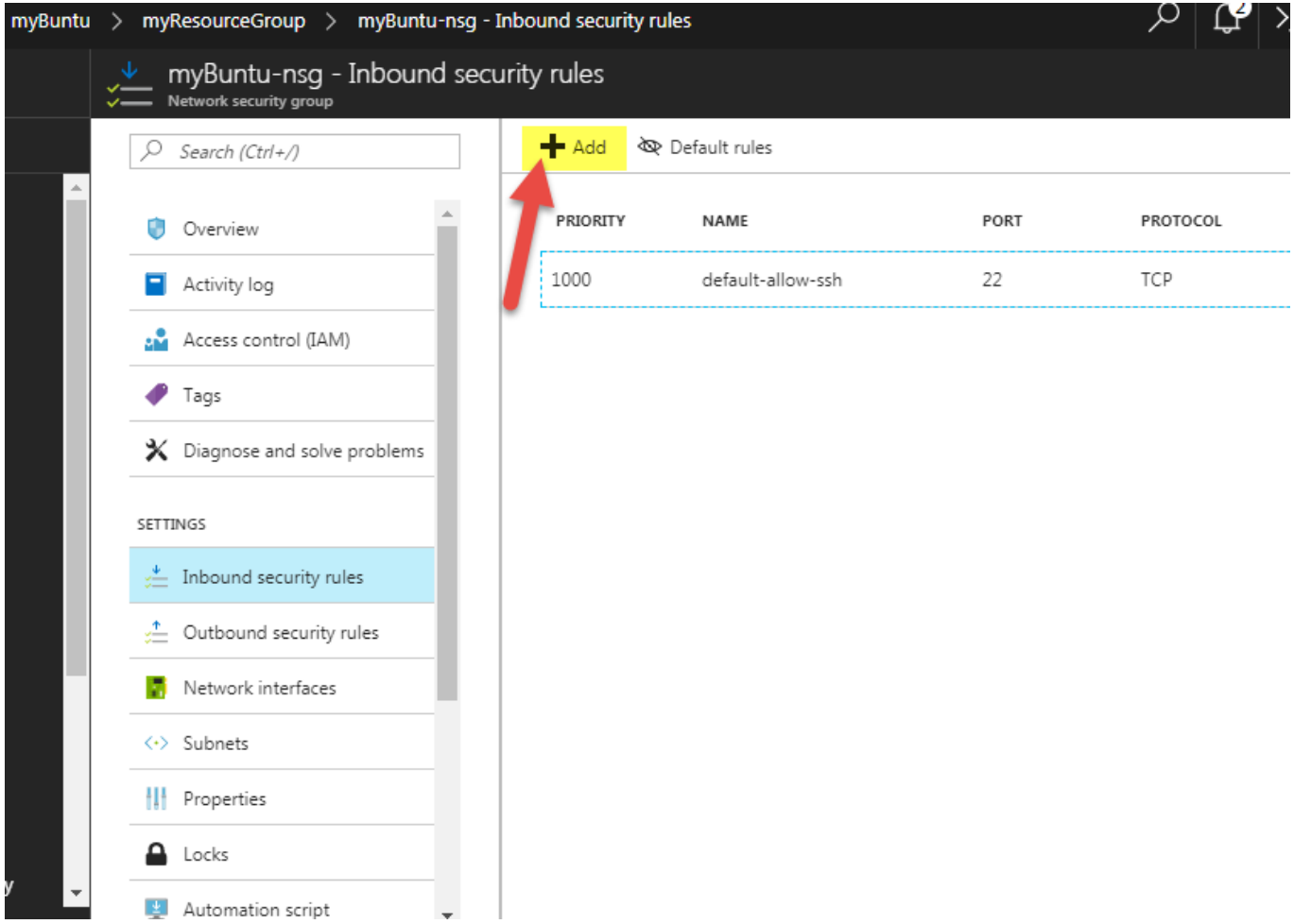
Select ‘Inbound security rules’

- This page shows details of the Network security group Inbound & Output rules
- We will need to change the Inbound traffic rule



