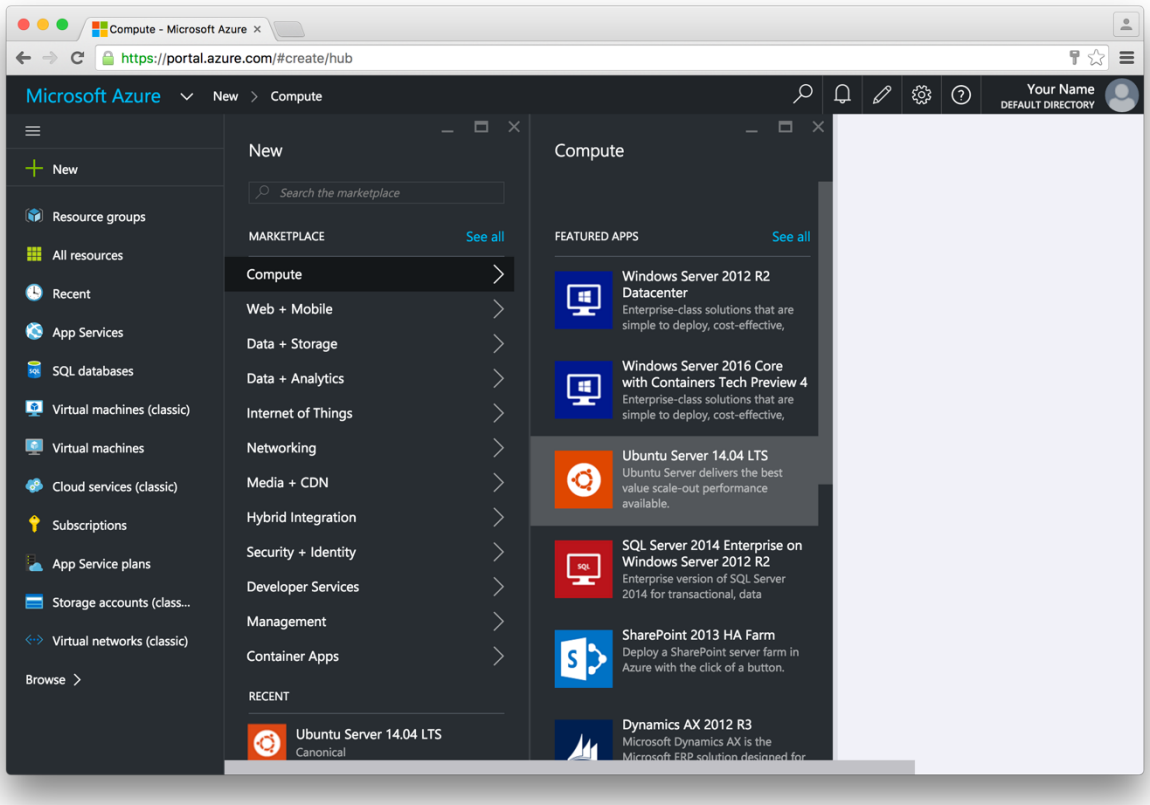
Azure Guide

Ubuntu 14.04 Virtual Machine LAMP Stack

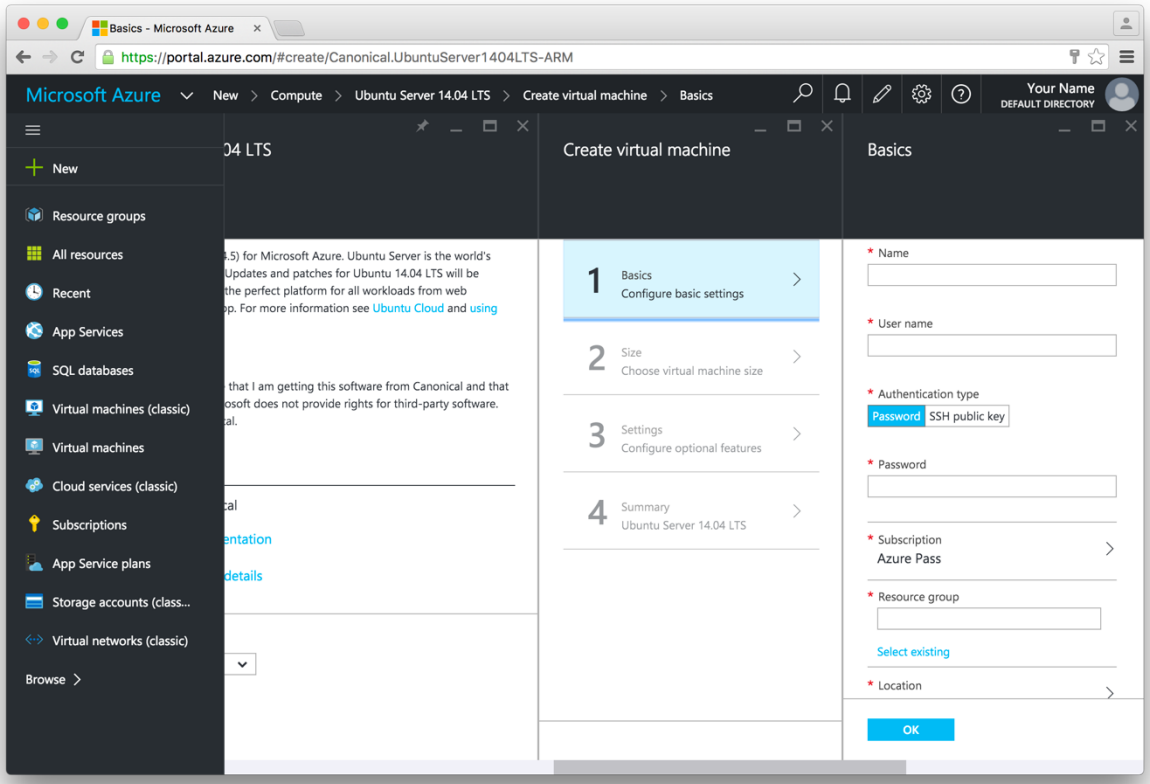
Creating a Virtual Machine

Sign-in to the Azure Portal at https://portal.azure.com

Click *New* on the left-hand side of the page. Select *Compute* and then *Ubuntu Server 14.04 LTS.*



Clicking *Create* will prompt you for more information about the virtual machine:

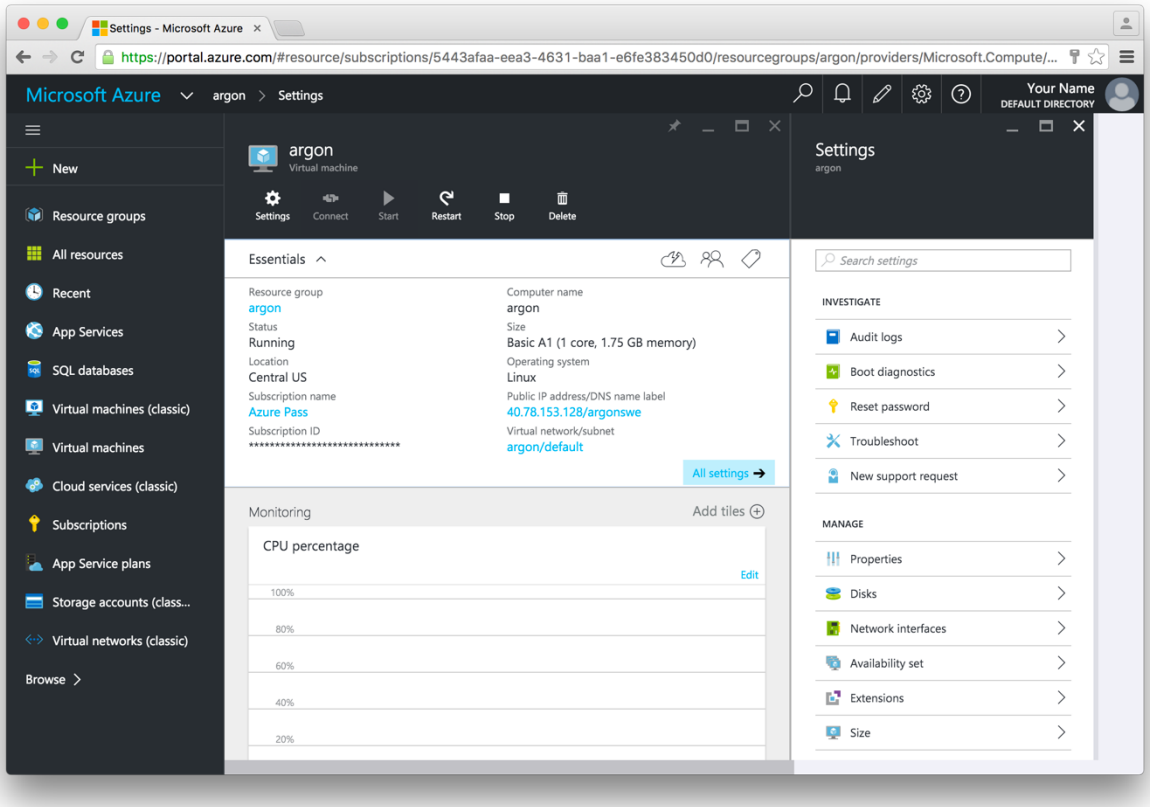


Here are some notes about the fields above:

- **Name:** this is the name of your virtual machine. In lecture, we named our VM “Argon”.
- **User name:** this is the account you will use to connect to your virtual machine.
- **Password:** create a strong password.
    - Attackers will try to compromise your virtual machine. Please be careful and protect your VM with a strong password.
- **Resource Group:** this will group all of the assets that come with your virtual machine. In lecture, we named our resource group “argon”, similar to our VM’s name.
- **Size:** click “View All” to see more size options. In lecture, we chose the A1 Basic machine, which costs an estimated $32.74 a month to run.
    - Feel free to pick any option that works for you, but make sure that you don’t go over your monthly spending allowance of $100.
    - Remember that you can upgrade/downgrade the VM size at any time, even after you’ve built your VM.
- **Other:** the other options can stay on their default settings.

