Deployment of Chef on Microsoft Azure

Lab Guide

March 2016

SUPER HUMAN

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Overview

This document will provide detailed step-by-step instructions that will guide you through the installation of Chef Server on Microsoft Azure assuming an Azure subscription has already been created. The scenarios that will cover the setup Chef Server 12, BYOL (Bring You Own License), install cookbooks and bootstrapping a Windows VM (virtual machine) node with an IIS Web Server installation Cookbook.

Requirements

Microsoft Azure Subscription

Local workstation can be any OS you choose (Linux, Mac OS, or Windows) or a virtual machine configured with:

- Text Editor – Most popular ones are Atom, Sublime Text, and Notepad++ for writing Chef code amongst others.
- Free Telnet/SSH Client for Windows – Most popular ones are Microsoft Telnet Client, PuTTY, and AnyConnect amongst others.

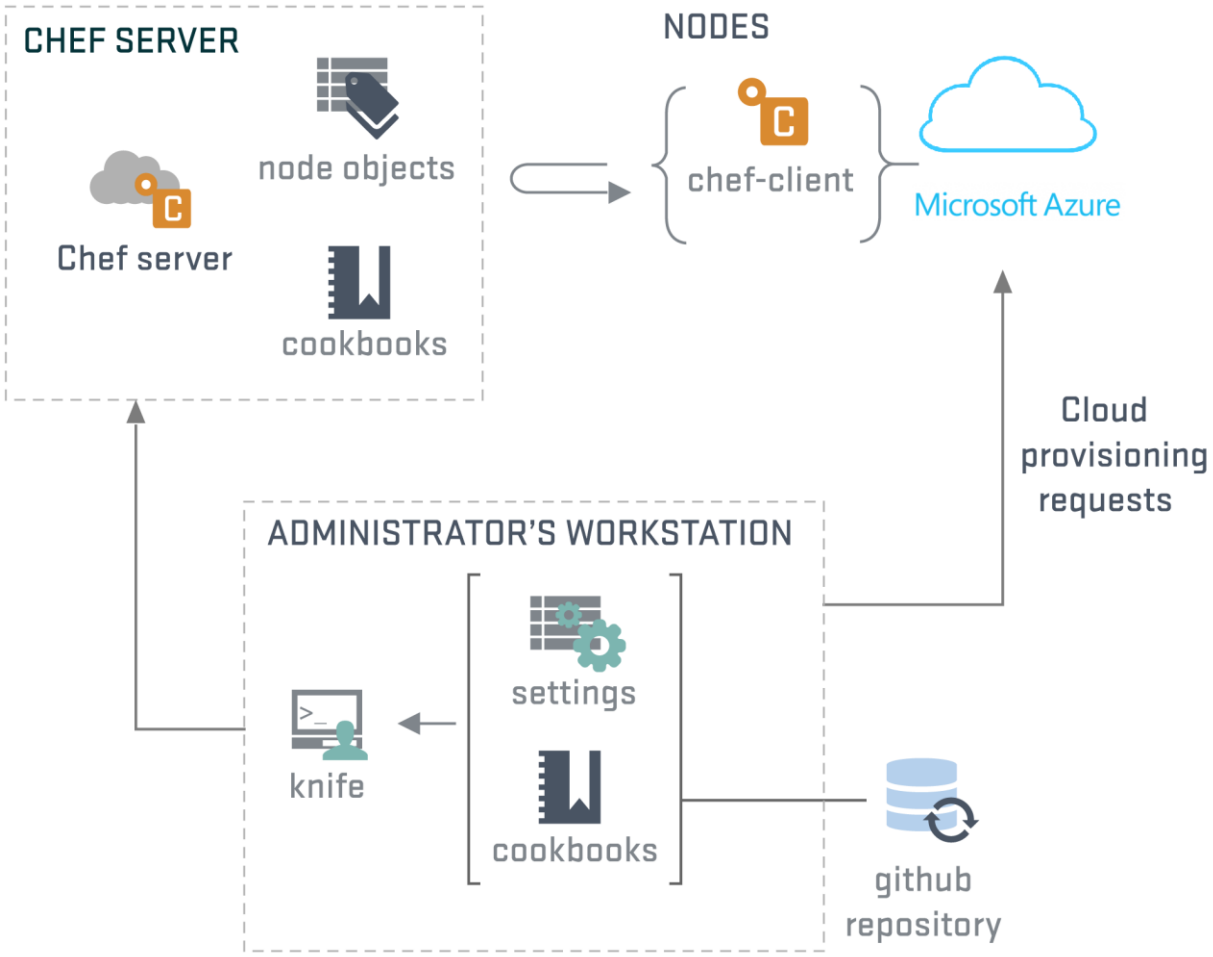
> **Note:** This lab guide is written with detailed instructions how using Windows as the client. Some actions will be different from other OS options.
>
> As an option you can use your Microsoft Azure subscription to create a new virtual machine using the Windows Server 2012 R2 Datacenter image as a workstation for this lab.

Technical Support

1. Having trouble with this lab or have a question? Please contact SuperHuman_Help@microsoft.com for technical assistance.

Chef Basic Concepts

This is a highlevel architectural diagram of components in Chef Server.



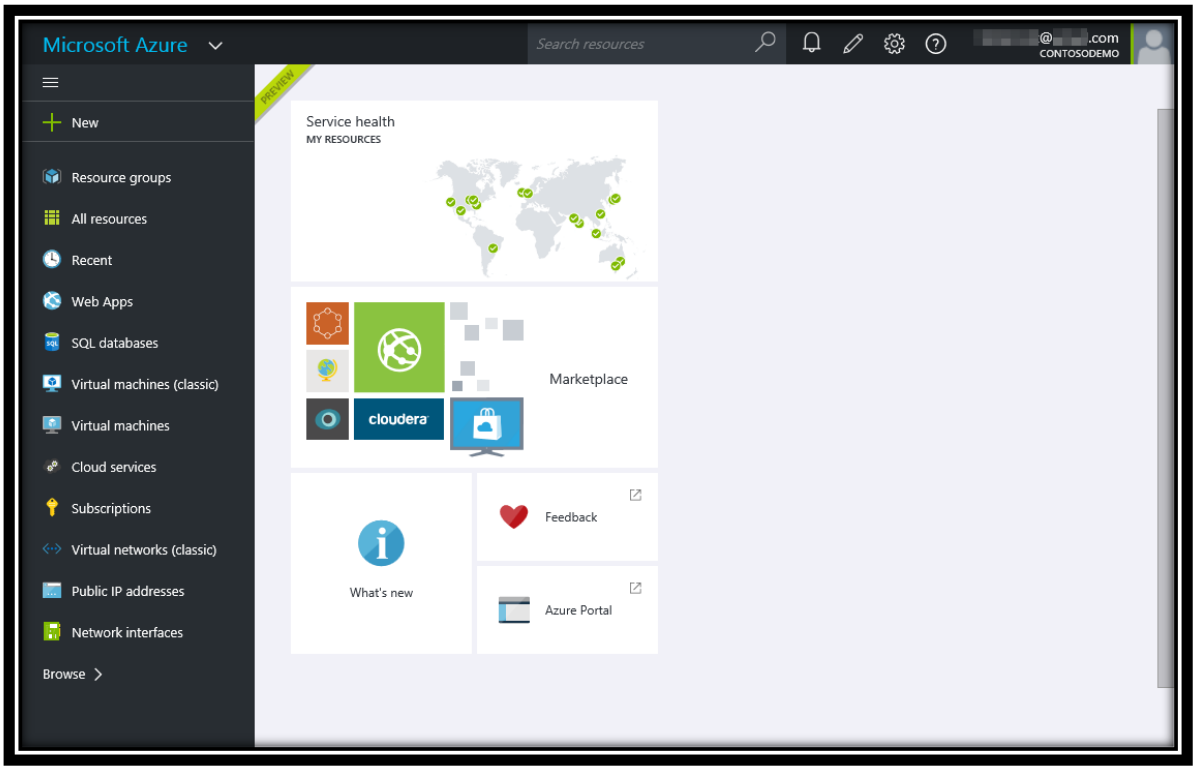
Exercise 1: Environment Setup

In this exercise you will setup your Chef Server environment for use throughout the rest of the exercises. This will involve downloading some tools and sample code to your local workstation that will be need to complete all the steps.

Task 1: Creating the Chef Server 12, BYOL

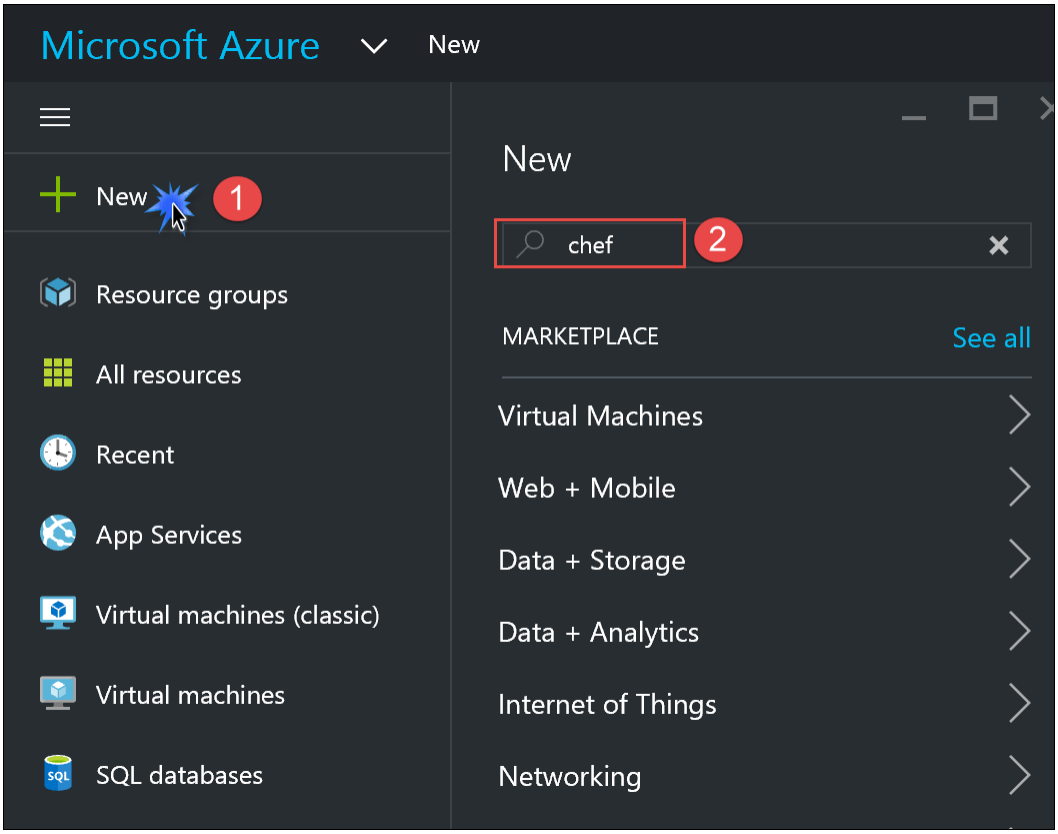
1. Verify that you have installed the text editor and the SSH client as per the prerequisites.

2. Go to the Azure Preview portal (**http://portal.azure.com/**), after entering your credentials the following screen will be displayed.



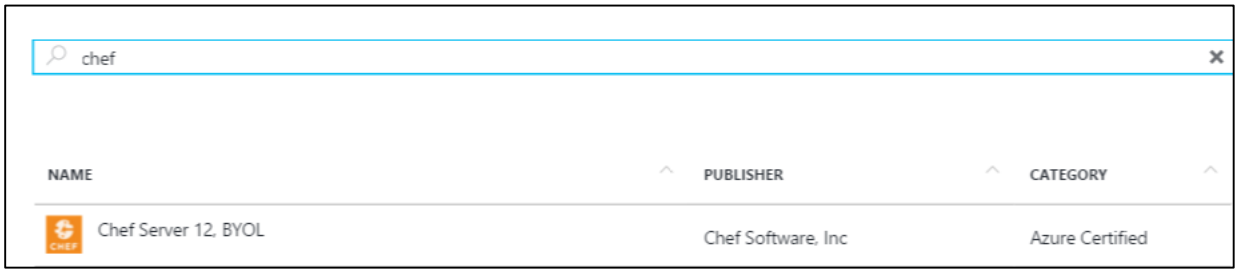
Azure Preview portal

3. To create the Chef Server, you need to get the application from the Marketplace. First click on **+New**, then type "chef" into the search box and hit enter.