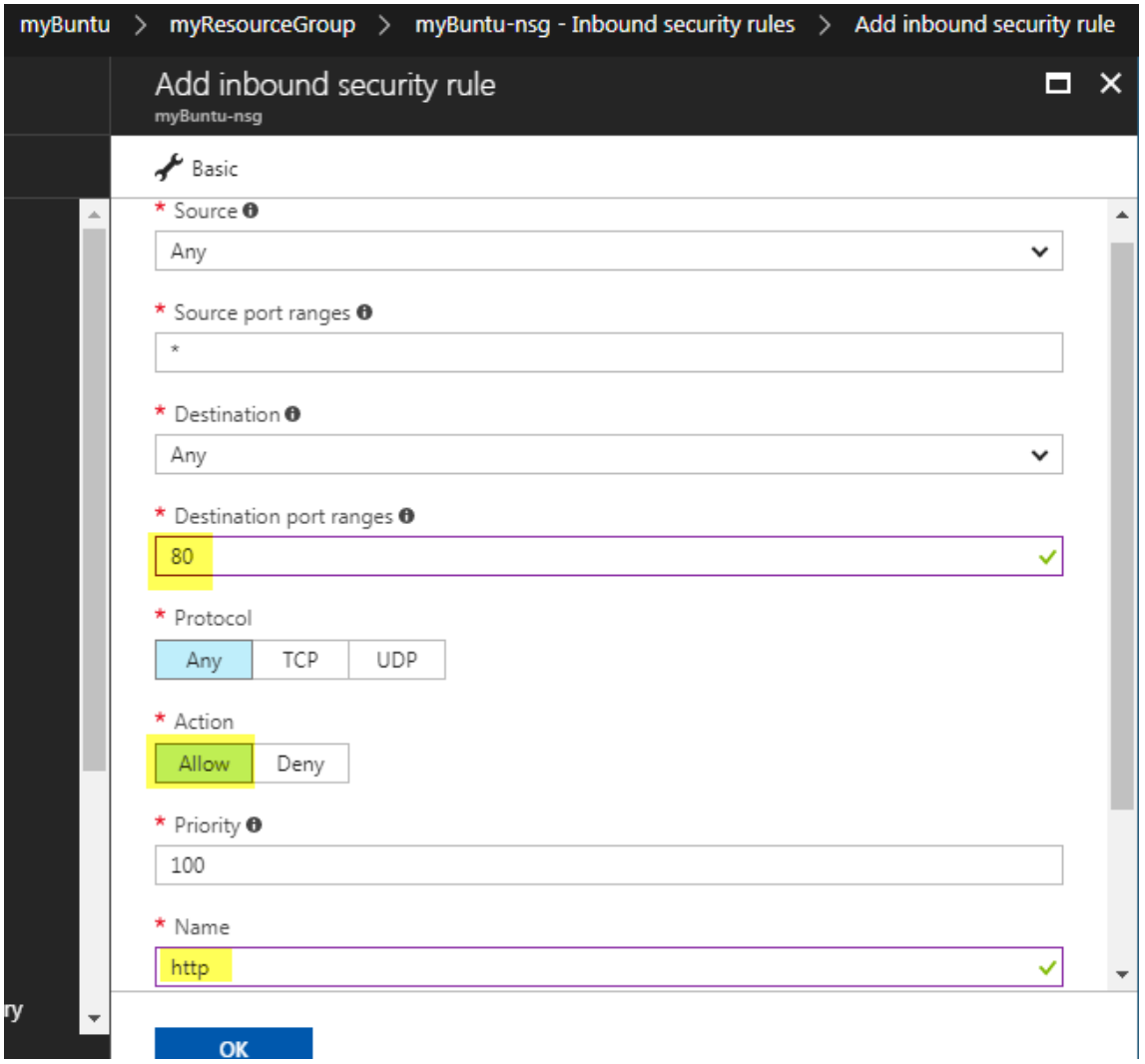
Select ‘Add’