After you've followed the prompts above, Azure will take a few minutes to create your virtual machine. When it's done, you'll have an icon like this on your home screen:

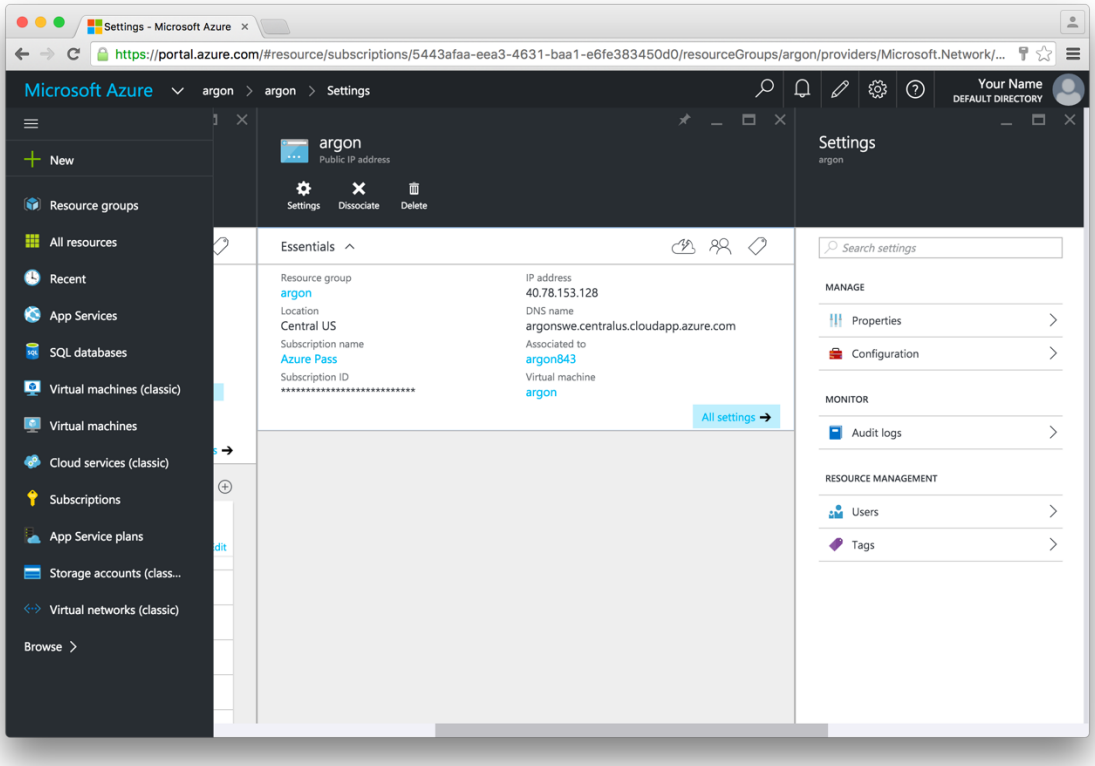
Click on it to view the virtual machine's main control panel:



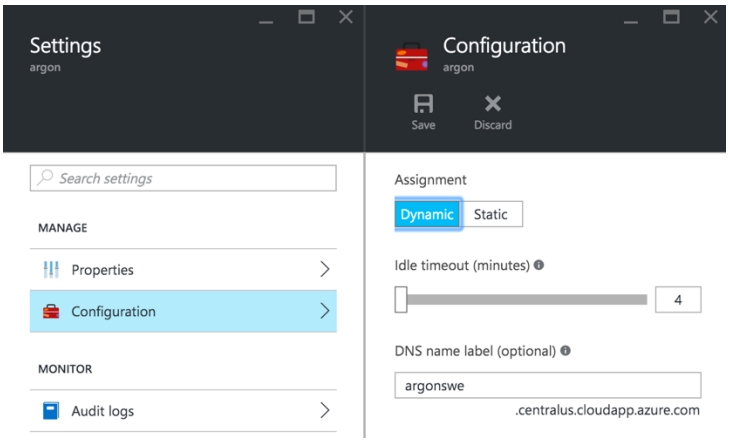
Configuring DNS

By default, your virtual machine comes with a public IP address. Azure will provide you with a domain name as well, but you need to set it manually.

Click on the blue text under *Public IP address/DNS name label* from the screenshot above. Doing so will open your *Public IP Address* settings panel:



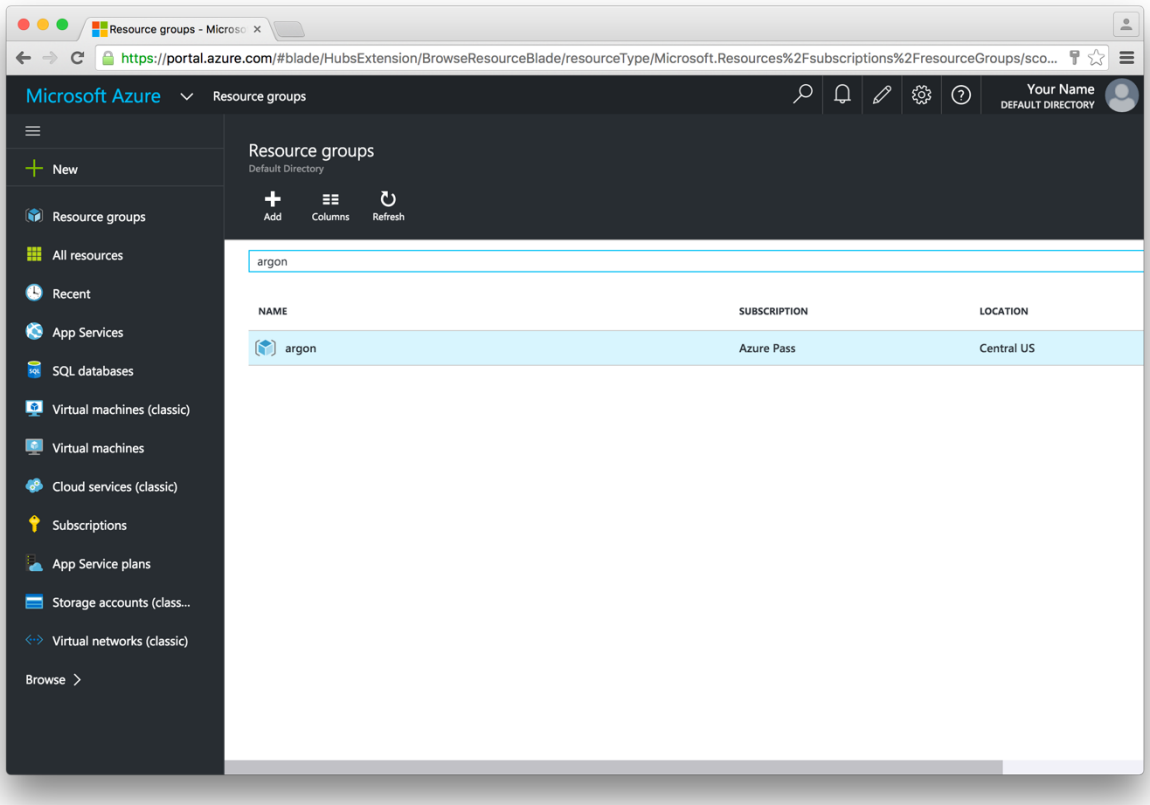
Click on *Configuration* and set the *DNS name label (optional):*



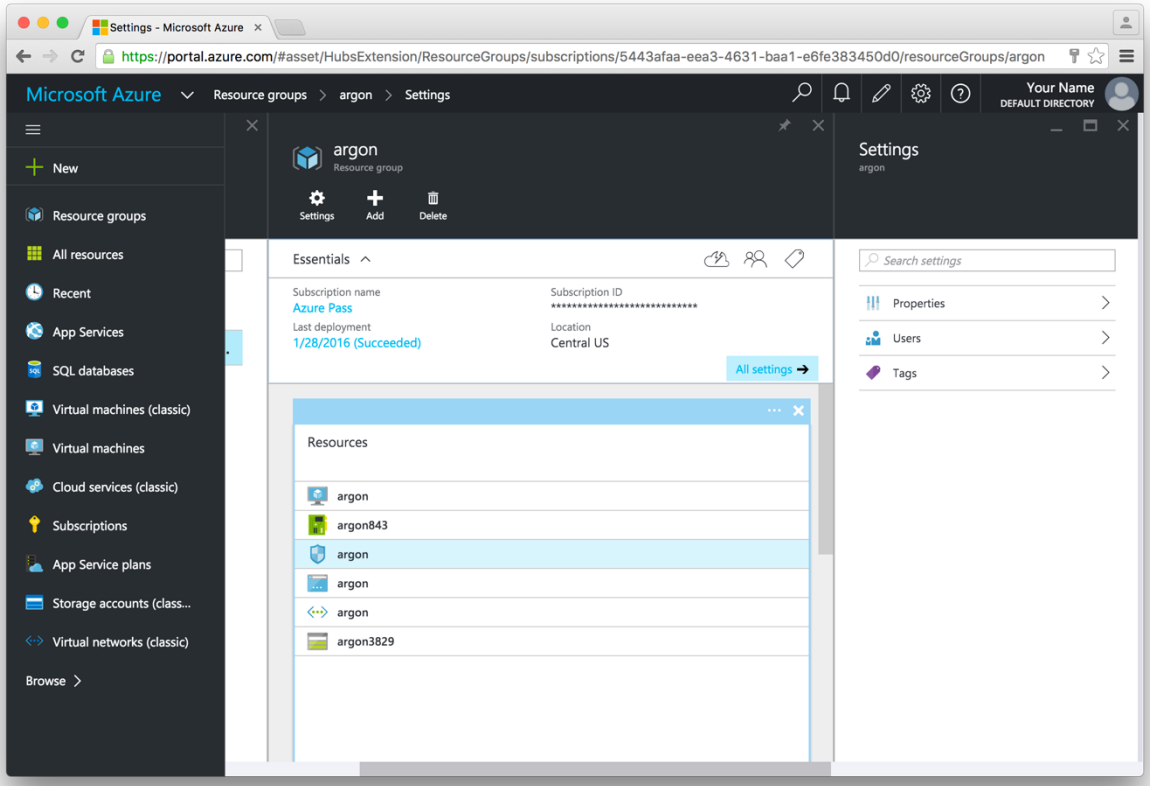
Adding Endpoints

By default, Azure blocks all communication to a virtual machine except port 22 for SSH. We'll be installing a web server (Apache), which means we'll want to open up port 80 for HTTP traffic.