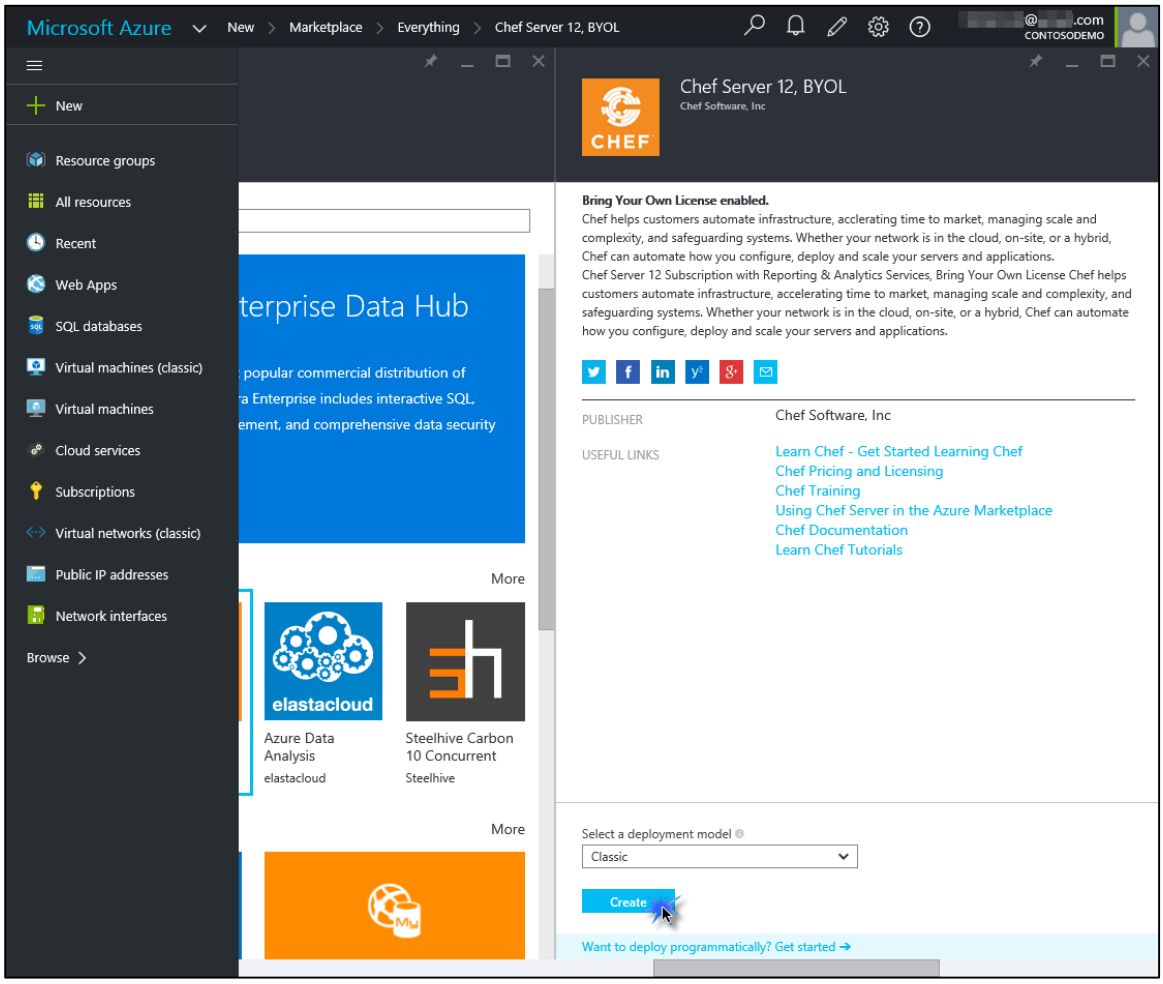
Navigating to the Marketplace

4. Click **Chef Server 12, BYOL**.



Locating Chef Server 12 in the Marketplace

5. After clicking on **Chef Server 12, BYOL**, change the deployment model to **Classic** and click on **Create**.



Chef Server VM Creation

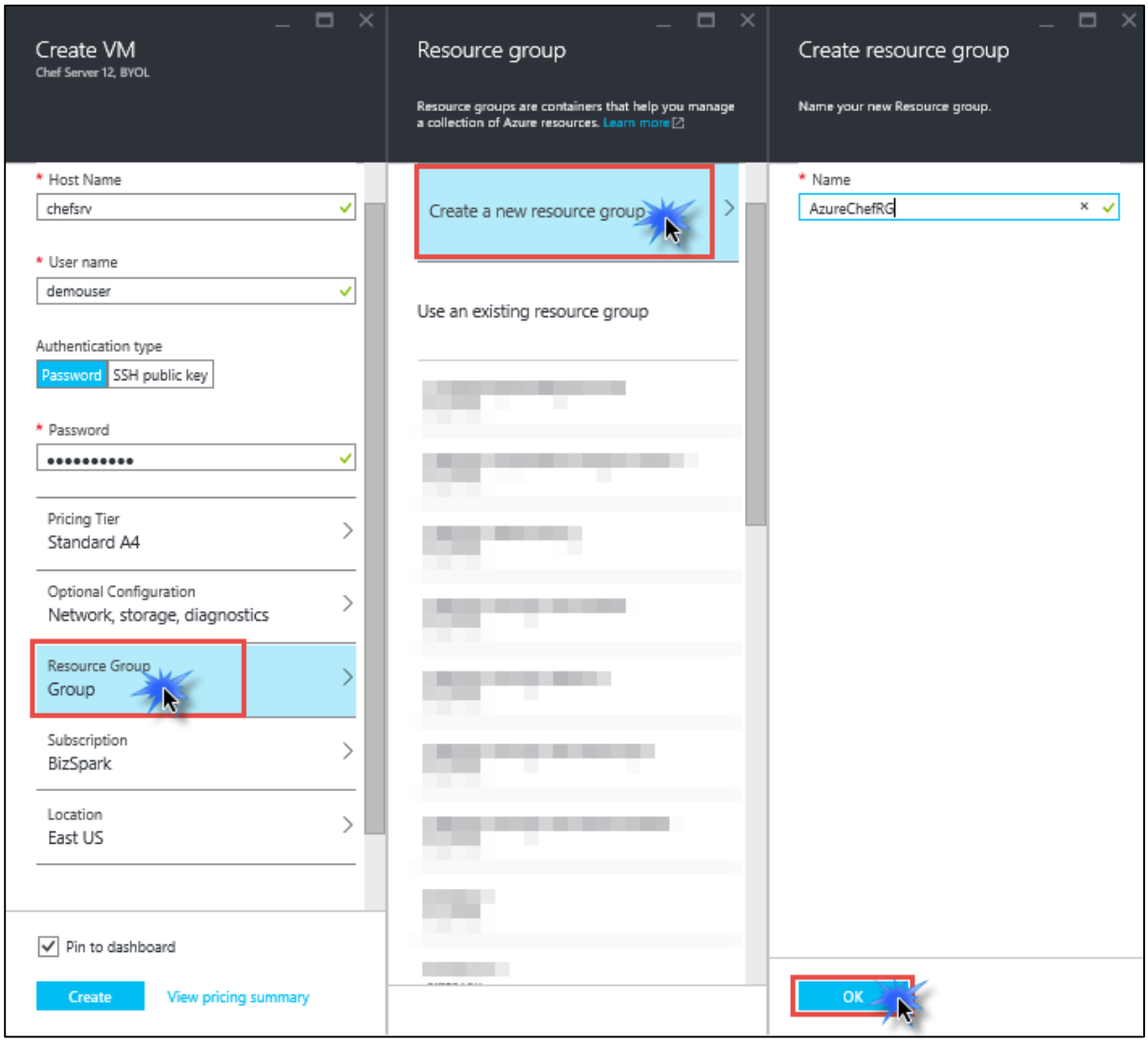
6. In the creation process of the Chef Server VM, enter **Host Name**, **User name**, and **Password**. For the purpose of this exercise, we used:

    i. Host Name = *chefsrv*

    ii. User name = *demouser*

    iii. Password = *demo@pass1*

7. Click **Resource Group** on the Create VM blade
8. Click **Create a new resource group** on the Resource group blade
9. Use the name "***AzureChefRG***" on the Create resource group blade
10. Click on **OK** button which takes you back to Create VM blade



Creating Resource Group

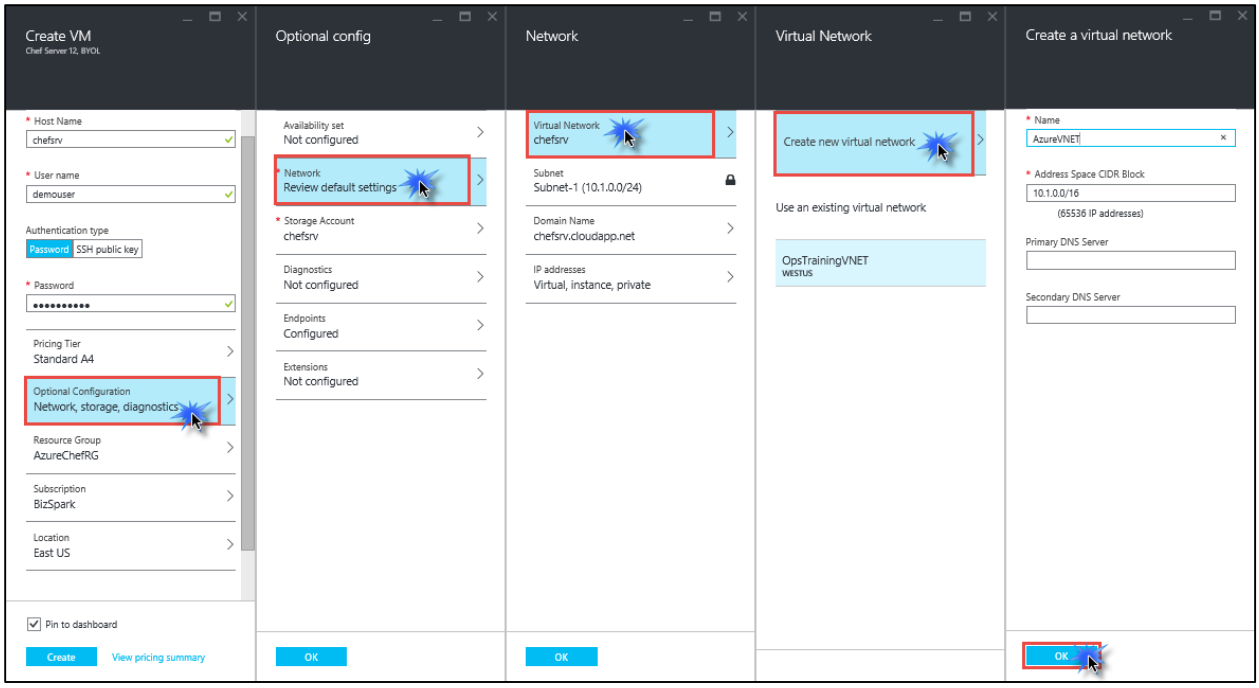
> ***NOTE:** We left the default A4 Standard Pricing Tier just for the purpose of this exercise. This Pricing Tier is for *Azure Infrastructure Costs*, not the cost of *Chef Server 12, BYOL* application. But if you plan to deploy Chef Server in a development or production environment, then you should follow Chef's System Requirements as if it were On-premises requirements.

11. At the Create VM blade click on **Optional Configuration**.

12. Click on **Network.**

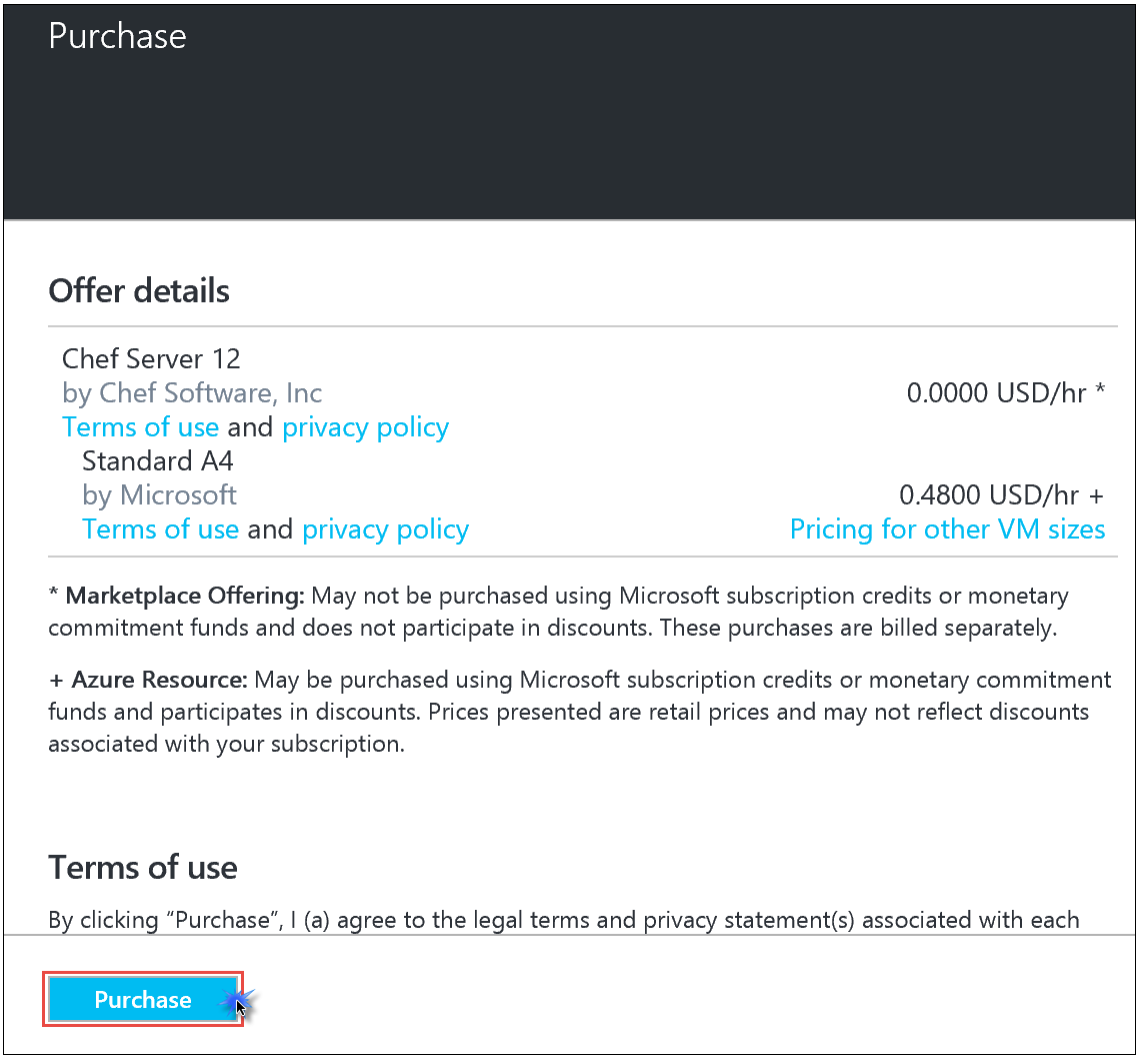
13. Click **Virtual Network**, on the Virtual Network blade click on **Create new virtual network**.

14. On the Create a virtual network blade type ***AzureVNET*** for Name and click **OK** button, click **OK** on Network blade, click **OK** on Optional config blade.