- Add a new inbound port rule to reach our Linux Vm



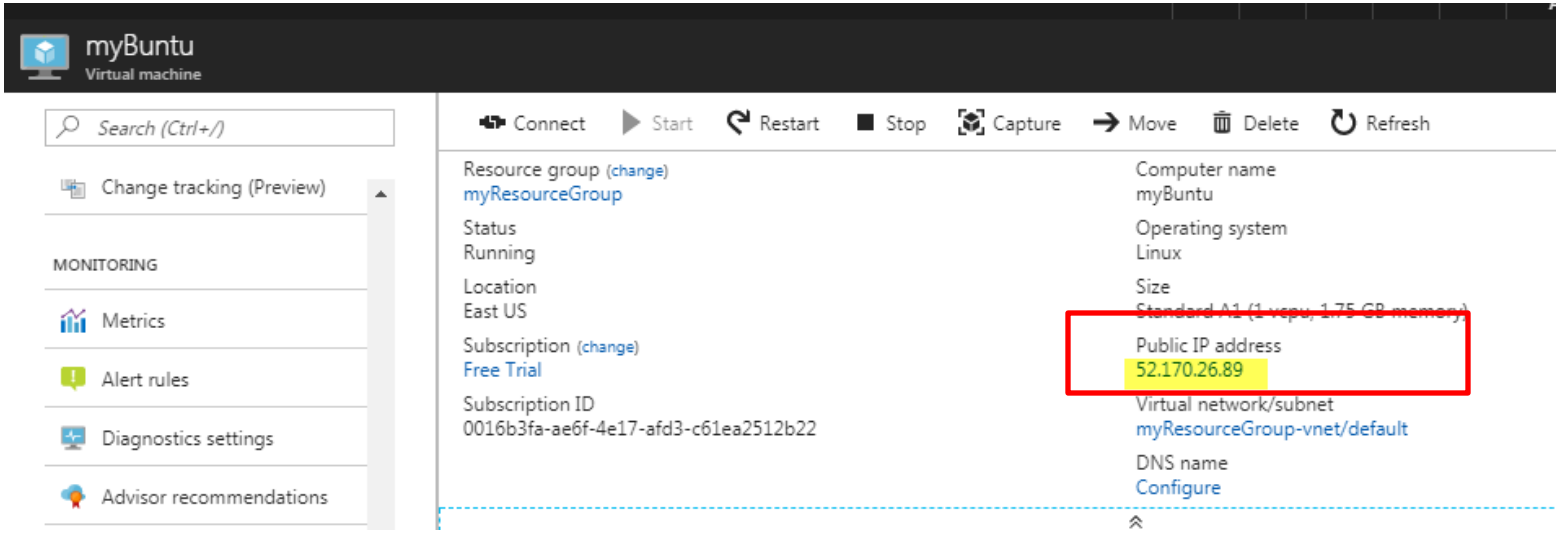
Add Port 80 to Destination port ranges

- In the destination port put: 80
- Make sure the action is set to “Allow”
- Add the Name as: http
- Then select ‘ok’