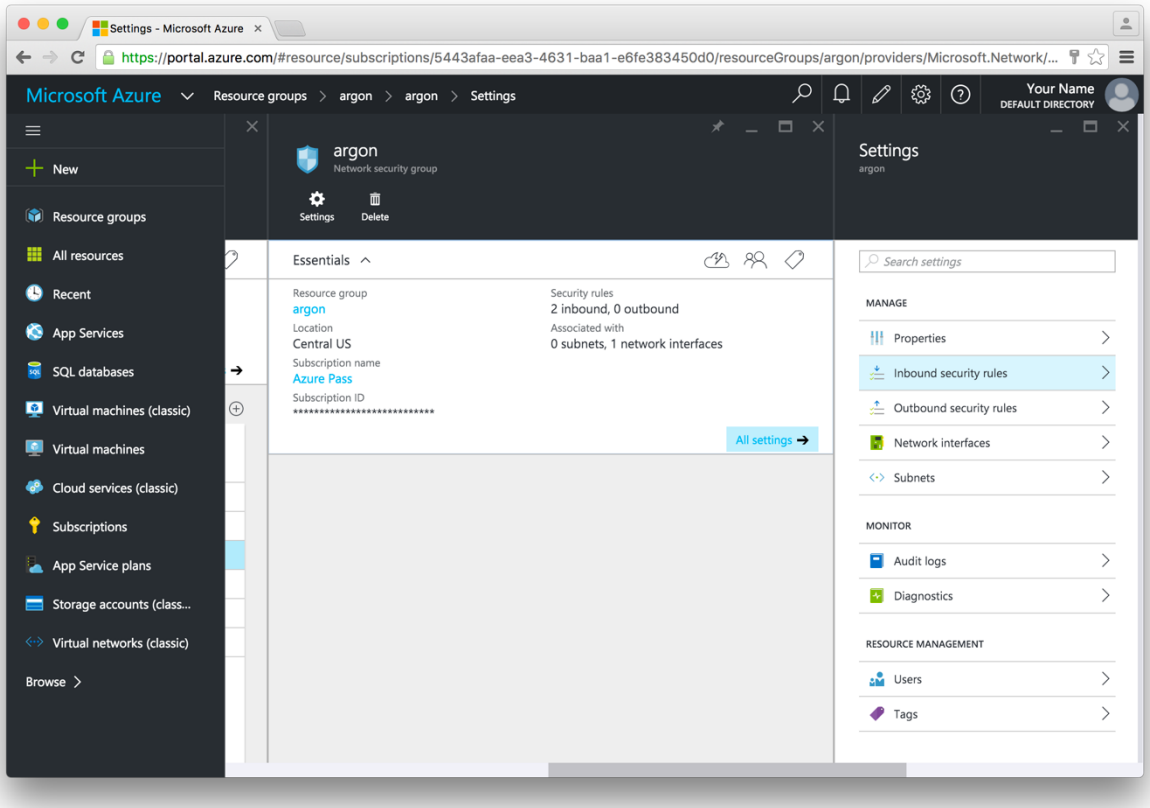
Click on *Resource groups* on the left-hand side of the Portal and select the group that corresponds to your virtual machine.



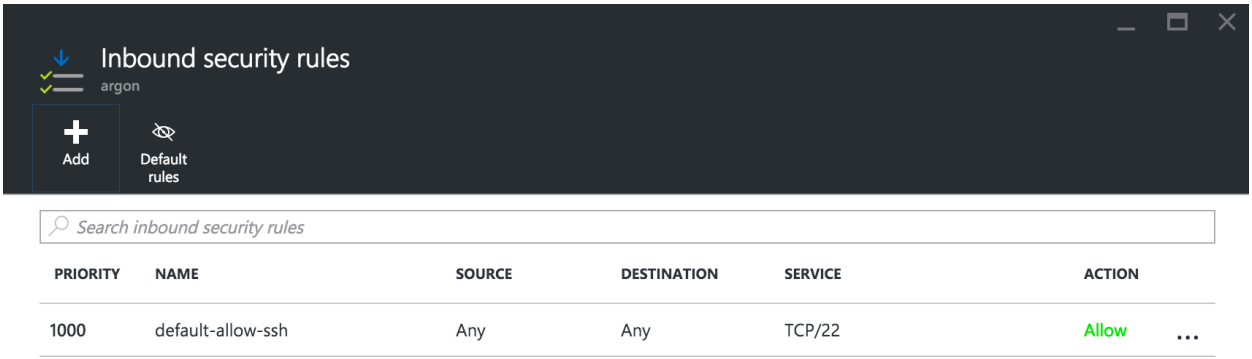
This panel shows you all of the resources that belong to your virtual machine. Find the icon that looks like a blue shield (highlighted below) and click on it:



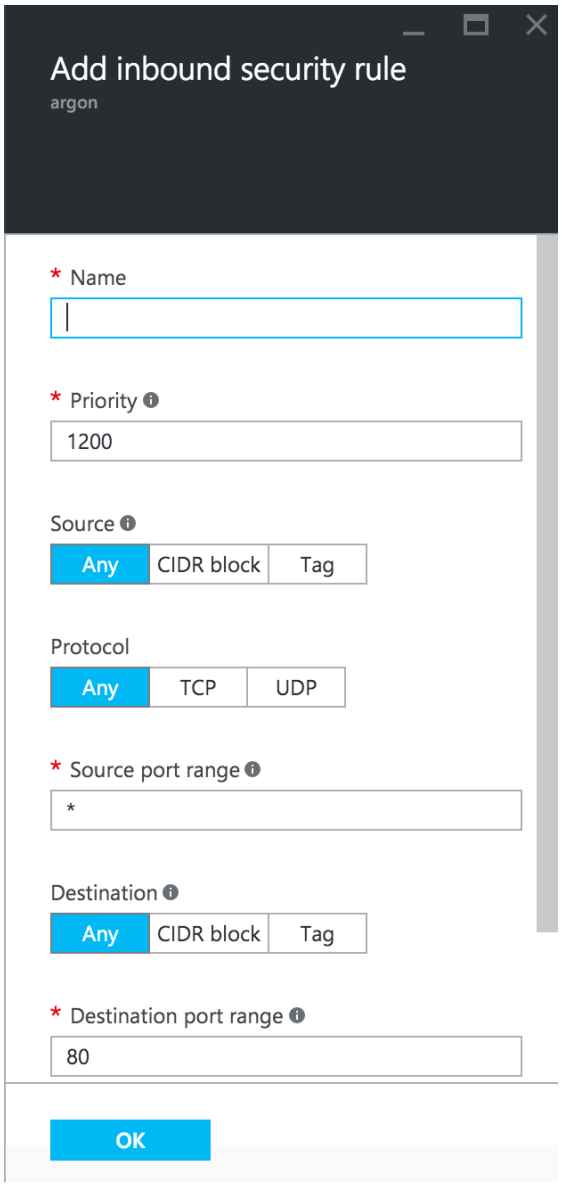
Here are your security settings. Click on the *Inbound security rules* option to the right.



Click *Add*.



Here, we'll add an inbound rule for HTTP traffic. Give the rule a name of "http" and make sure that the *Destination port range* is set to "80". Everything else can stay on its default settings.



Installing Software

From a terminal window, connect to your virtual machine over SSH:

```
$ ssh USERNAME@SERVER.centralus.cloudapp.azure.com
```

Once you're connected, let's make sure the system is up-to-date:

```
$ sudo apt-get update
$ sudo apt-get upgrade
```

For security, install Fail2Ban. Fail2Ban will block users who attempt to login multiple times with an incorrect password:

```
$ sudo apt-get install fail2ban
```

Now we'll install our web server, Apache:

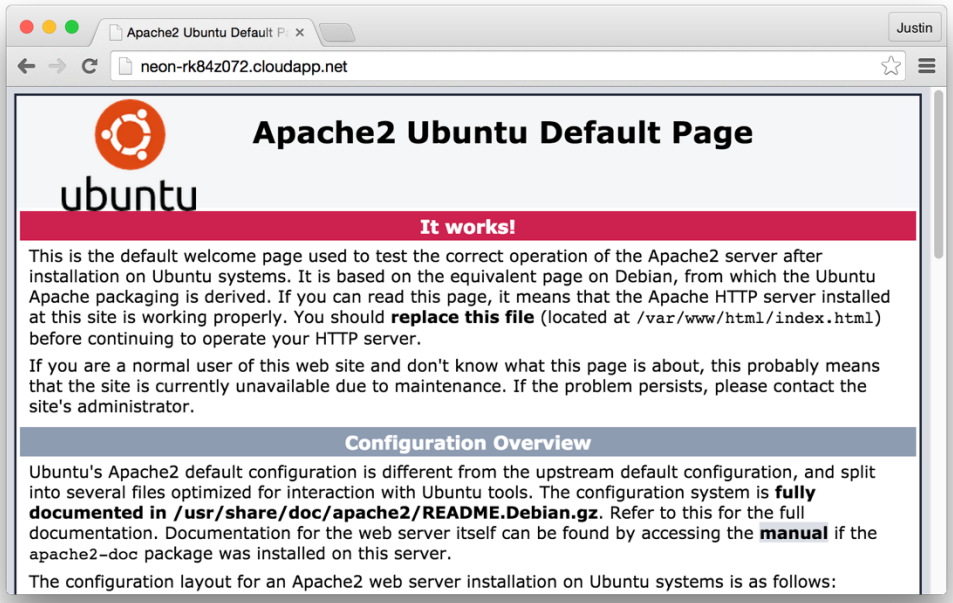
```
$ sudo apt-get install apache2
```

And finally, we'll install PHP:

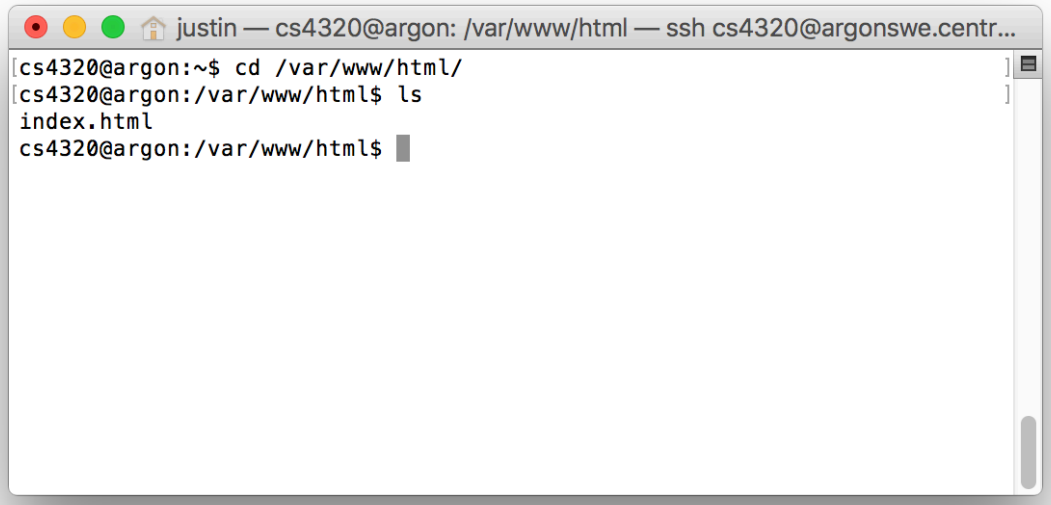
```
$ sudo apt-get install php5 php-pear php5-mysql
```

Virtual Hosts in Apache

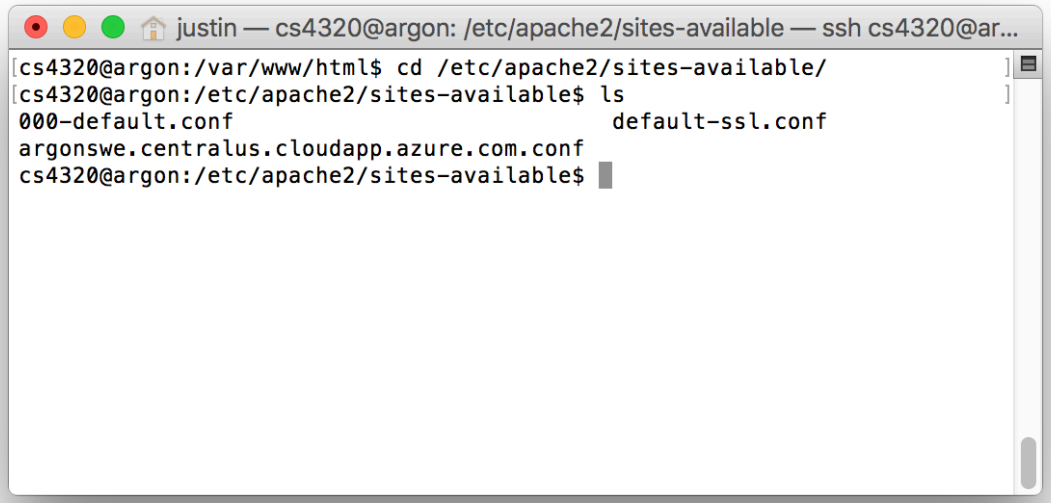
After successfully installing Apache, we can navigate to our virtual machine in a web browser. When we do, we'll be greeted by Apache's default landing page:



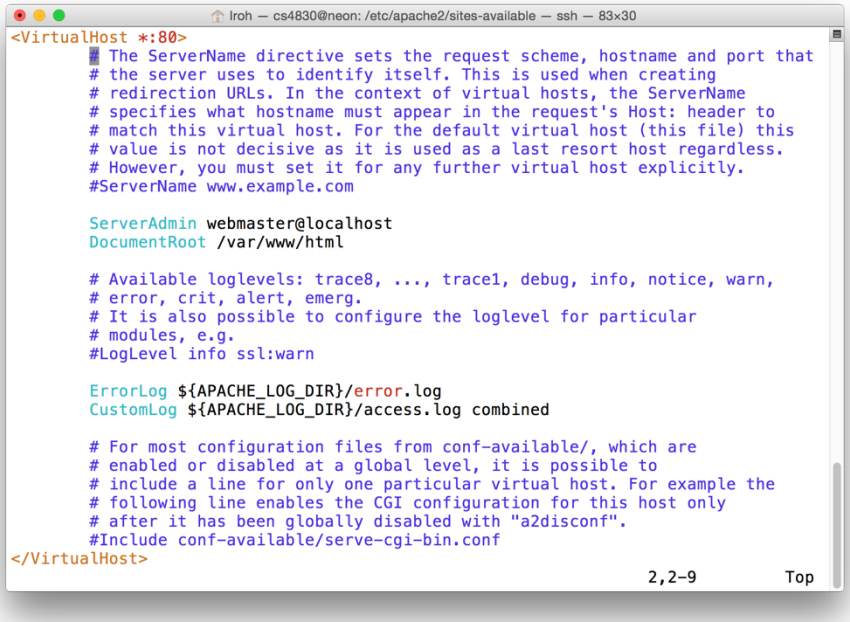
This page is located within `/var/www/html/`