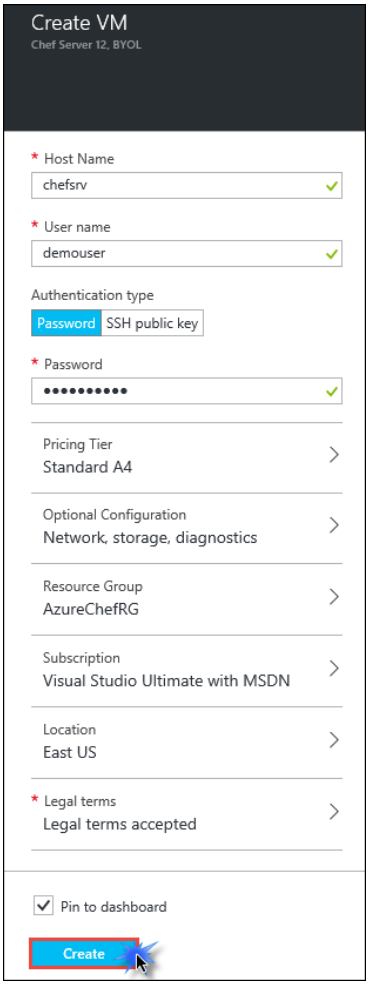
Creating Virtual Network

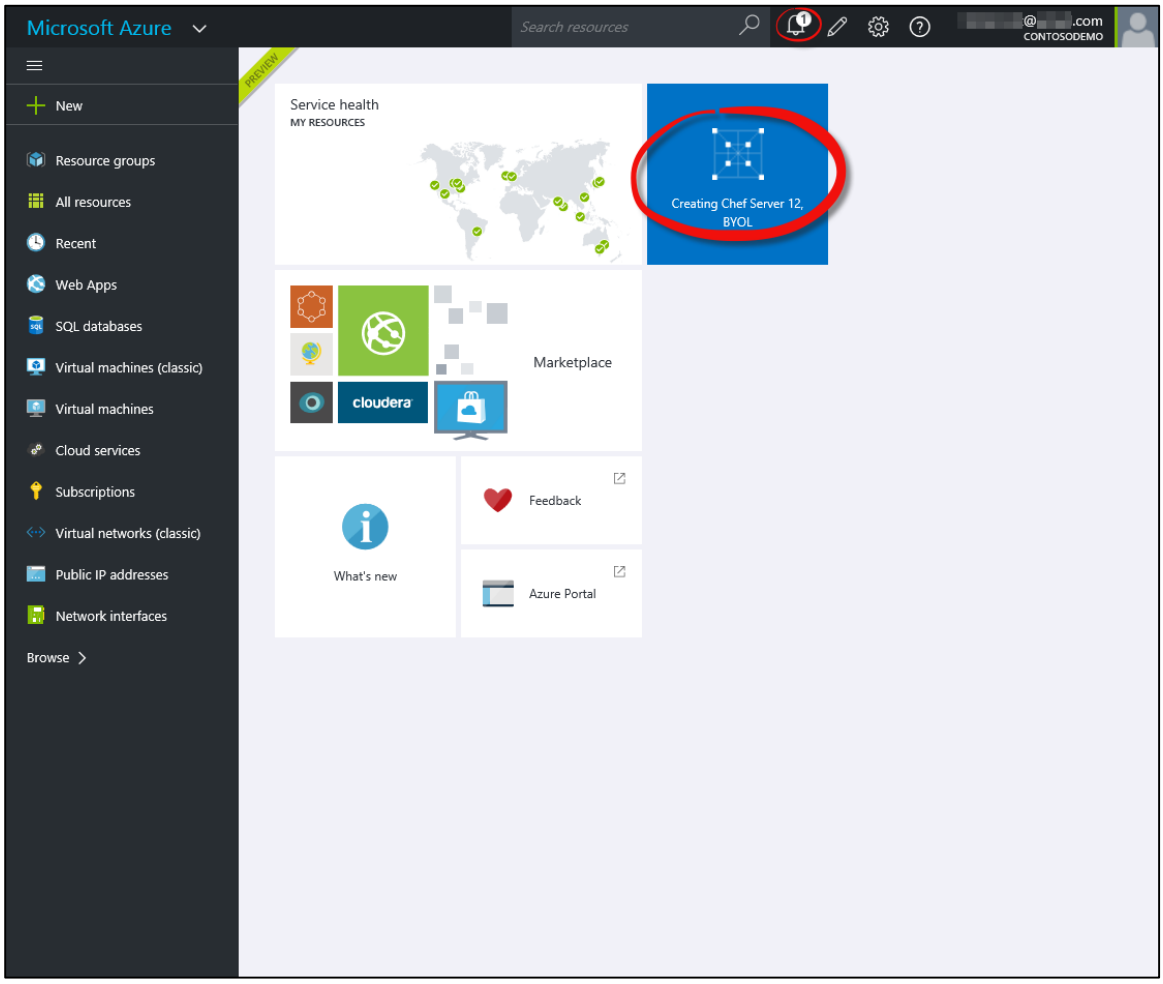
15. Click **Legal terms**, notice that the cost to use *Chef Server 12, BYOL* is **$0.00 USD**, click on the **Purchase** button.



Purchase blade for Chef Server, BYOL VM

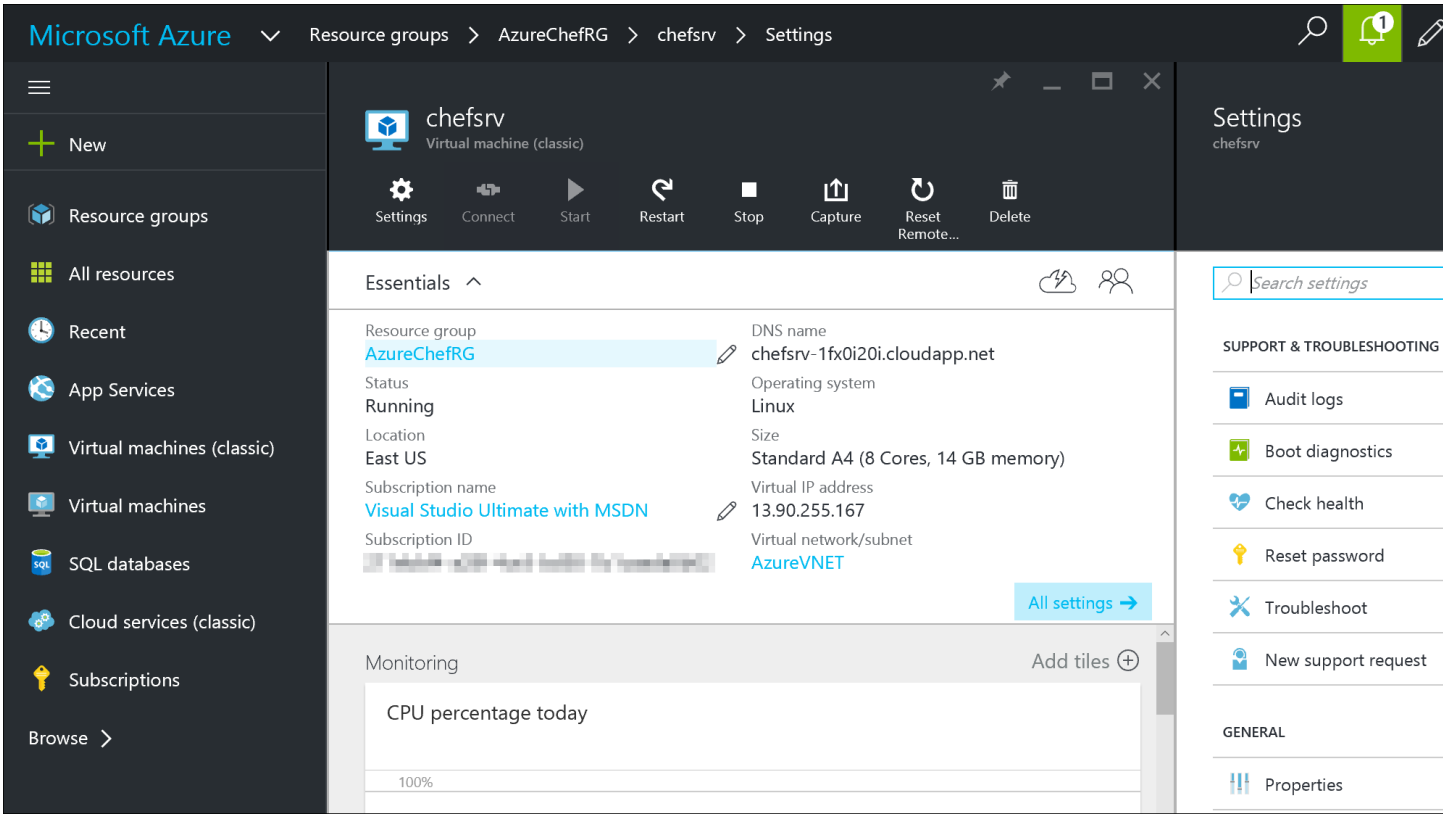
16. On the Create VM blade, click the **Create** button. This will take you back to the portal where you will see the Chef VM being created.





Azure Preview portal creating Chef Server, BYOL VM

17. Once completed, it will display all the VM Settings and it should be up running automatically.



Screen details when Chef Server, BYOL VM completes

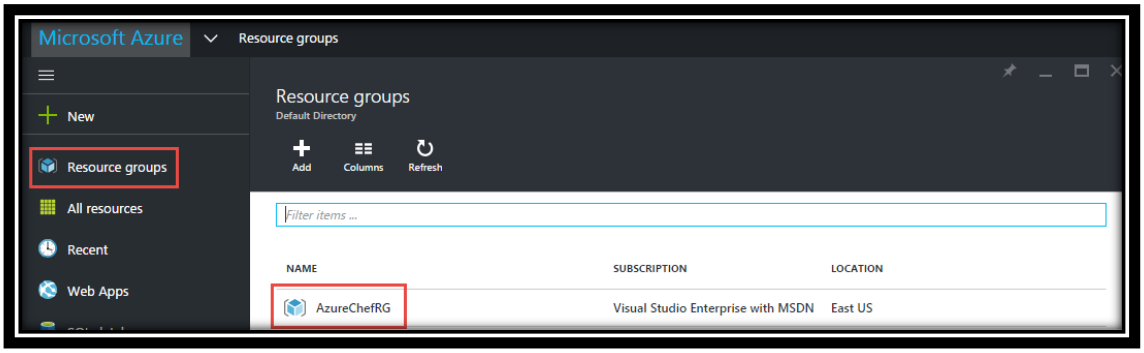
Task 2: Completing Chef Server Installation

1. When confirming that the Chef Server VM was successfully created and running, you will need to use a SSH and telnet client tool of your preference to establish a connection to the Chef Server. **You will need to connect use the external DNS name for the Chef Server.**

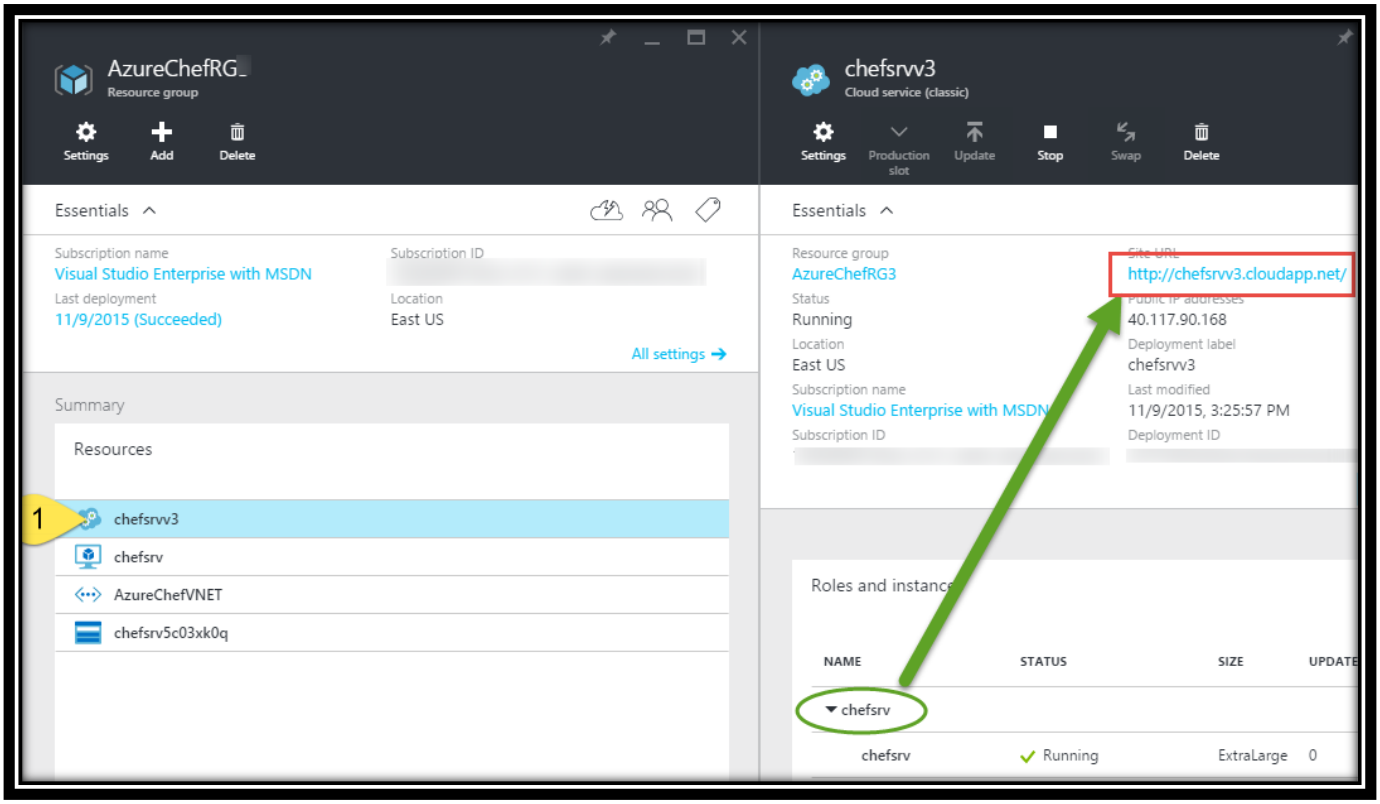
2. For this lab demo we'll use **PuTTY**, copy and paste the Host Name details and create a friendly name to save it under Saved Sessions.