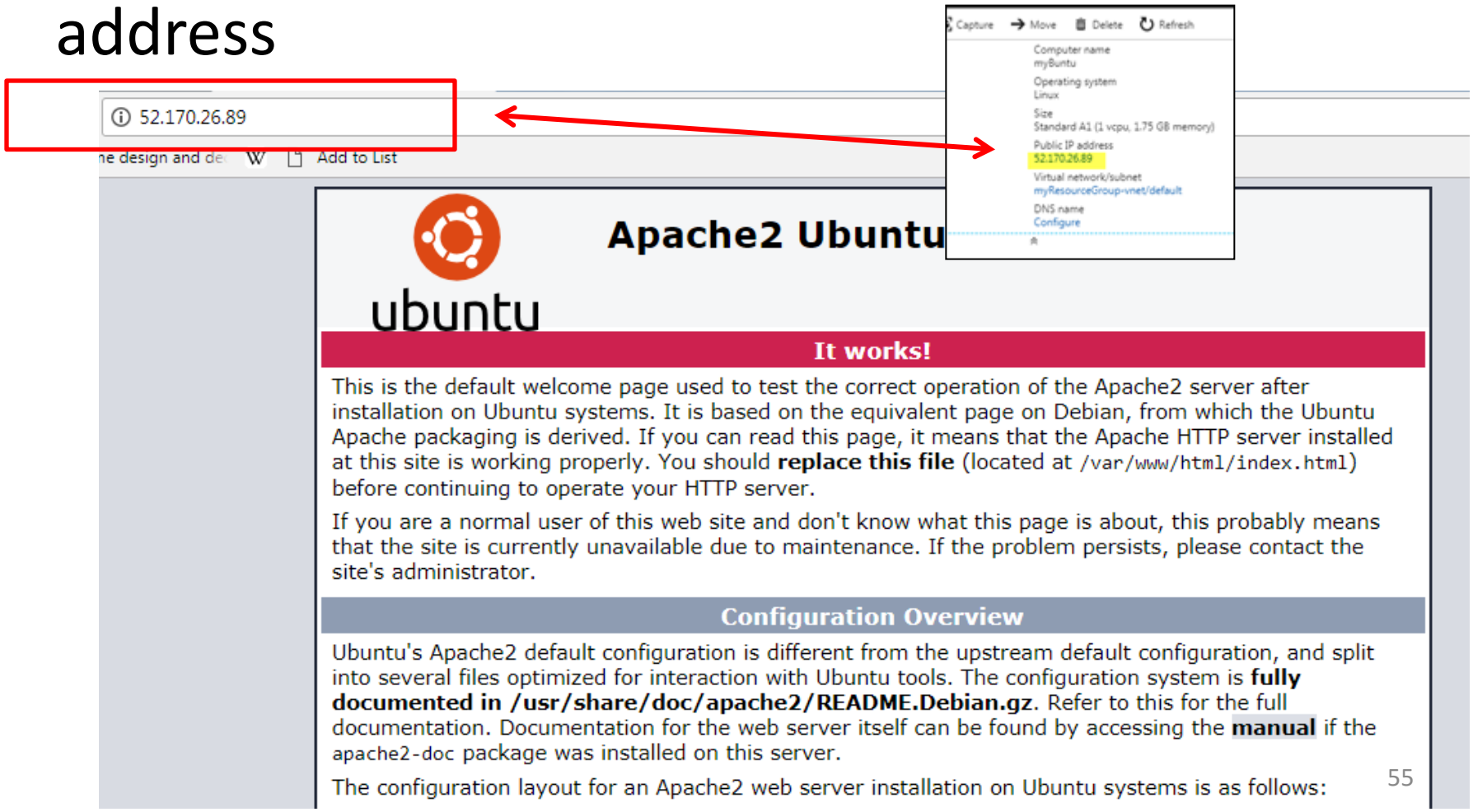
Test it out!

- Test reaching Apache on the web all due to port 80 allowing access to your VM home page!
- Go to your browser and type in your public IP Address (ex. Mine is 52.170.26.89) – this can be found on the first page of your VM. You can also find behavior of your VM here.



