Vagrant installation and Vagrant Box -Implementation and 2 `Complete Documentation

Thursday, July 23, 2015
12:21 PM

Vagrant is an amazing tool for managing virtual machines via a simple to use command line interface. With a simple vagrant up you can be working in a clean environment based on a standard template.
These standard templates are called base boxes, and this website is simply a list of boxes people have been nice enough to make publicly available.

Vagrant provides easy to configure, reproducible, and portable work environments built on top of industry-standard technology and controlled by a single consistent workflow to help maximize the productivity and flexibility of you and your team.
To achieve its magic, Vagrant stands on the shoulders of giants. Machines are provisioned on top of VirtualBox, VMware, AWS, or any other provider. Then, industry-standard provisioning tools such as shell scripts, Chef, or Puppet, can be used to automatically install and configure software on the machine.

Added the vagrant box using the command:

$vagrant box add VAGR12 https://oss-binaries.phusionpassenger.com/vagrant/boxes/latest/ubuntu-14.04-amd64-vbox.box

$vagrant init VA
$Vagrant up

C:\HashiCorp\Vagrant>cd bin

D:\>cd VAGR12

D:\VAGR12>vagrant box add VagPup https://oss-binaries.phusionpassenger.com/vagrant/boxes/latest/ubuntu-14.04-amd64-vbox.box
==> box: Box file was not detected as metadata. Adding it directly...
==> box: Adding box 'VagPup' (v0) for provider:
    box: Downloading: https://oss-binaries.phusionpassenger.com/vagrant/boxes/latest/ubuntu-14.04-amd64-vbox.box
    box: Progress: 100% (Rate: 3425k/s, Estimated time remaining: --:--:--)
==> box: Successfully added box 'VagPup' (v0) for 'virtualbox'!

D:\VAGR12>vagrant init VAGR12
A `Vagrantfile` has been placed in this directory. You are now
ready to `vagrant up` your first virtual environment! Please read
the comments in the Vagrantfile as well as documentation on
`vagrantup.com` for more information on using Vagrant.

To start a vagrant box execute the Vagrant up command

arpity@ARPITY /d/VAGR12
$ vagrant up

```
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
   default: Adapter 1: nat
==> default: Forwarding ports...
   default: 22 => 2222 (adapter 1)
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
   default: SSH address: 127.0.0.1:2222
   default: SSH username: vagrant
   default: SSH auth method: private key
   default: Warning: Connection timeout. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
==> default: Mounting shared folders...
   default: /vagrant => D:/VAGR12
   default: /tmp/vagrant-puppet/manifests-a11d1078b1b1f2e3bdea27312f6ba513 => D
:/VAGR12/manifests
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
provision`
==> default: flag to force provisioning. Provisioners marked to run always will
still run.
```

To enter in the Vagrant box VM execute the Vagrant ssh command

```
arpity@ARPITY /d/VAGR12/manifests
$ vagrant ssh
Welcome to Ubuntu 14.04 LTS (GNU/Linux 3.13.0-24-generic x86_64)

 * Documentation:  https://help.ubuntu.com/
Last login: Fri Jul 31 10:06:45 2015 from 10.0.2.2
vagrant@ubuntu-14:~$ ls /vagrant
Dump_test.sql  EMS_Hibernate.war  manifests  Vagrantfile
vagrant@ubuntu-14:~$ cd /var/lib/tomcat7/webapps
vagrant@ubuntu-14:/var/lib/tomcat7/webapps$ ls -l
total 4
drwxr-xr-x 3 root root 4096 Jul 31 09:39 ROOT
vagrant@ubuntu-14:/var/lib/tomcat7/webapps$ exit
logout
Connection to 127.0.0.1 closed.
```

To implement the Puppet Provisioning in Vagrant running Box, Here is the complete code for Puppet manifests used to implement the following POC