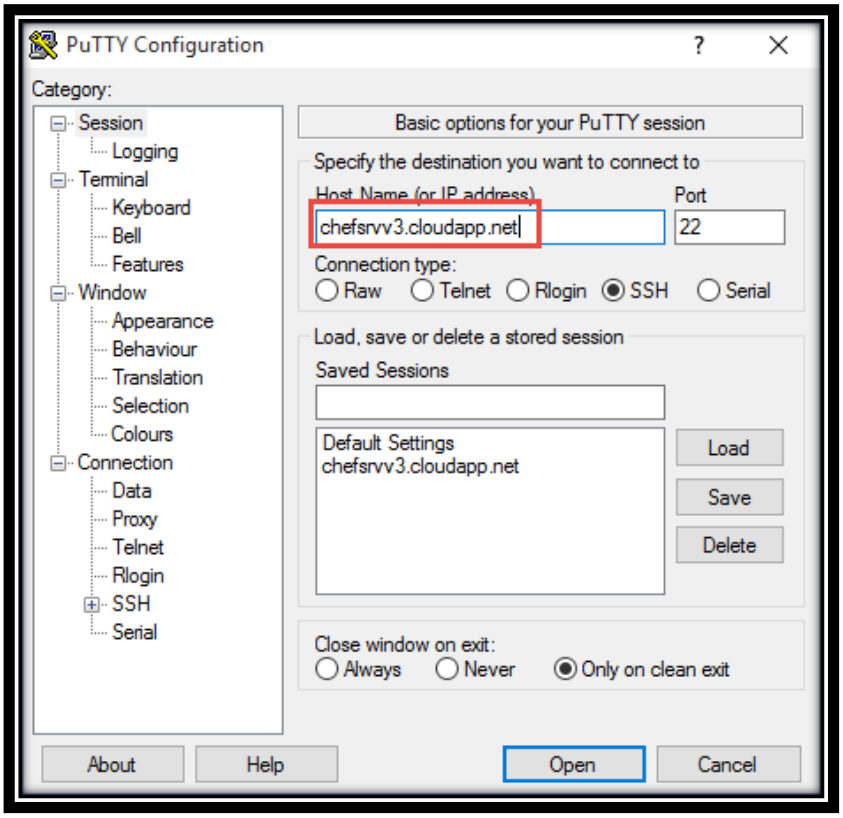
3. To find the external URL of the Cloud Service where your Chef Server resides use the following steps: Browse to http://portal.azure.com

4. Click **Resource Groups** and then **AzureChefRG**



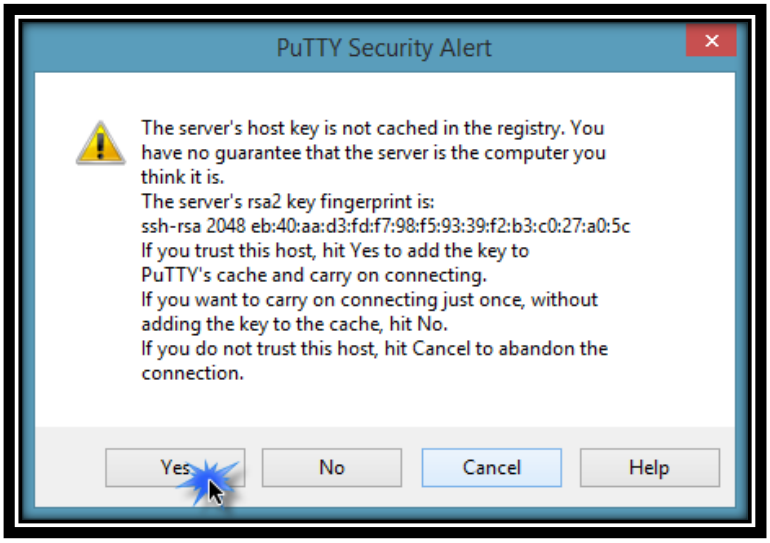
5. Once the Resource Group Loads click the Cloud Service icon and verify you see the Chef Server VM. Then locate the Site URL that you will use to connect to the Chef Server from the internet for the rest of this lab. In our example here the **Site URL** is **chefsrvv3.cloudapp.net.**





PuTTY Configuration

6. Click the **Yes** button to get past the *PuTTY Security Alert* dialog box.



PuTTY Security Alert dialog box

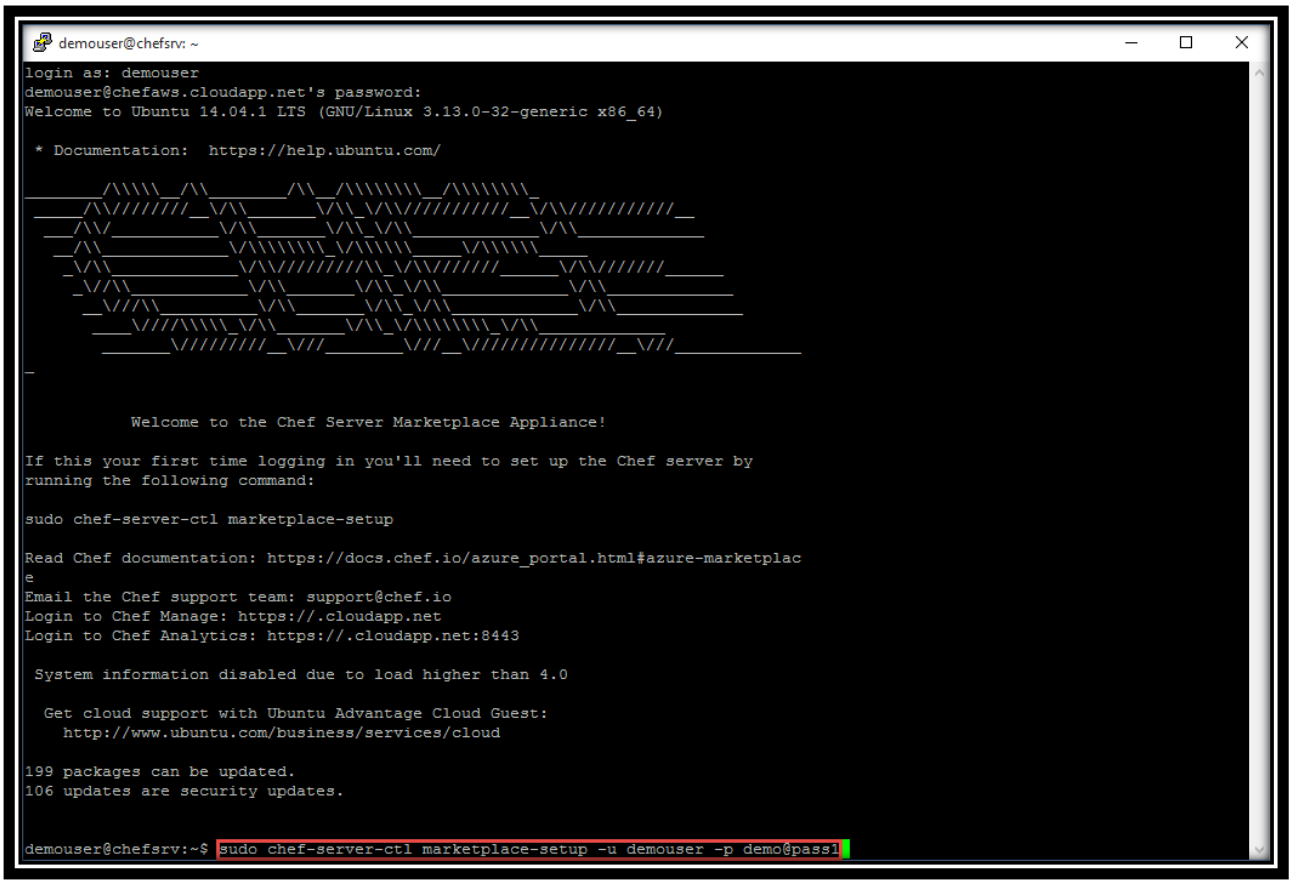
7. Once you enter the **User name** and **Password** credential used during the creation of your VM, you will need update the hostname property of the Chef Server to the Site URL. Enter the following command.

```
sudo chef-marketplace-ctl hostname chefsrvv3.cloudapp.net
```

NOTE: Make sure to use the site URL for the server name.

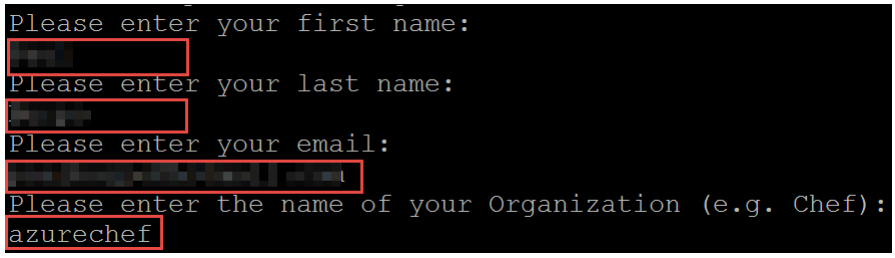
8. Once the Chef Server has been reconfigured then enter the setup syntax to complete the instllation of Chef Server 12, BYOL. ***(Replace the hostname with the SITE URL name that we used to connect to the puTTY session.***

```
sudo chef-server-ctl marketplace-setup -u demouser -p demo@pass1
```



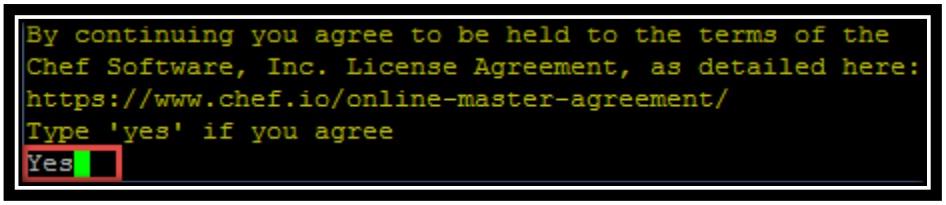
Command used to complete Chef Server setup

9. You will then be prompted to for your First Name, Last Name, Email, and Organization Name. Complete these using your information, but for the organization make sure to type **azurechef** (no spaces and no capitals letters).

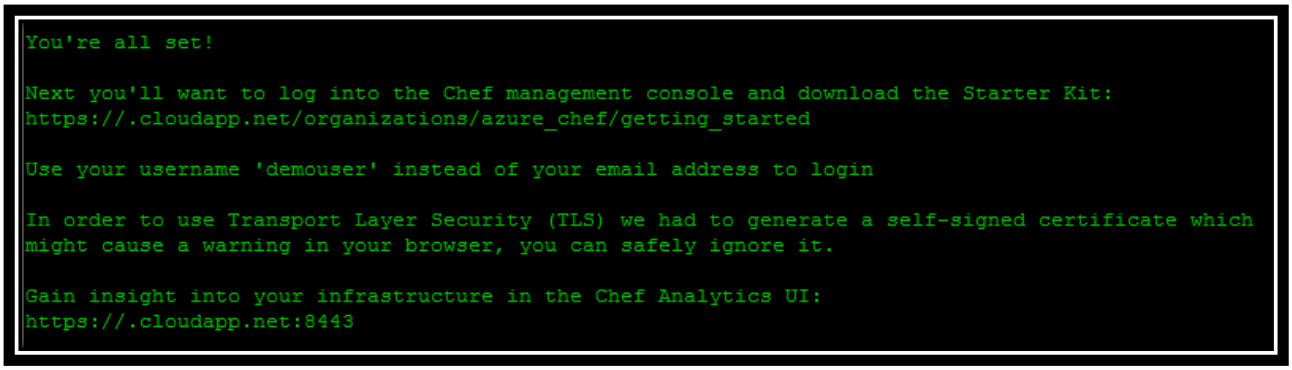


NOTE: You must use **azurechef** or the rest of this lab will not work properly.

10. Type **Yes** to accept the Chef License Agreement



Once Chef Server has finished installing, you get the following message.

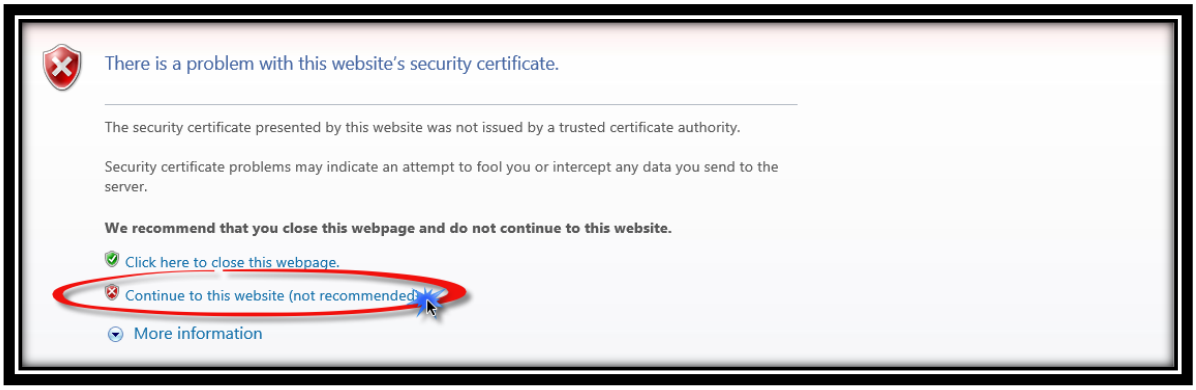


Chef Server completion and important details

Exercise 2: Chef Server Configuration

Task 1: Setting up Organization details

1. Open a browser on your local workstation and go to the Chef Manage console using the SITE URL name of your Chef Server VM. Click on **Continue to this website (not recommended)** link.