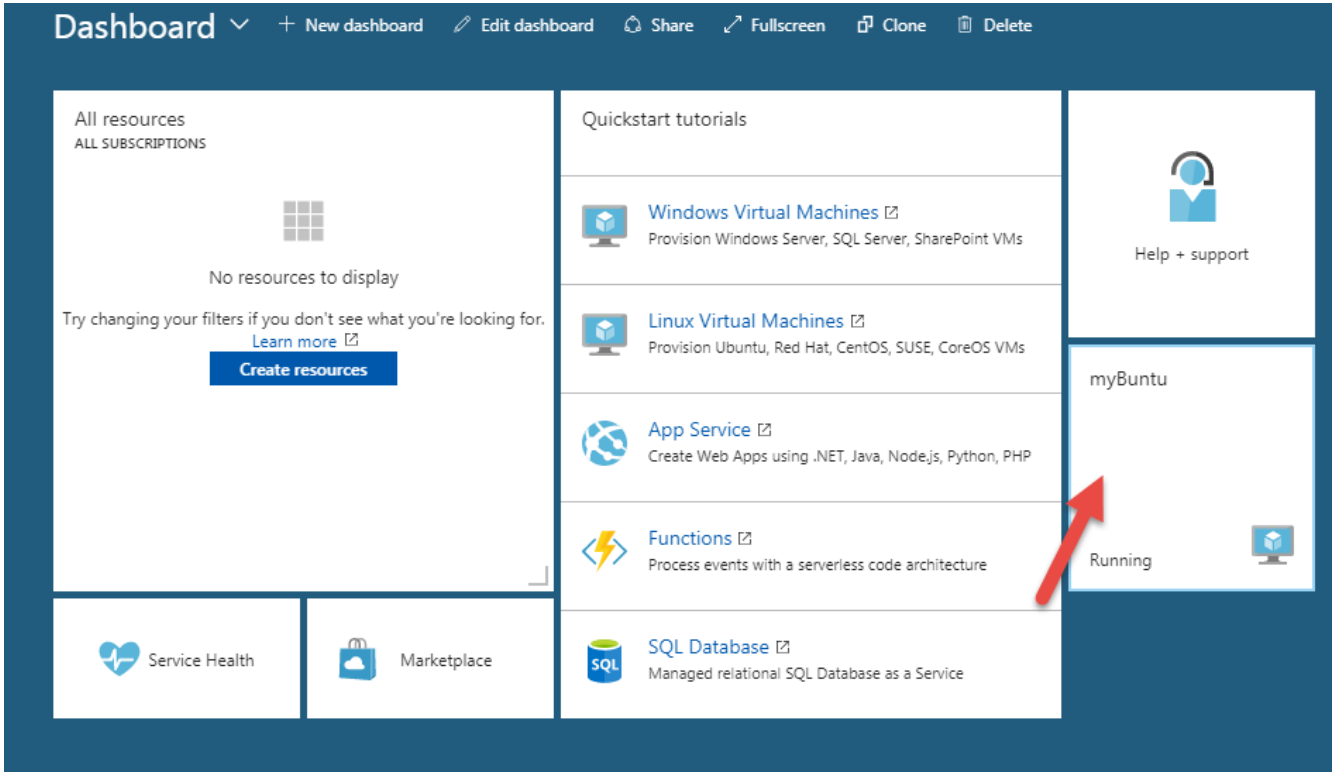
Test it out!

- Go to your browser and type in your public IP address



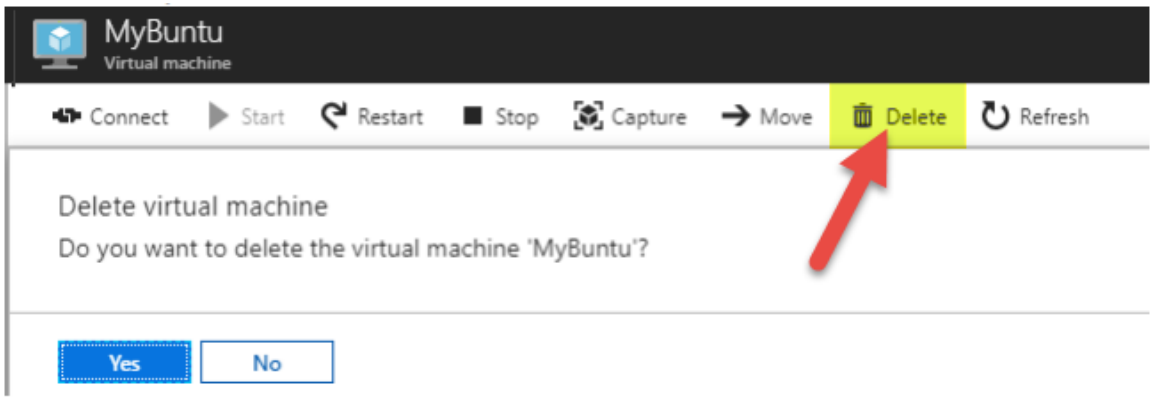
Delete your VM and Resource Group

- Once you are done you delete your VM and Resource Group to avoid getting charged for keeping them running.
- Select your VM from your Portal.