- **Download the vagrant box having Ubuntu 14.04+ Puppet preinstalled**
- **Configure vagrant file and provide required networking configuration**
- **Write a manifest to**
  - **Install tomcat, mysql**
  - **Manage services**

- **Populate DB**
- **Project Deployment**

Here the Puppet Manifests:

```
file {'/var/lib/tomcat7/webapps/EMS_Hibernate.war':
      ensure=>present,
      source=>'/vagrant/EMS_Hibernate.war',
      require => Service['tomcat7'],
    }

file {'/var/lib/tomcat7/webapps/Dump_test.sql':
      ensure=>present,
      source=>'/vagrant/Dump_test.sql',
      require => Service['mysql'],
    }


package{'tomcat7':
       ensure => installed,
      }


service{'tomcat7':
       ensure => running,
       require => Package['tomcat7'],
      }


package{'mysql-server':
       ensure => installed,
      }


service{'mysql':
       ensure => running,
       require => Package['mysql-server'],
      }

exec{mysql:
    command => '/usr/bin/mysql < /var/lib/tomcat7/webapps/Dump_test.sql',
    require => File['/var/lib/tomcat7/webapps/Dump_test.sql'],
   }
```

```
arpity@ARPITY /d/VAGR12/manifests
$ vagrant reload --provision
==> default: Attempting graceful shutdown of VM...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
   default: Adapter 1: nat
==> default: Forwarding ports...
   default: 22 => 2222 (adapter 1)
==> default: Booting VM...
```

```
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default: Warning: Connection timeout. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
==> default: Mounting shared folders...
    default: /vagrant => D:/VAGR12
    default: /tmp/vagrant-puppet/manifests-a11d1078b1b1f2e3bdea27312f6ba513 => D
:/VAGR12/manifests
==> default: Running provisioner: puppet...
==> default: Running Puppet with default.pp...
==> default: stdin: is not a tty
==> default: Notice: Compiled catalog for ubuntu-14.04-amd64-vbox in environment
 production in 0.18 seconds
==> default: Notice: /Stage[main]/Main/File[/var/lib/tomcat7/webapps/Dump_test.s
ql]/ensure: defined content as '{md5}eb7694b1b85e161882616a036d71b4ed'
==> default: Notice: /Stage[main]/Main/Exec[mysql]/returns: executed successfull
y
==> default: Notice: /Stage[main]/Main/File[/var/lib/tomcat7/webapps/EMS_Hiberna
te.war]/ensure: defined content as '{md5}fb15d8bba3b752f2bc90a5a713ab43a6'
==> default: Notice: Finished catalog run in 2.21 seconds

arpity@ARPITY /d/VAGR12/manifests
$ vagrant ssh