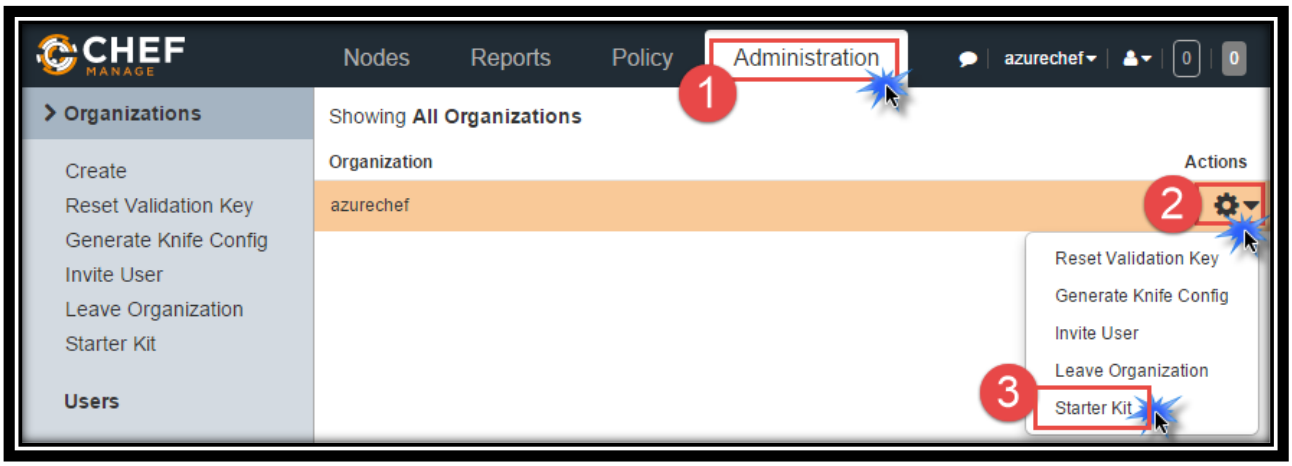


Chef Manage console certificate warning screen

2. Enter credentials and click on the **Sign In** button.

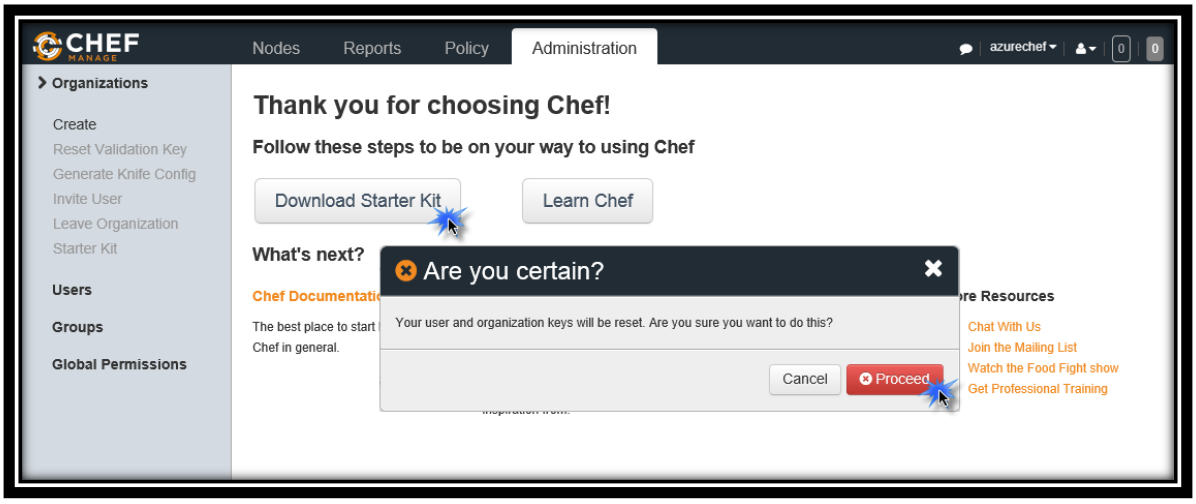
Chef Server Sign In screen

3. Once logged into the Chef Management Portal click **Administration** and then click gear icon under **Actions**. When the menus opens click **Starter Kit**.



Starter Kit dialog boxes

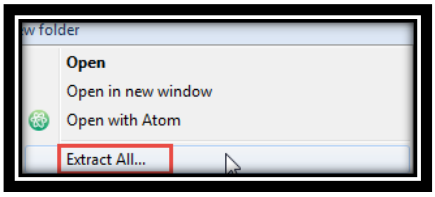
4. Now click on **Download Starter Kit** button and click on **Proceed** button.



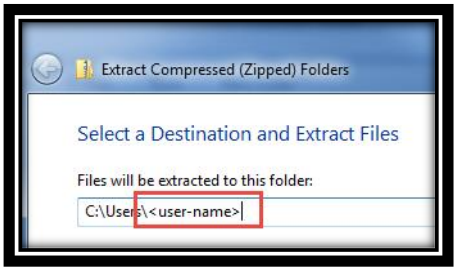
Starter Kit dialog boxes

> **Note:** This will download the Starter Kit to the Downloads folder on the local machine.

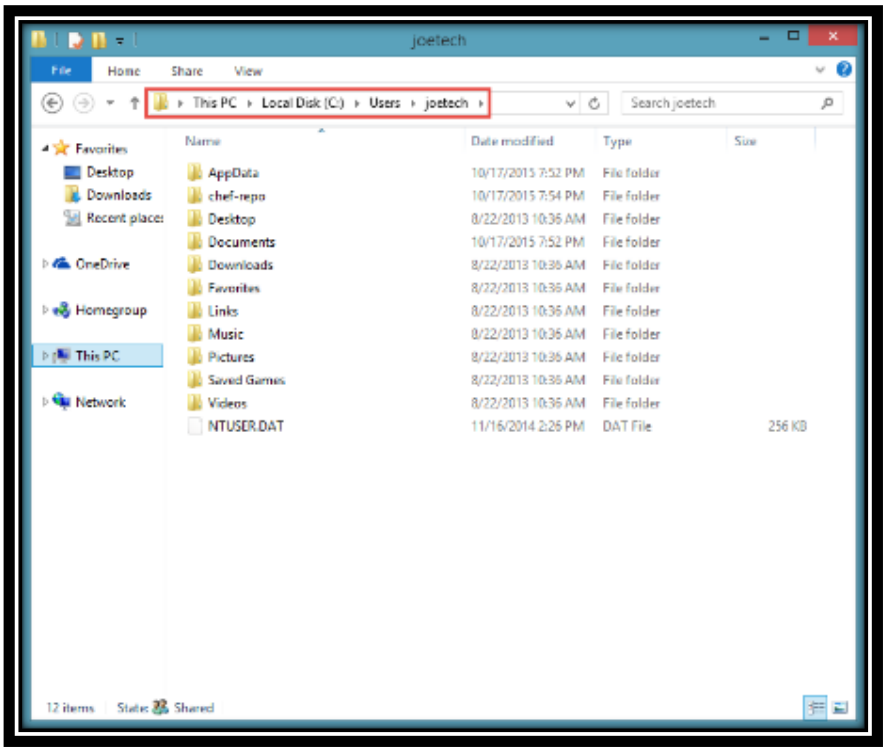
5. Browse to the "Downloads" folder on the machine being used for the lab. Right click on the file **chef-starter.zip** and click on **Extract All**



6. In the Select Destination and Extract Files box point the zip file to the Root of the **C:\users\<user-name>** directory replacing the **<user-name>** with your user profile name that you are using for this lab.



Note: This zip file will create a folder called **chef-repo** folder that will be extracted to your local workstation signed on Users folder



Users folder on workstation where chef-repo folder resides

7. Next you will install the Chef Development Kit on the local machine. Open a new browser window and go to https://downloads.chef.io/chef-dk/. Choose the correct client based on the OS you are using.

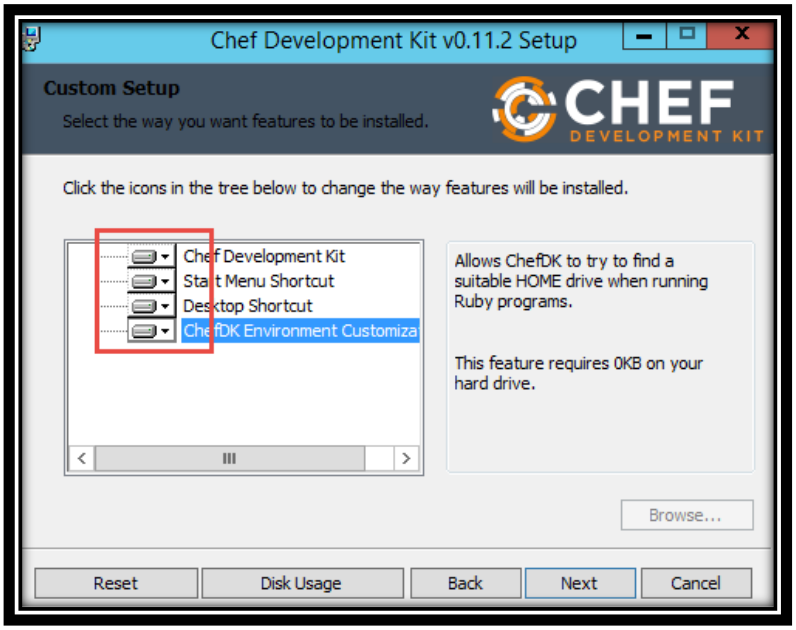
   Note: The following install steps are provided for Windows.

8. Click Windows and then **Downloads** to get the Chef Developer Kit bits.

9. Double click on the **chef-dk** MSI package file that was saved to your **Downloads** folder.

10. Click **Next** on the Chef Developer Kit Setup Wizard and accept the terms and click **Next** on the following screen.

11. Choose all of the available packages to install to your hard drive on the Custom Setup Screen of the Chef Development Kit Setup Wizard.



12. Once the installation has completed, open Explorer in Windows and find the folder **c:\users\<user-name>\chef-repo\.chef** then review the files that were created which should include:

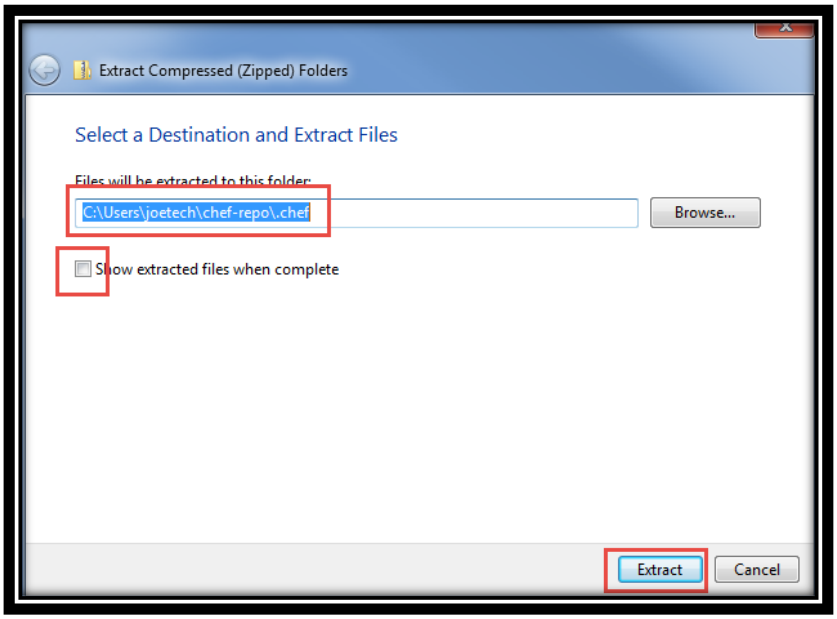
- **<cheforganizationname>-validator.pem**
- **<chefuser>.pem**
- **knife.rb**

13. Open the **knife.rb** file and update the the **chef_server_url** to the SITEURL of the CHEF server. Also add a new line with the following:
ssl_verify_mode :verify_none

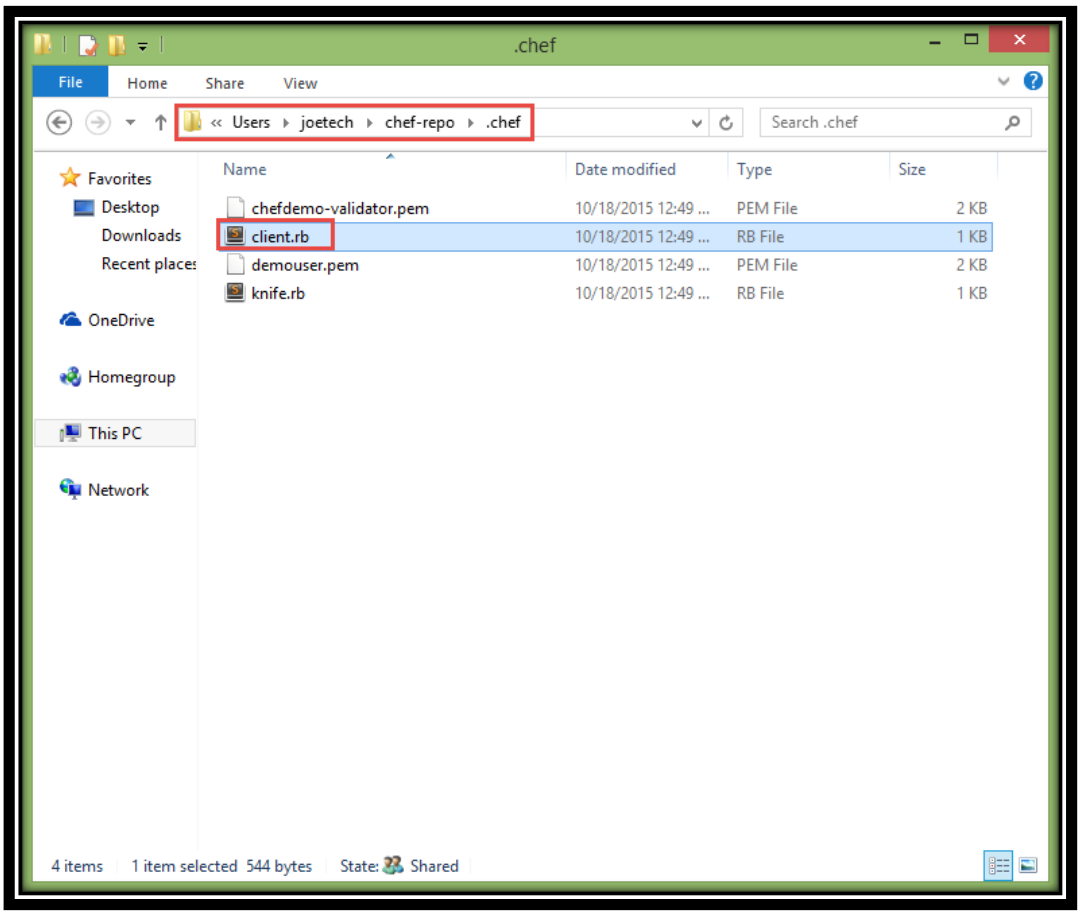
    The knife.rb file should look the following:

```
current_dir = File.dirname(__FILE__)
log_level                :info
log_location             STDOUT
node_name                "demouser"
client_key               "#{current_dir}/demouser.pem"
validation_client_name   "azurechef-validator"
validation_key           "#{current_dir}/azurechef-validator.pem"
chef_server_url          "https://chefsrvv3.cloudapp.net/organizations/azurechef"
cookbook_path            ["#{current_dir}/../cookbooks"]
ssl_verify_mode :verify_none
```

14. Browse to the following link: http://bit.ly/1H3ppBD to download the **client.zip** file. Right click the file and extract the client.rb file into the **c:\users\<user-name>\chef-repo\.chef** folder.



The folder will look like this once you have unzipped the file to the correct directory.



Files in .chef folder

15. Next, open the **client.rb** file with a text editor and change the URL for the Chef Server to the **Site URL** the where the Chef Server Resides. Ensure you update the [SITEURL] place holder.