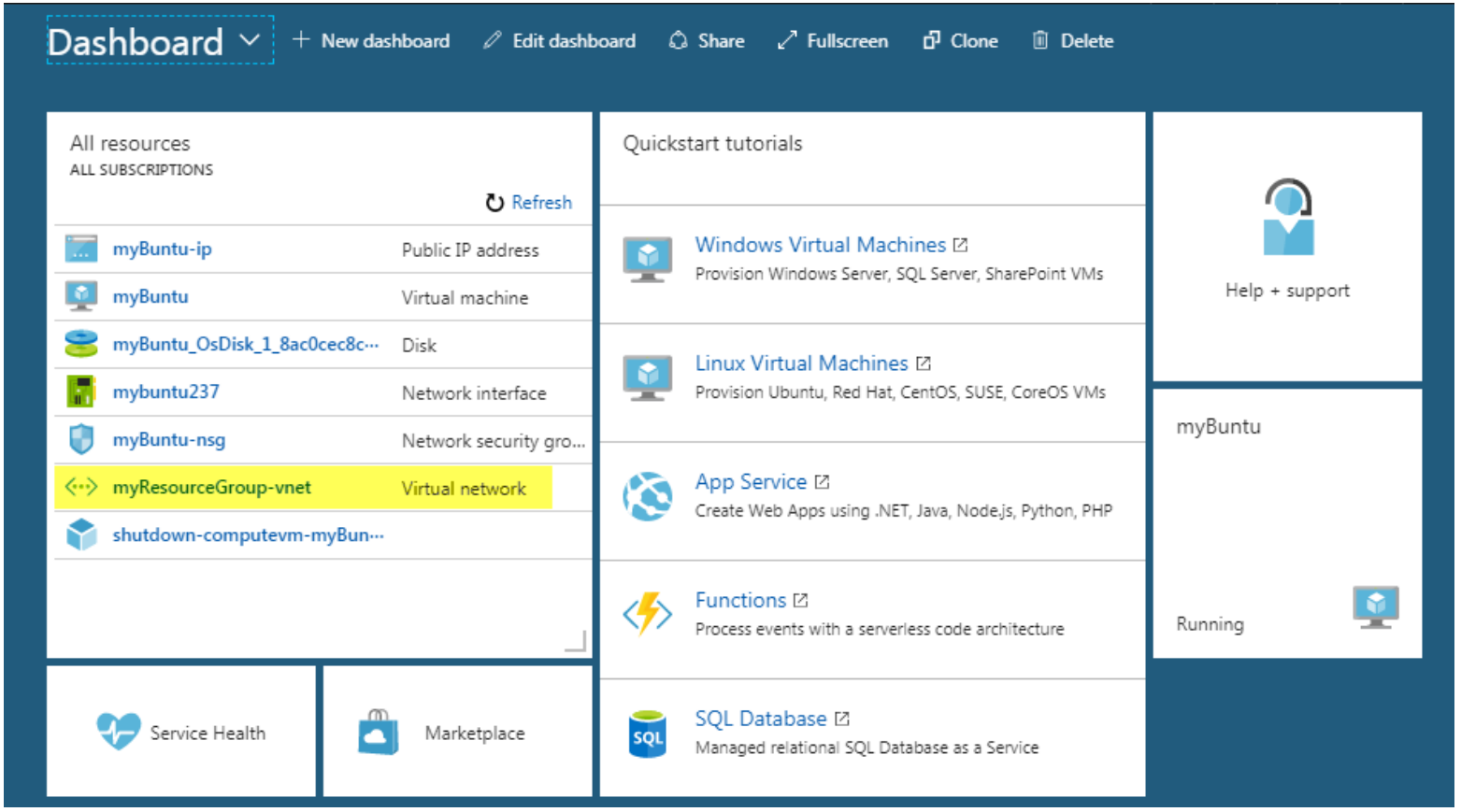
Delete your VM

- Select ‘Delete’ and then select ‘Yes’ to remove your VM.