Welcome to Ubuntu 14.04 LTS (GNU/Linux 3.13.0-24-generic x86_64)

 * Documentation:  https://help.ubuntu.com/
Last login: Fri Jul 31 10:10:11 2015 from 10.0.2.2
vagrant@ubuntu-14:~$ cd /vagrant
vagrant@ubuntu-14:/vagrant$ ls -l
total 36846
-rwxrwxrwx 1 vagrant vagrant       6 Jul 31 10:13 a.txt.txt
-rwxrwxrwx 1 vagrant vagrant    2945 Jul 24 14:35 Dump_test.sql
-rwxrwxrwx 1 vagrant vagrant 37722338 Jul 24 14:35 EMS_Hibernate.war
drwxrwxrwx 1 vagrant vagrant       0 Jul 31 09:32 manifests
-rwxrwxrwx 1 vagrant vagrant    3409 Jul 31 09:31 Vagrantfile



arpity@ARPITY /d/VAGR12
$ ls -l
total 18424
-rw-r--r--  1 arpity  Administ    2945 Jul 24 20:05 Dump_test.sql
-rw-r--r--  1 arpity  Administ 37722338 Jul 24 20:05 EMS_Hibernate.war
-rw-r--r--  1 arpity  Administ    3409 Jul 31 15:01 Vagrantfile
-rw-r--r--  1 arpity  Administ       6 Jul 31 15:43 a.txt.txt
drwxr-xr-x  3 arpity  Administ       0 Jul 31 15:02 manifests

arpity@ARPITY /d/VAGR12
$ cd manifests/

arpity@ARPITY /d/VAGR12/manifests
$ ls -l
total 1
-rw-r--r--  1 arpity  Administ     990 Jul 31 15:33 default.pp

arpity@ARPITY /d/VAGR12/manifests
$ notepad default.pp
```

```
arpity@ARPITY /d/VAGR12/manifests
$ vagrant ssh
Welcome to Ubuntu 14.04 LTS (GNU/Linux 3.13.0-24-generic x86_64)

 * Documentation:  https://help.ubuntu.com/
Last login: Fri Jul 31 11:54:01 2015 from 10.0.2.2
vagrant@ubuntu-14:~$ mysql
ERROR 1045 (28000): Access denied for user 'vagrant'@'localhost' (using password
: NO)
vagrant@ubuntu-14:~$ sudo su
root@ubuntu-14:/home/vagrant# mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 38
Server version: 5.5.35-1ubuntu1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| test               |
+--------------------+
4 rows in set (0.00 sec)

mysql> use test;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> select * from test.Employee;
+------+----------+--------+
| code | name     | city   |
+------+----------+--------+
|   11 | Rinnie   | Kota   |
|   13 | Abhishek | Indore |
+------+----------+--------+
2 rows in set (0.00 sec)

mysql> Ctrl-C -- exit!
Aborted
root@ubuntu-14:/home/vagrant# cd /var/lib/tomcat7/webapps
root@ubuntu-14:/var/lib/tomcat7/webapps# ls -l
total 36848
drwxr-xr-x 5 tomcat7 tomcat7     4096 Jul 31 12:00 EMS_Hibernate
-rwxrwxrwx 1 vagrant vagrant 37722338 Jul 31 12:00 EMS_Hibernate.war
drwxr-xr-x 3 root    root        4096 Jul 31 11:59 ROOT
root@ubuntu-14:/var/lib/tomcat7/webapps# cd\
>
```