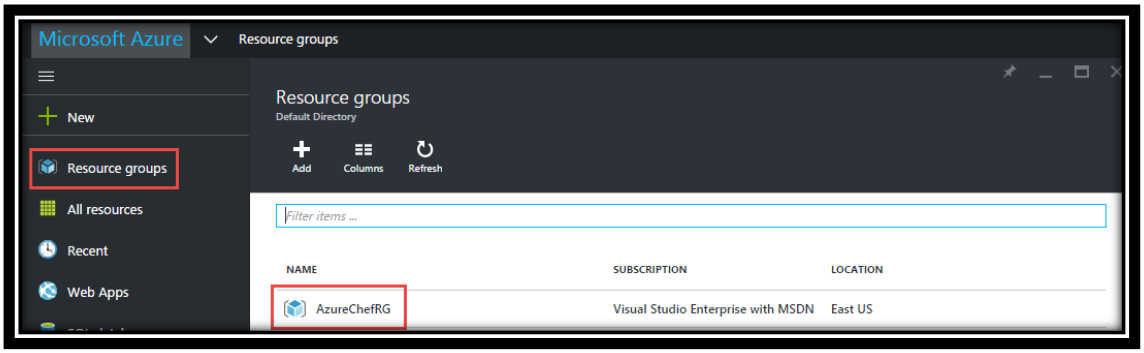
```
log_level        :info
log_location     STDOUT
chef_server_url https://chefsrvv3.cloudapp.net/organizations/azurechef"
validation_client_name "azurechef-validator"
validation_key "{current_dir}/azurechef-validator.pem"
client_key "{current_dir}/demouser.pem"
ssl_verify_mode :verify_none
```

Note: If you are unable to download the client.zip file that contains the client.rb file you can create it using the text found in the box above making sure to change the name of the chef_server_url to the SITEURL of your Chef Server. This should be placed into the **c:\user\userid\chef-repo\.chef** folder.

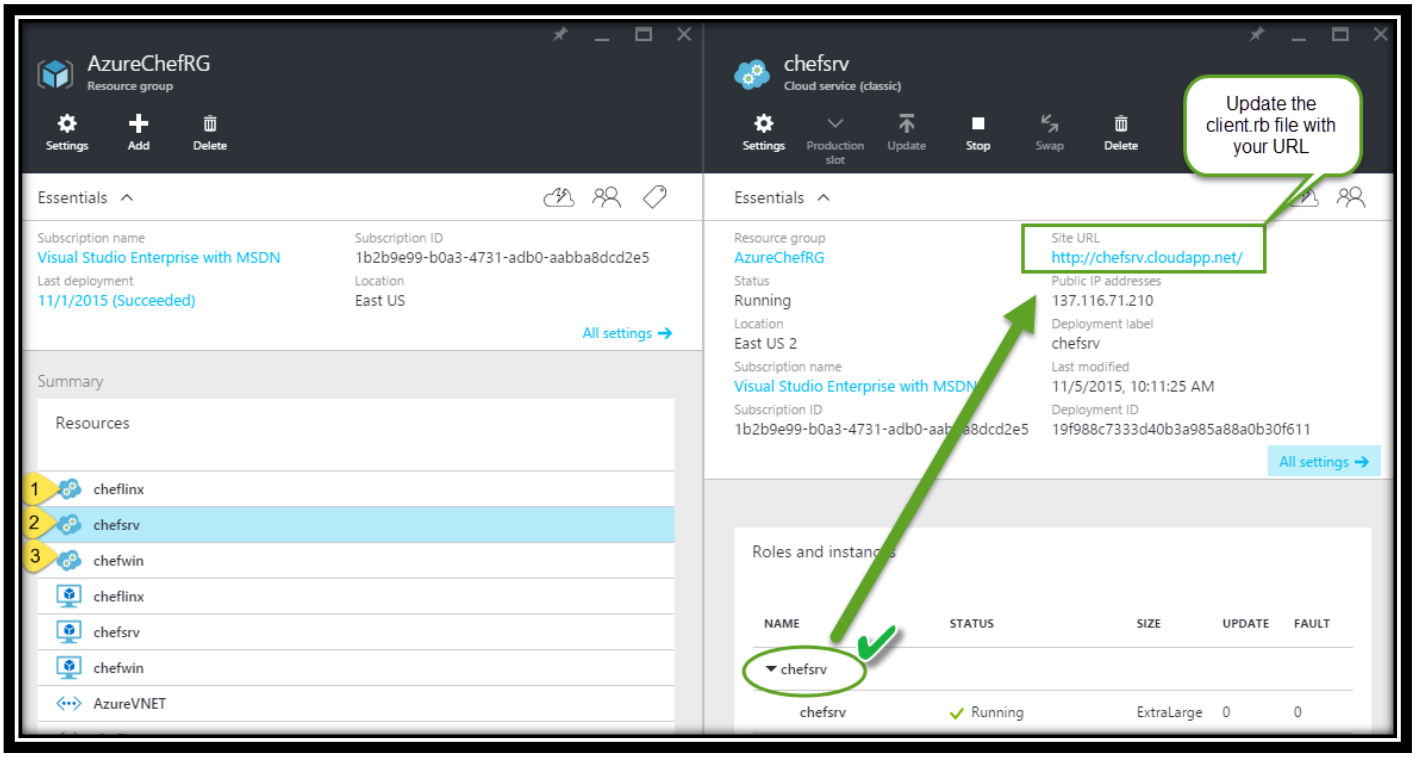
To find the external **SITE URL** of the Cloud Service where your Chef Server resides use the following steps:

16. Browse to http://portal.azure.com

17. Click **Resource Groups** and then **AzureChefRG**

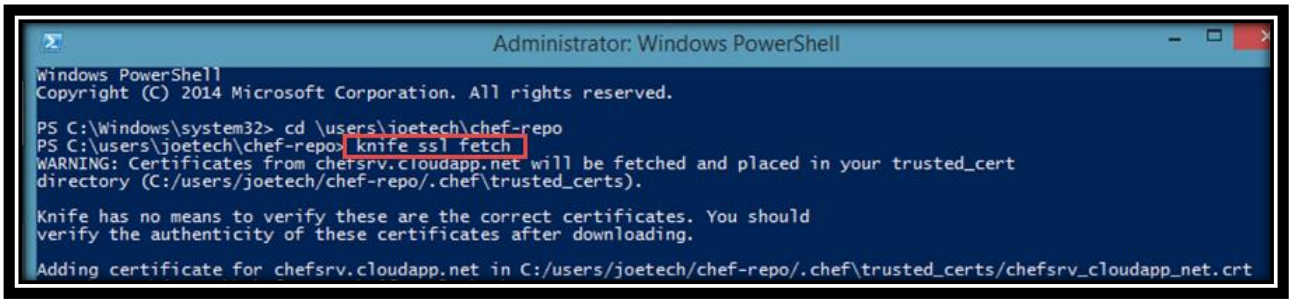


18. Once the Resource Group Loads click each Cloud Service until you find the Cloud Service that shows your Chef Server VM. Then locate the **Site URL** that you will use to update the client.rb file.



19. Next confirm connectivity is working from local workstation SSL connections to the Chef Server using the **knife** tool. Open a PowerShell console window using **Run as Administrator.** Execute the following steps commands:

```
CD C:\users\[your user id]\chef-repo
knife ssl fetch
```



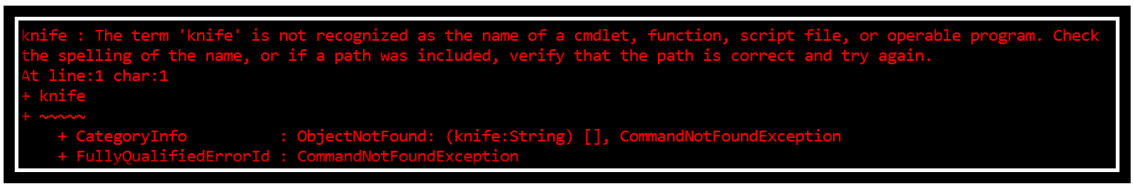
Confirming SSL validity from PowerShell CLI

Troubleshooting the knife command

All knife commands needs to run from the chef-repo folder of the user's home folder on the local workstation (**C:\users\<user_name>\chef-repo**), so make sure you are running from that directory.

Also verify that the **client.rb** file and **knife.rb** file point to the external name of the cloud service that contains your Chef Server.

If you experience issues with the knife tool such as the following error then you need to ensure that you have started the PowerShell window by using the Run as Administrator or you may have to restart your machine to allow the environment variables to be set.



Exercise 3: Download and Install Cookbooks

Chef cookbooks can be manually downloaded from Chef Supermarket found at https://supermarket.chef.io/. This is repository of cookbooks is created and maintained by Chef's Community.

In this exercise you will download and extract Cookbooks using the Chef Development Kit Tools.

Task 1: Manual Download and Extraction of Cookbooks

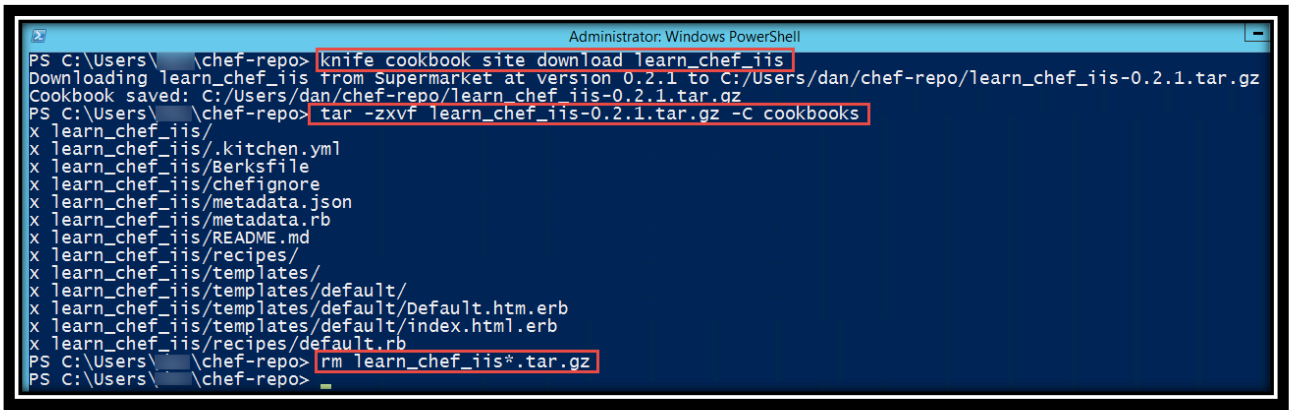
1. Open a PowerShell console window using **Run as Administrator.** The following steps must be executed in this window from the directory: **C:\users\<user_name>\chef-repo**

2. Download, Extract and then delete the **IIS cookbook for Windows** into the **C:\users\<user_name>\chef-repo\cookbooks** using the following commands.

```
knife cookbook site download learn_chef_iis

tar -zxvf learn_chef_iis-0.2.1.tar.gz -C cookbooks
```

```
rm learn_chef_iis*.tar.gz
```



Downloading cookbooks in Administrator PowerShell from Chef Supermarket

Task 2: Upload the Cookbook to Chef Server

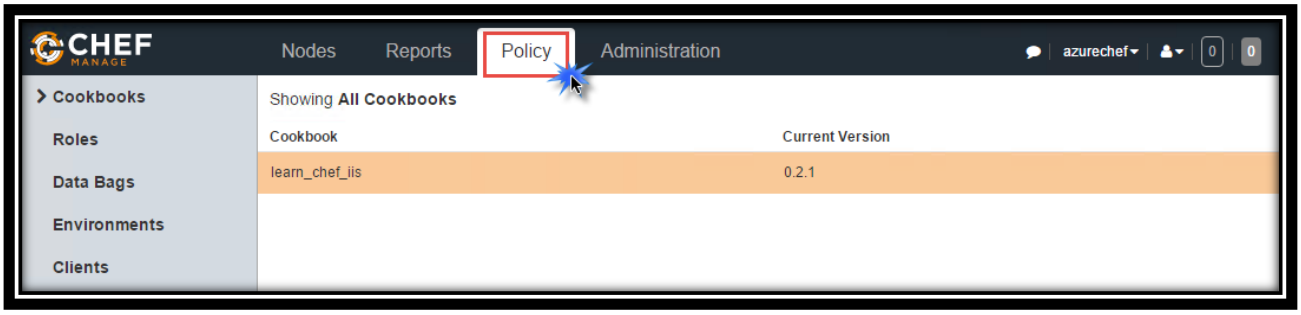
1. From an Administrator PowerShell window, you will upload the **IIS cookbook for Windows** to the Chef Server using the following steps:

Note: Confirm you are in the chef-repo folder before beginning.

```
knife cookbook upload learn_chef_iis
```

Uploading cookbooks to Chef Server

2. Open a browser to your Chef Server at http://[SITE URL].cloudapp.net which will connect you to the Chef Manage console. Once logged in click the **Policy** button to and confirm the cookbook has been uploaded successfully.



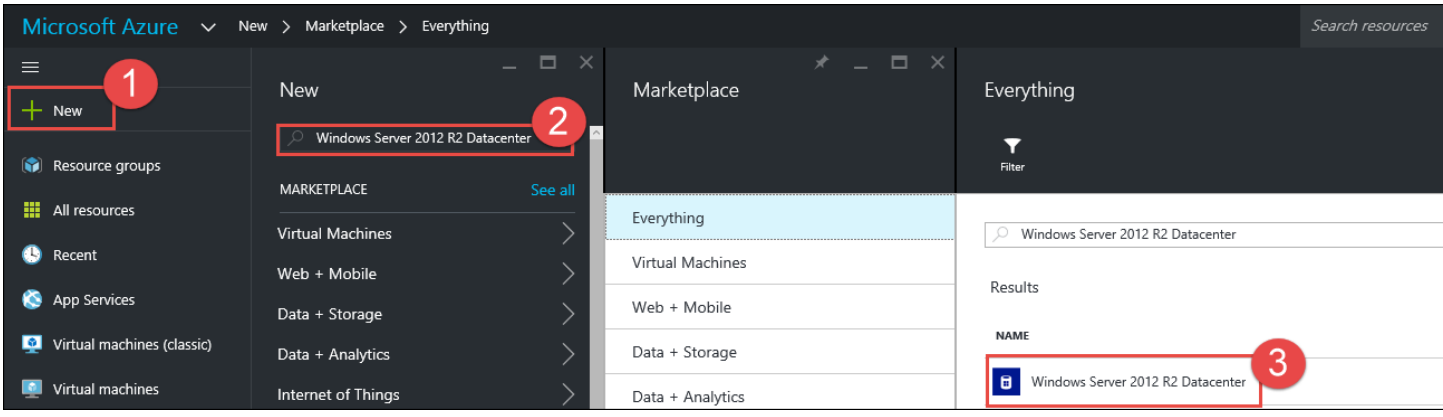
Chef Manage console to confirm cookbook uploaded

Exercise 4: Bootstrapping Chef Node in Azure

Now that Chef Server 12, BYOL is fully configured on Microsoft Azure, use the following steps to bootstrap a node using the Chef Client plugin extensions. The same steps are used to bootstrap either a Linux or Windows client node.