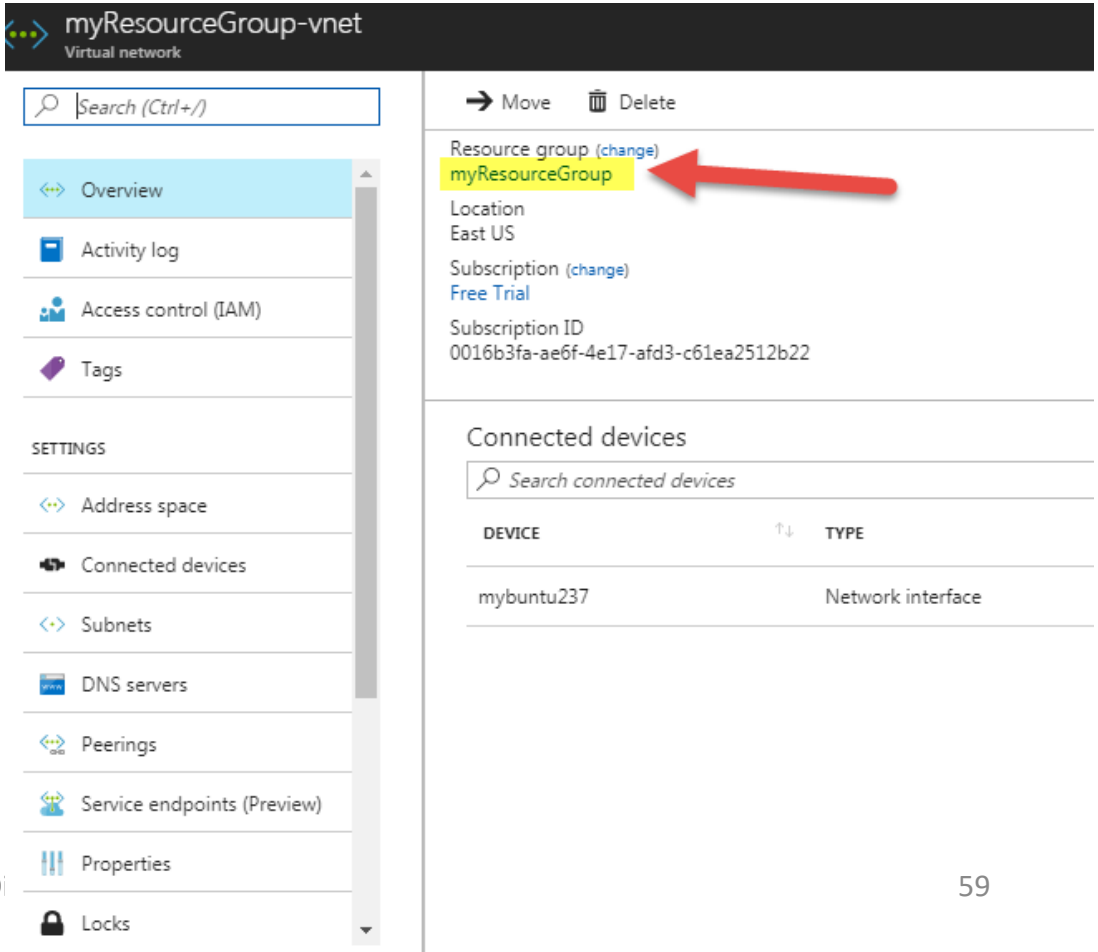
Delete your Resource Group

- In your portal select the myResourceGroup-vnet



Delete your Resource Group

- Once in your virtual network, select ‘myResourceGroup’. You could reuse Resource Groups if you prefer and not delete them.



Delete your Resource Group

- Finally, select ‘delete resource group’ to delete your Resource Group