Assign IP and Port Forwarding, Here's the complete snapshot of Vagrantfile:

```
# -*- mode: ruby -*-
# vi: set ft=ruby :

# All Vagrant configuration is done below. The "2" in Vagrant.configure
# configures the configuration version (we support older styles for
# backwards compatibility). Please don't change it unless you know what
# you're doing.
Vagrant.configure(2) do |config|
  # The most common configuration options are documented and commented below.
  # For a complete reference, please see the online documentation at
  # https://docs.vagrantup.com.

  # Every Vagrant development environment requires a box. You can search for
  # boxes at https://atlas.hashicorp.com/search.
  config.vm.box = "VAGPUP"

  # Disable automatic box update checking. If you disable this, then
  # boxes will only be checked for updates when the user runs
  # `vagrant box outdated`. This is not recommended.
  # config.vm.box_check_update = false

  # Create a forwarded port mapping which allows access to a specific port
  # within the machine from a port on the host machine. In the example below,
   # accessing "localhost:8080" will access port 80 on the guest machine.
  #config.vm.network "forwarded_port", guest: 80, host: 8080

  # Create a private network, which allows host-only access to the machine
  # using a specific IP.
  # config.vm.network "private_network", ip: "192.168.33.10"

  # Create a public network, which generally matched to bridged network.
  # Bridged networks make the machine appear as another physical device on
  # your network.
  # config.vm.network "public_network"

  # Share an additional folder to the guest VM. The first argument is
  # the path on the host to the actual folder. The second argument is
  # the path on the guest to mount the folder. And the optional third
  # argument is a set of non-required options.
  # config.vm.synced_folder "../data", "/vagrant_data"

  # Provider-specific configuration so you can fine-tune various
  # backing providers for Vagrant. These expose provider-specific options.
  # Example for VirtualBox:
  #
  # config.vm.provider "virtualbox" do |vb|
  #   # Display the VirtualBox GUI when booting the machine
  #   vb.gui = true
  #
  #   # Customize the amount of memory on the VM:
  #   vb.memory = "1024"
  # end
  #
  # View the documentation for the provider you are using for more
  # information on available options.
```

```
  # Enable the Puppet provisioner
  #config.vm.provision :puppet do |puppet|
  #  puppet.manifests_path = "manifests"
   # puppet.manifest_file = "site.pp"
#end

   config.vm.provision :puppet


  # other config here

  config.vm.network "forwarded_port", guest: 8080, host: 8081


config.vm.network "public_network", ip: "172.27.59.5"

  # config.vm.provision "puppet" do |puppet|
  #   puppet.options = "--verbose --debug"
  # end




  # Define a Vagrant Push strategy for pushing to Atlas. Other push strategies
  # such as FTP and Heroku are also available. See the documentation at
  # https://docs.vagrantup.com/v2/push/atlas.html for more information.
  # config.push.define "atlas" do |push|
  #   push.app = "YOUR_ATLAS_USERNAME/YOUR_APPLICATION_NAME"
  # end

  # Enable provisioning with a shell script. Additional provisioners such as
  # Puppet, Chef, Ansible, Salt, and Docker are also available. Please see the
  # documentation for more information about their specific syntax and use.
  # config.vm.provision "shell", inline: <<-SHELL
  #   sudo apt-get update
  #   sudo apt-get install -y apache2
  # SHELL
end
```