Task 1: Bootstrap Windows Client Node

1. From the Azure Preview portal click on **New**, then type **Windows Server 2012 R2 Datacenter** into the search box and hit enter and choose **Windows Server 2012 R2 Datacenter** from the search results.

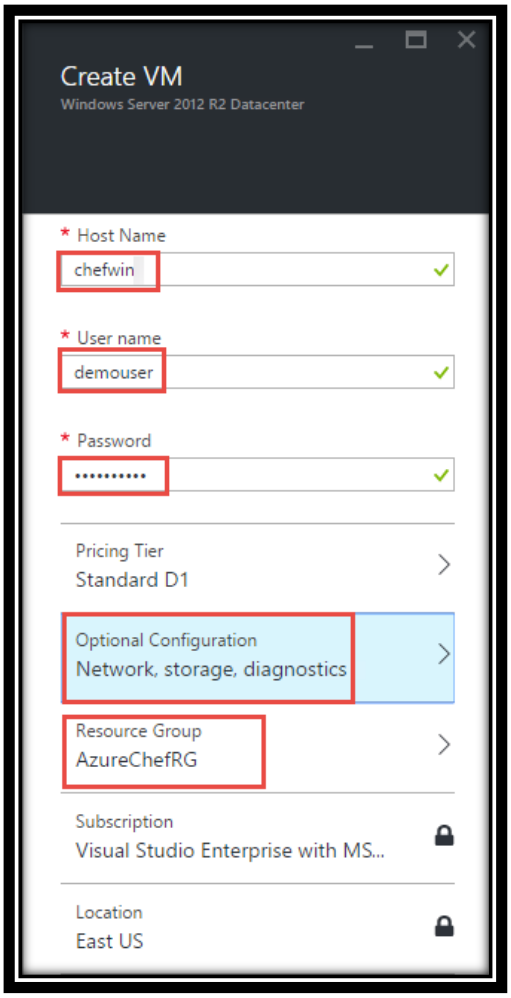


Bootstrap Windows Client node

2. On the Windows Server 2012 R2 Datacenter blade, change the default deployment model to Classic, click on **Create** button.

3. On the Create VM blade, type the **Host Name**, **User name**, and **Password**. In this example the Hostname was chefwin, demouser and demo@pass1 respectively.

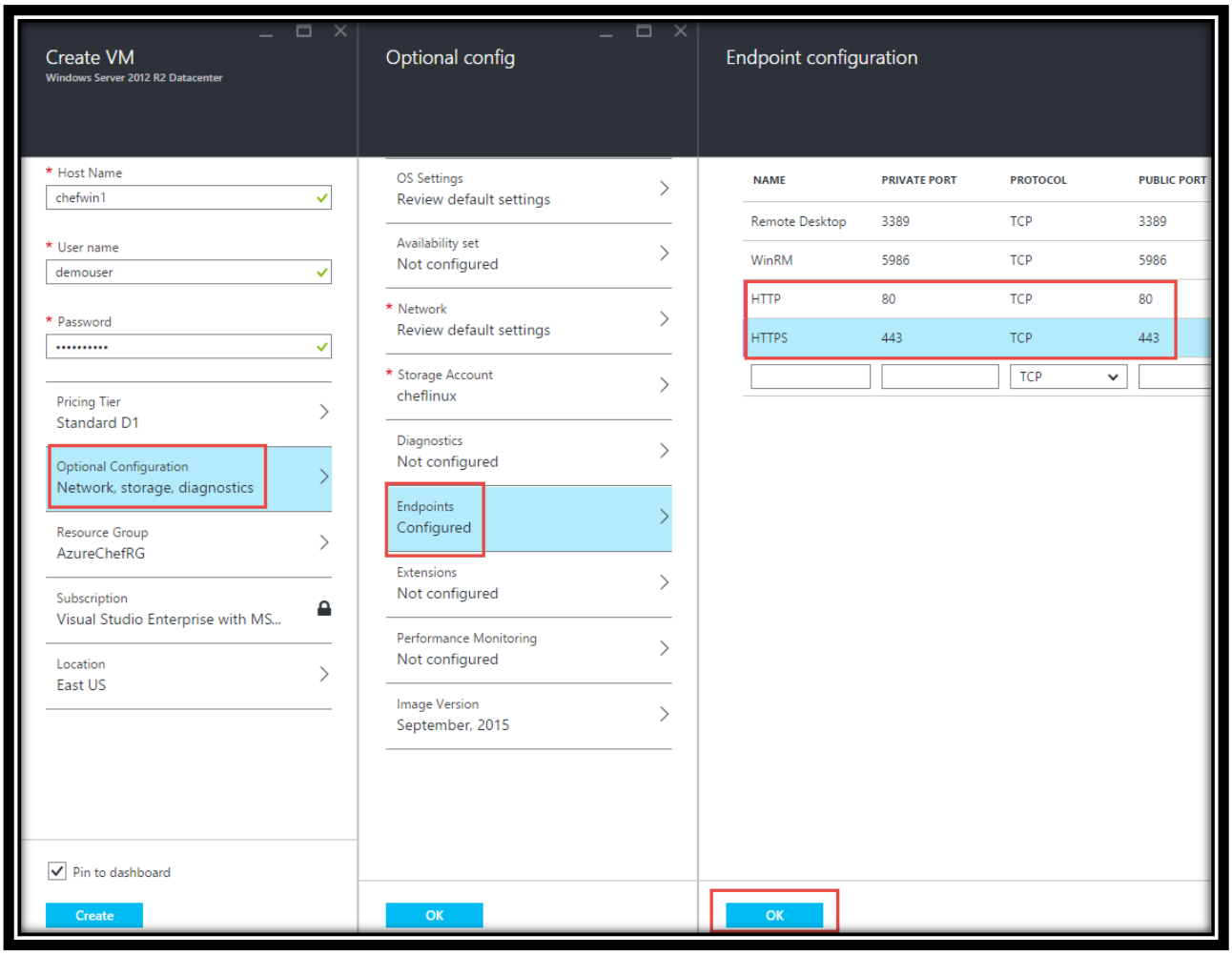
4. Click on **Resource Group**, select **AzureChefRG**.



Bootstrap Windows Client node

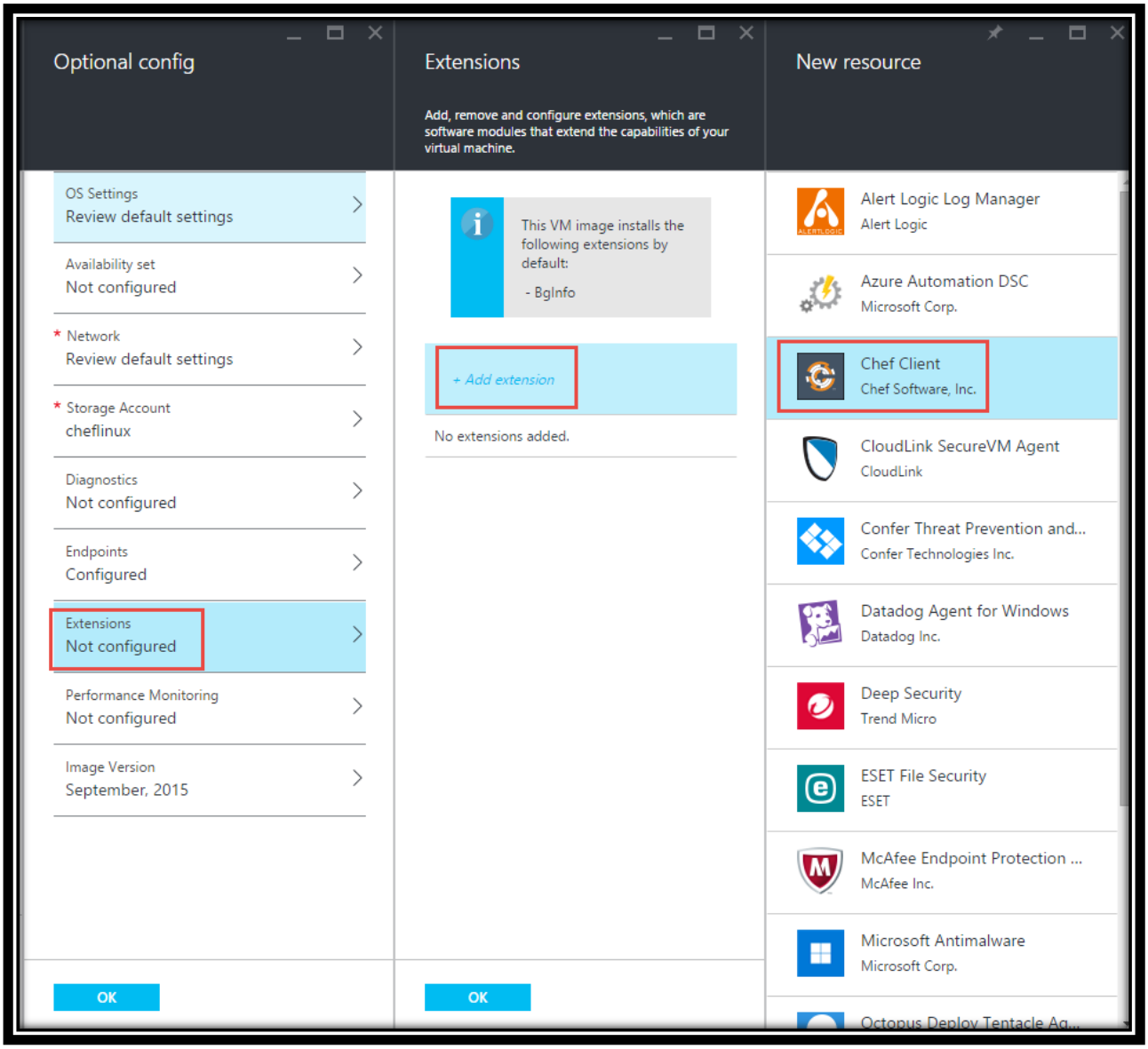
5. Back on the Create VM blade, click on **Optional Configuration**

6. Click on **Endpoints**,
7. Add the following ports for **HTTP** (**80**) and **HTTPS** (**443**)
8. Click **OK**



Opening Endpoint ports

9. On the **Optional Configuration** blade, select the following.
10. Click on **Extensions**
11. On the Extension blade, click on ***+Add extension***,
12. On the New resource blade, click **Chef Client**.



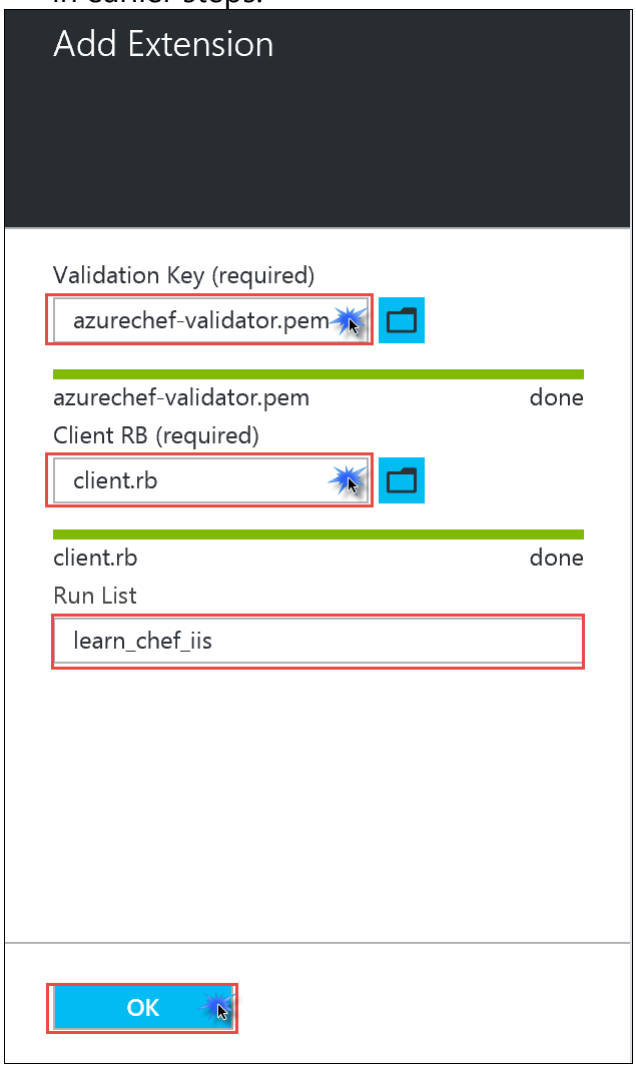
Adding Windows Chef Extension

13. Click **Create** on the Chef Client blade.

14. Click on the empty box or blue folder icon under the **Validate Key (Required)** then select the **azurechef-validator.pem** from the **c:\users\<user-name>\chef-repo\.chef** folder.

15. Click on the empty box or blue folder icon under the **Client RB (Required)** then select the **client.rb** from the **c:\users\<user-name>\chef-repo\.chef** folder.