`/var/www/html/` is the default web-accessible directory, but we can change that. Let's take a look at Apache's default configuration, located in `/etc/apache2/sites-available/`



The default configuration file is *000-default.conf*. It defines a <VirtualHost> container that provides contact info, tells Apache where to serve content from (DocumentRoot), and specifies a destination for access and error data (ErrorLog/CustomLog):



To customize these options, create your own *.conf* file in the *sites-available/* folder. I've created one named after my server's domain name, **argonswe.centralus.cloudapp.azure.com.conf**

```
cs4320@argon:/etc/apache2/sites-available$ sudo vim
argonswe.centralus.cloudapp.azure.com.conf
```

Things to Note

- The ServerName has been updated to the virtual machine's domain name
- The DocumentRoot now points to a folder within my user's home directory
- The ErrorLog and CustomLog also point to a folder within `/home/cs4320/`
- The last step is to grant access to the new DocumentRoot. The <Directory> container here states that all files and folders within `/home/cs4320/argon.../public_html/` will be web-accessible.

The next step is to create the directories mentioned by DocumentRoot, ErrorLog, CustomLog, and <Directory>. From your home directory (`/home/cs4320/`) do the following:

```
cs4320@argon:~$ mkdir argonswe.centralus.cloudapp.azure.com
cs4320@argon:~$ cd argonswe.centralus.cloudapp.azure.com
cs4320@argon:~/...$ mkdir public_html
cs4320@argon:~/...$ mkdir log
```

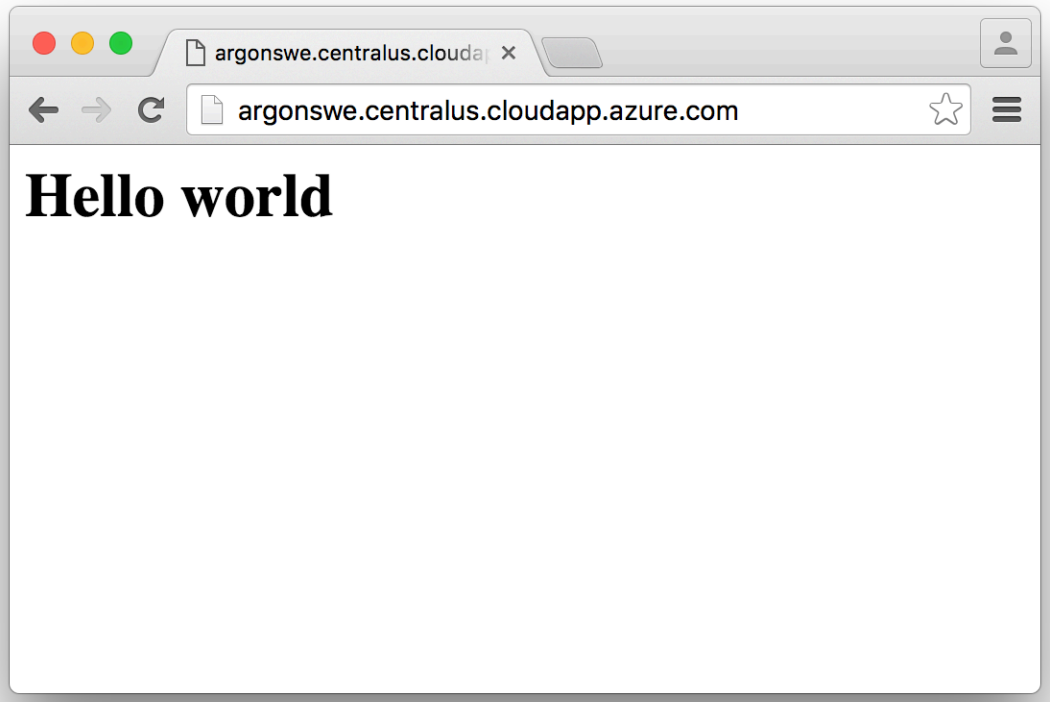
Let's also create a quick index.html page in the `public_html/` directory:

```
cs4320@argon:.../public_html$ echo "<h1>Hello world</h1>" > index.html
```

Finally, we need to disable the old virtual host (a2dissite) and enable the new one (a2ensite). After that, Apache should be restarted.

```
cs4320@argon:~$ sudo a2dissite 000-default.conf
cs4320@argon:~$ sudo a2ensite
argonswe.centralus.cloudapp.azure.com.conf
cs4320@argon:~$ sudo service apache2 reload
```

Now we can reach our content in a web browser!



Other Notes

To see who is accessing your site, take a look at *access.log* within the `log/` folder you created. Similarly, check *error.log* to view your PHP errors.