The above colored syntax depicts the port forwarding port and assign IP

Again restarting the vagrant ubuntu VM, using the command:

```
arpity@ARPITY /d/VAGR12
$ vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 8080 => 8081 (adapter 1)
    default: 22 => 2222 (adapter 1)
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
```

```
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default: Warning: Connection timeout. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
==> default: Configuring and enabling network interfaces...
==> default: Mounting shared folders...
    default: /vagrant => D:/VAGR12
    default: /tmp/vagrant-puppet/manifests-a11d1078b1b1f2e3bdea27312f6ba513 => D
:/VAGR12/manifests
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
provision`
==> default: flag to force provisioning. Provisioners marked to run always will
still run.

arpity@ARPITY /d/VAGR12
$ vagrant reload --provision
==> default: Attempting graceful shutdown of VM...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 8080 => 8081 (adapter 1)
    default: 22 => 2222 (adapter 1)
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default: Warning: Connection timeout. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
==> default: Configuring and enabling network interfaces...
==> default: Mounting shared folders...
    default: /vagrant => D:/VAGR12
    default: /tmp/vagrant-puppet/manifests-a11d1078b1b1f2e3bdea27312f6ba513 => D
:/VAGR12/manifests
==> default: Running provisioner: puppet...
==> default: Running Puppet with default.pp...
==> default: stdin: is not a tty
==> default: Notice: Compiled catalog for ubuntu-14.04-amd64-vbox in environment
 production in 0.20 seconds
==> default: Notice: /Stage[main]/Main/Package[mysql-server]/ensure: ensure chan
ged 'purged' to 'present'
==> default: Notice: /Stage[main]/Main/Exec[mysql]/returns: executed successfull
y
==> default: Notice: /Stage[main]/Main/Package[tomcat7]/ensure: ensure changed '
purged' to 'present'
==> default: Notice: /Stage[main]/Main/File[/var/lib/tomcat7/webapps/EMS_Hiberna
te.war]/owner: owner changed 'tomcat7' to 'vagrant'
==> default: Notice: /Stage[main]/Main/File[/var/lib/tomcat7/webapps/EMS_Hiberna
te.war]/group: group changed 'tomcat7' to 'vagrant'
==> default: Notice: Finished catalog run in 26.39 seconds

arpity@ARPITY /d/VAGR12
$ vagrant halt
==> default: Attempting graceful shutdown of VM...
```

```
arpity@ARPITY /d/VAGR12
$ vagrant reload --provision
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
   default: Adapter 1: nat
   default: Adapter 2: bridged
==> default: Forwarding ports...
   default: 8080 => 8081 (adapter 1)
   default: 22 => 2222 (adapter 1)
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
   default: SSH address: 127.0.0.1:2222
   default: SSH username: vagrant
   default: SSH auth method: private key
   default: Warning: Connection timeout. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
==> default: Configuring and enabling network interfaces...
==> default: Mounting shared folders...
   default: /vagrant => D:/VAGR12
   default: /tmp/vagrant-puppet/manifests-a11d1078b1b1f2e3bdea27312f6ba513 => D
:/VAGR12/manifests
==> default: Running provisioner: puppet...
==> default: Running Puppet with default.pp...
==> default: stdin: is not a tty
==> default: Notice: Compiled catalog for ubuntu-14.04-amd64-vbox in environment
 production in 0.23 seconds
==> default: Notice: /Stage[main]/Main/File[/var/lib/tomcat7/webapps/Dump_test.s
ql]/content: content changed '{md5}b641275b886de75d95808533f86d0ebe' to '{md5}eb
7694b1b85e161882616a036d71b4ed'
==> default: Notice: /Stage[main]/Main/File[/var/lib/tomcat7/webapps/Dump_test.s
ql]/owner: owner changed 'tomcat7' to 'vagrant'
==> default: Notice: /Stage[main]/Main/File[/var/lib/tomcat7/webapps/Dump_test.s
ql]/group: group changed 'tomcat7' to 'vagrant'
==> default: Notice: /Stage[main]/Main/Exec[mysql]/returns: executed successfull
y
==> default: Notice: Finished catalog run in 1.70 seconds
```