16. In the **Run List** box, type **learn_chef_iis** which is one of the cookbooks uploaded in earlier steps.



Complete adding Windows Chef Extension

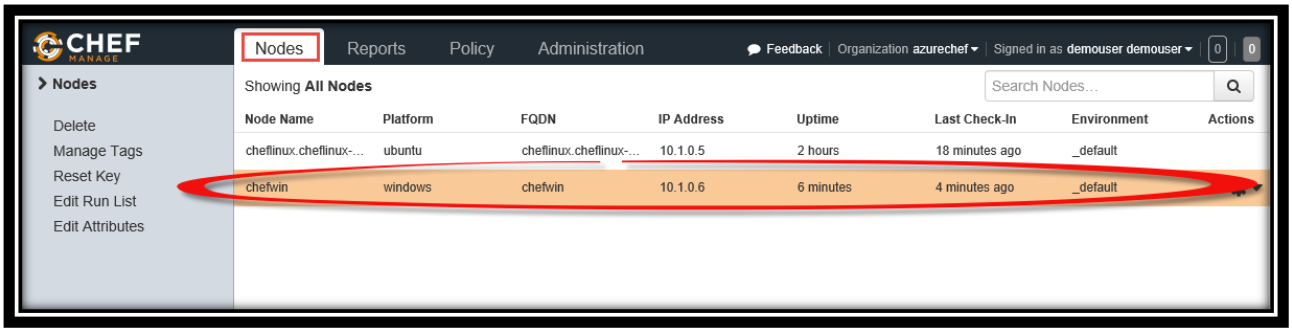
17. Click **OK** button on the Add Extension pane,

18. Click **OK** button on the Extensions pane

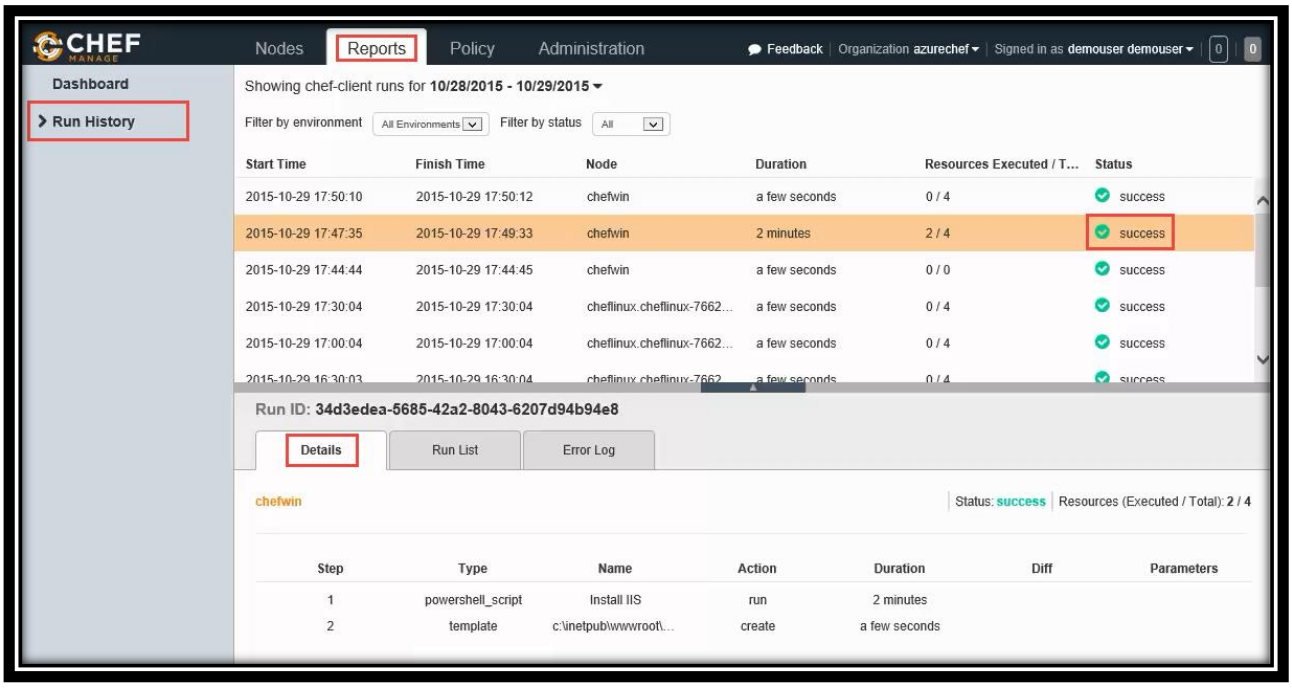
19. Click **OK** button on the Optional Config pane.

20. Click **Create** button on the Create VM pane.

Once the Windows Chef node has been successfully deployed, you will see it in Chef Manage console on the **Nodes** tab.



If you click on the **Reports** tab, then click on the **Run History** on the left column, you will notice that the cookbook **learn_chef_iis** from the Run List completed with a **success** status.



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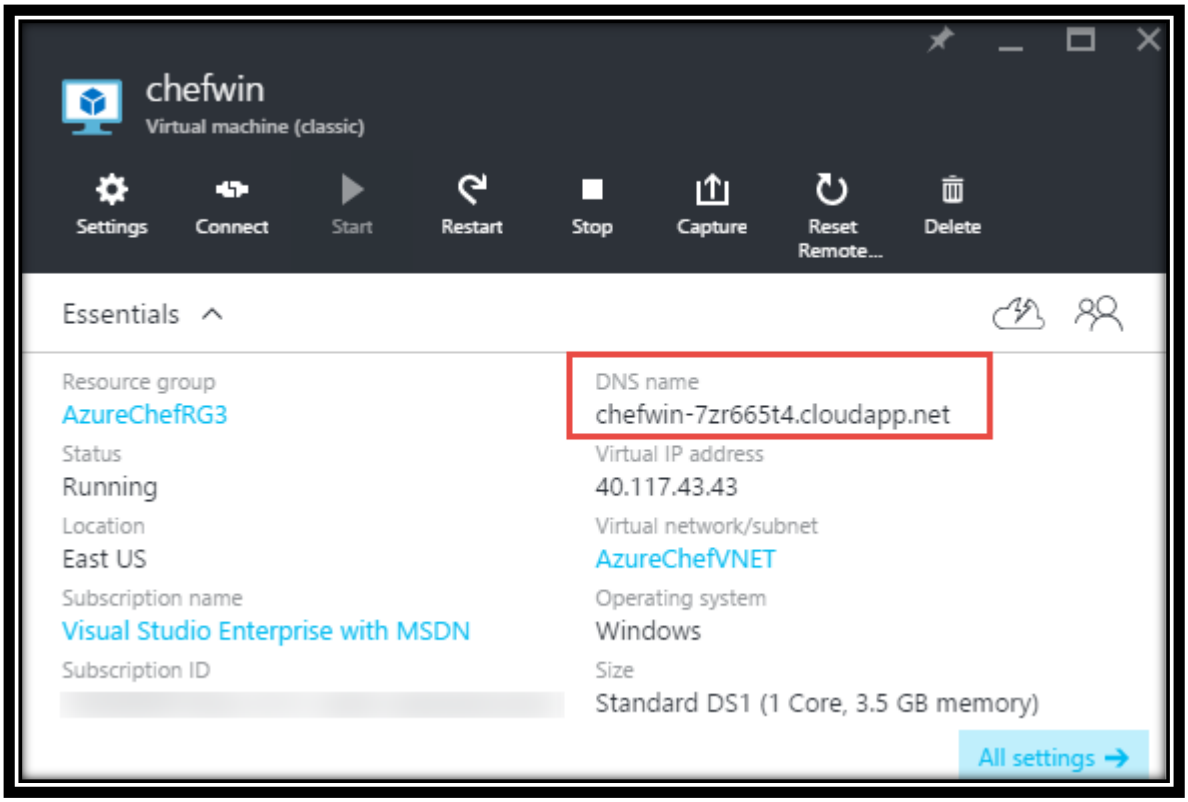
You will also be able to verify the installation by navigating to the website using the

DNS name in a browser and see the default **hello world** webpage install by the **learn_chef_iis** cookbook:

21. Browse to http://portal.azure.com
22. Click **Resource Groups** and then **AzureChefRG**
23. Next click the name **chefwin** VM and locate the **DNS Name**



Browse to http://<YourWindowsVMName.cloudapp.net to see the application running. In our case we browse to http://chefwin-7zr665t4.cloudapp.net

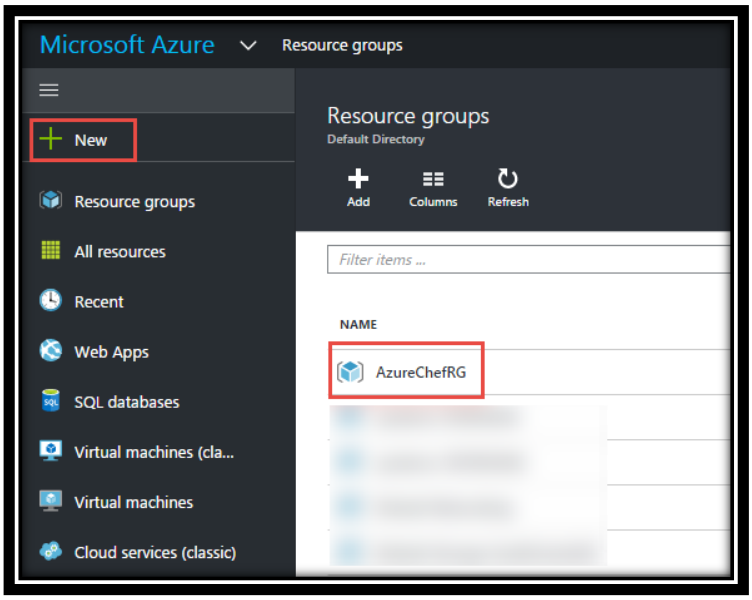
Exercise 5: Provide Proof of Lab Completion

Task 1: Create Screen Shots of the environment created during this Lab

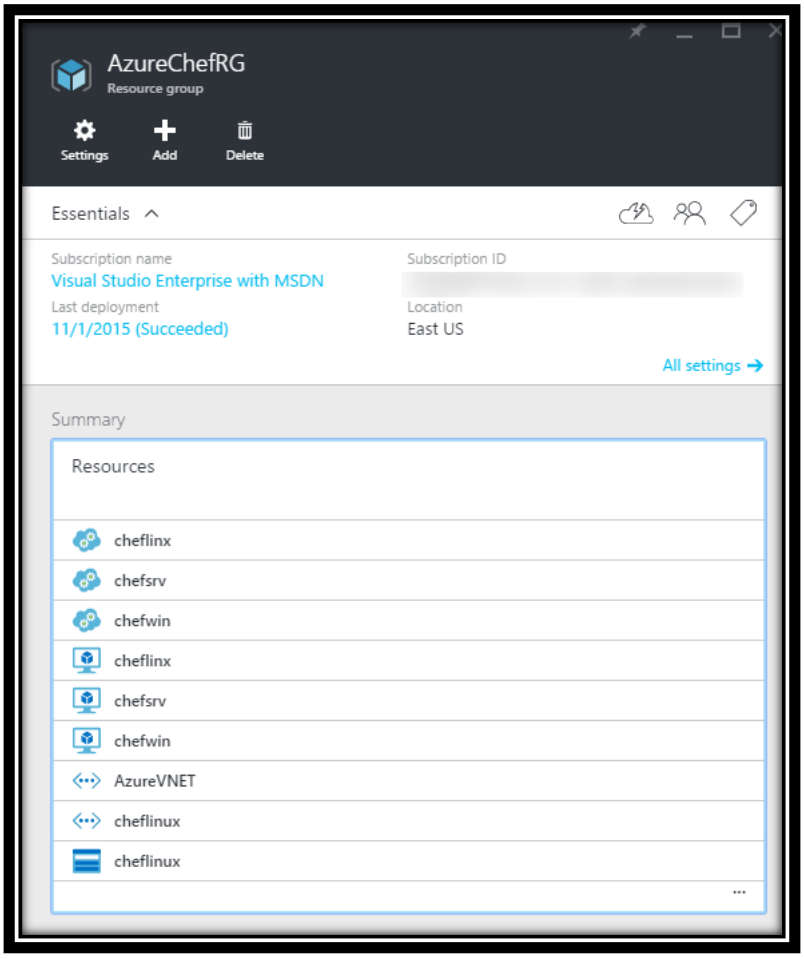
Please save your lab screenshots as either a .jpeg or .png. Upload your screenshots in one .zip file here.

1. Browse to http://portal.azure.com using the subscription that was used for this lab.

2. Click on **Resource Groups** and then Click on **AzureChefRG**

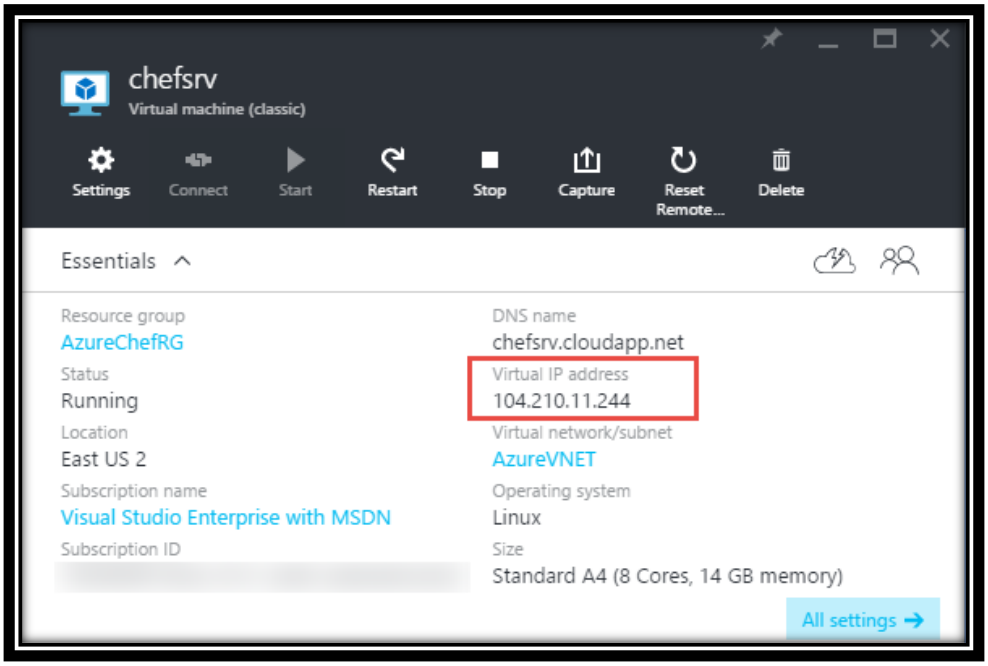


3. Take a Screen shot of the Resources that you created



4. Click on the name of the Chef Server that you created in the example here the server is named **chefsrv.**

5. Take a screen shot of the details of **chefsrv** making note of the IP address



6. Now browse to your Chef server and take a screen shot of the Management console showing the cheflinux and chefwin VMs.