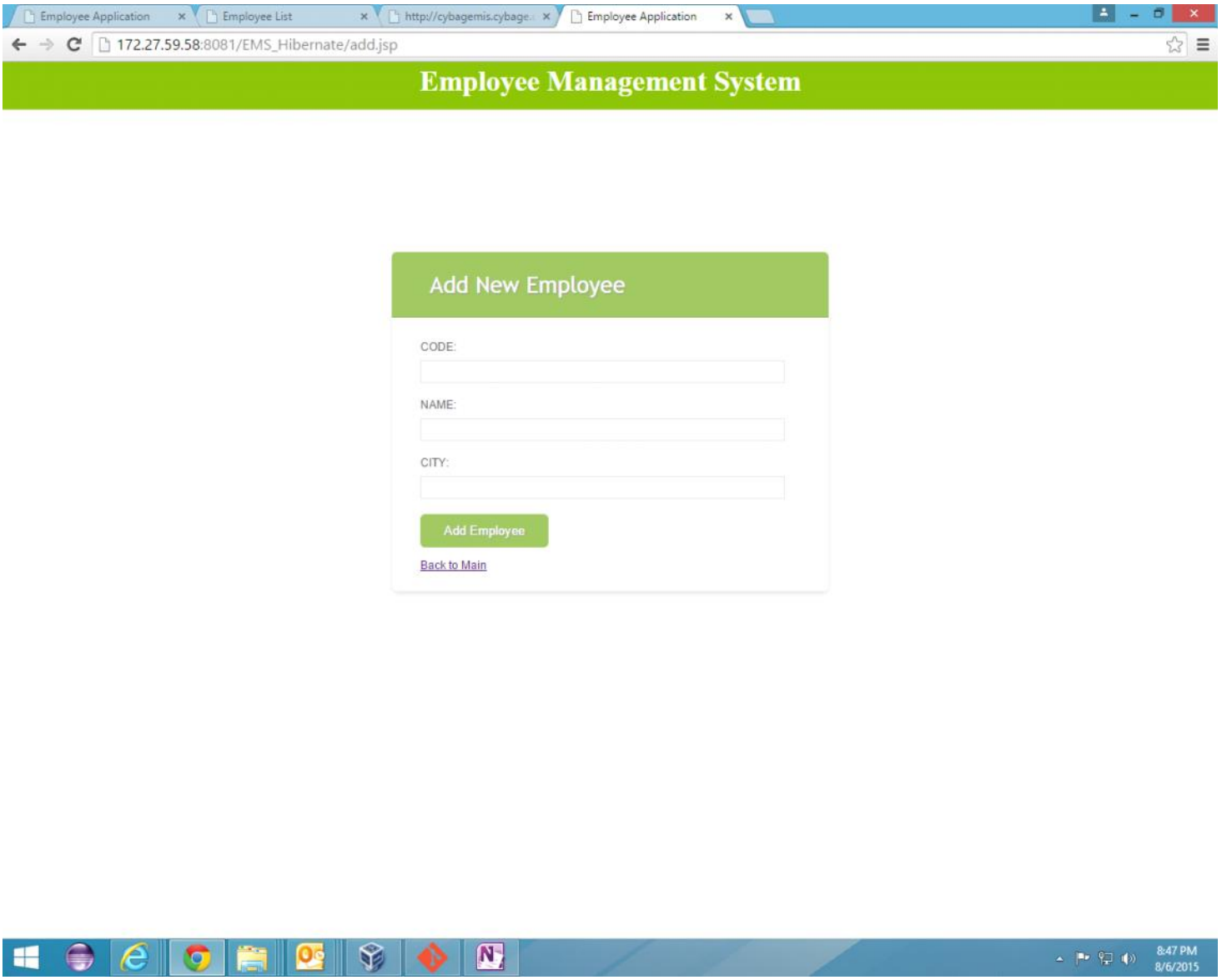
Now check the IP of Vagrant running machine:

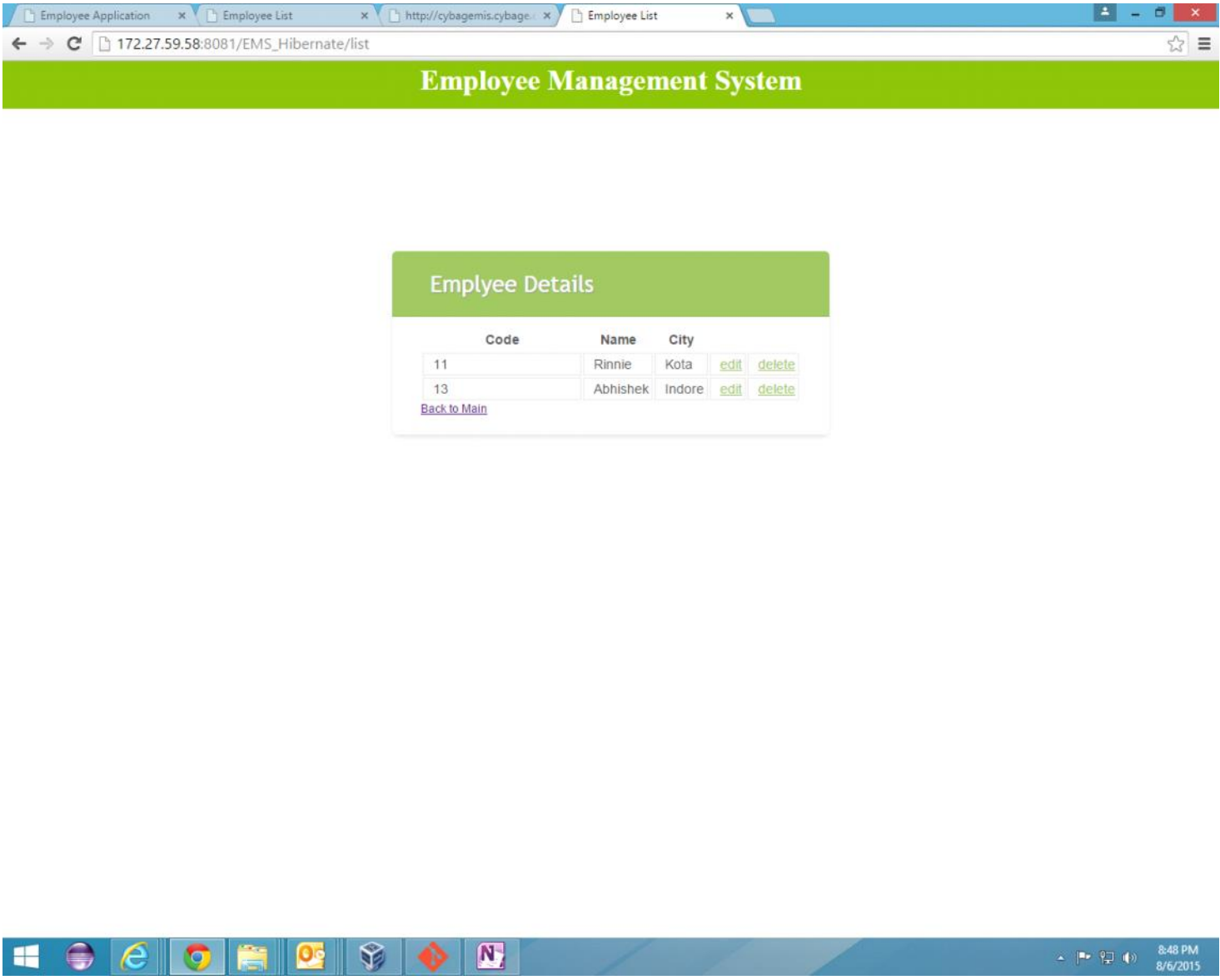
```
arpity@ARPITY /d/VAGR12
$ vagrant ssh
Welcome to Ubuntu 14.04 LTS (GNU/Linux 3.13.0-24-generic x86_64)

 * Documentation:  https://help.ubuntu.com/
Last login: Thu Aug  6 14:55:20 2015 from 10.0.2.2
vagrant@ubuntu-14:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 08:00:27:98:dc:aa
          inet addr:10.0.2.15  Bcast:10.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fe98:dcaa/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:731 errors:0 dropped:0 overruns:0 frame:0
          TX packets:722 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:79655 (79.6 KB)  TX bytes:103705 (103.7 KB)

eth1      Link encap:Ethernet  HWaddr 08:00:27:01:96:e2
          inet addr:172.27.59.5  Bcast:172.27.59.255  Mask:255.255.255.0
```

inet6 addr: fe80::a00:27ff:fe01:96e2/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:3152 errors:0 dropped:0 overruns:0 frame:0
TX packets:94 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:291917 (291.9 KB) TX bytes:6146 (6.1 KB)

lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
inet6 addr: ::1/128 Scope:Host
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:280 errors:0 dropped:0 overruns:0 frame:0
TX packets:280 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:50657 (50.6 KB) TX bytes:50657 (50.6 KB)

As clearly shown that IP of Runnung Vagrant machine is assigned to 172.27.59.5, Now hit the IP of host window machine with forwarded port specified in Vagrantfile


Employee Application
Employee List
http://cybagemis.cybage.
Employee Application
172.27.59.58:8081/EMS_Hibernate/add.jsp
Employee Management System
Add New Employee
CODE:
NAME:
CITY:
Add Employee
Back to Main
8:47 PM
8/6/2015


Employee Application
Employee List
http://cybagemis.cybage
Employee List
172.27.59.58:8081/EMS_Hibernate/list
Employee Management System
Emplyee Details
Code
Name
City
11
Rinnie
Kota
edit
delete
13
Abhishek
Indore
edit
delete
Back to Main
8:48 PM
8/6/2015