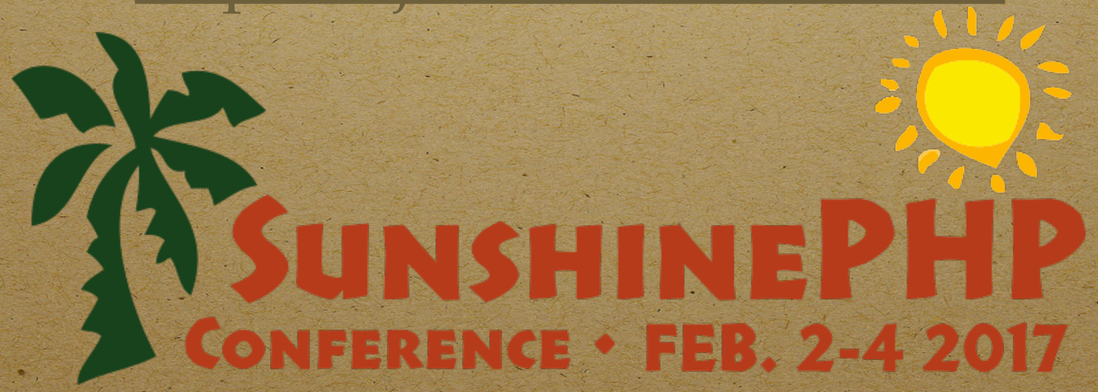
Create Your Own Local Development Environments With Vagrant

Joe Ferguson

https://joind.in/talk/e4161



https://github.com/svpernova09/VagrantTutorial

Who Am I?

- Joe Ferguson
- PHP Developer
- Engineer @ Aol.
- Twitter: @JoePFerguson
- Organizer of @MemphisPHP
- OSMI Board Member
- @NomadPHP Lightning Talks
- Passionate about Community

https://github.com/svpernova09/VagrantTutorial

Development Environments

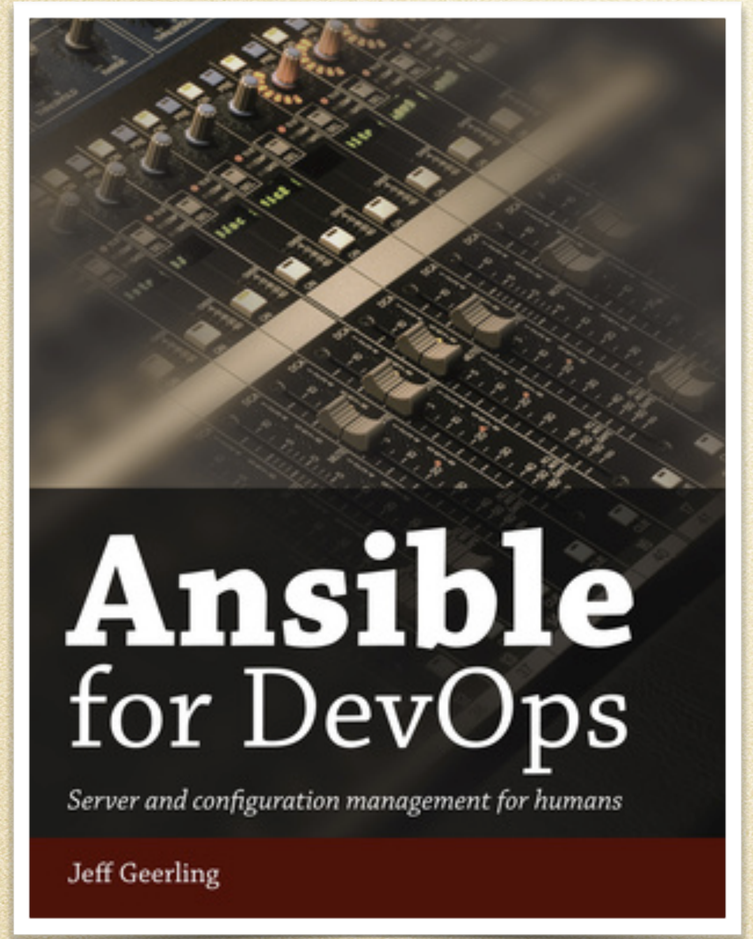
https://github.com/svpernova09/VagrantTutorial

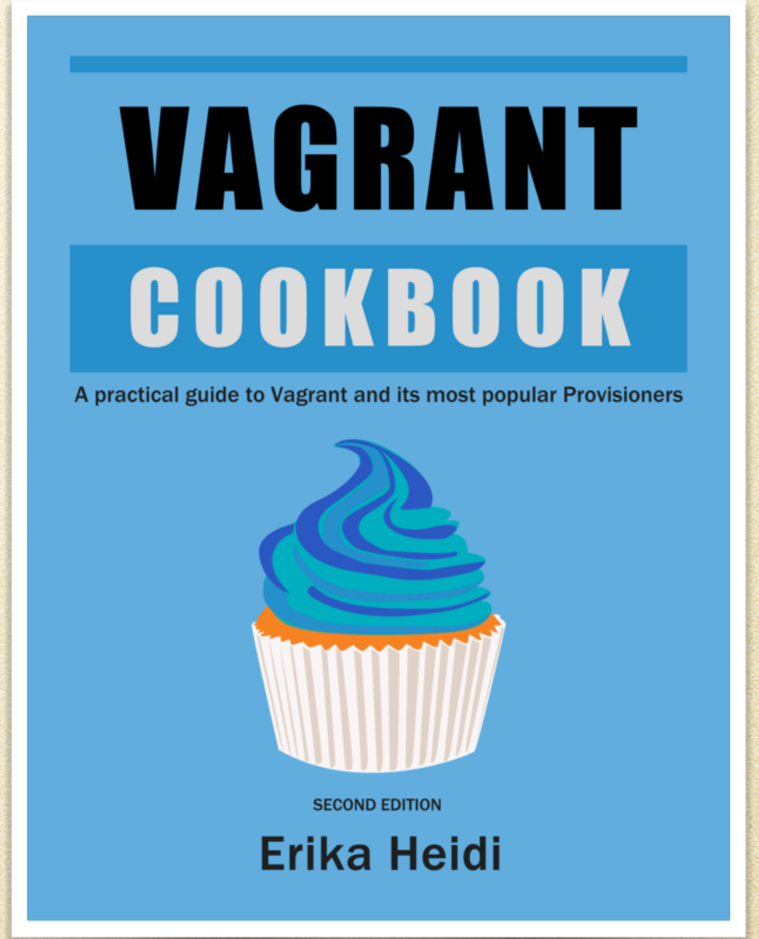
Overview

- Intro to Vagrant
- Your First Vagrant Machine
- Shell Script Provisioning
- Intro to Ansible
- Advanced Ansible Example
- Homestead Vagrant Box
- PuPHPet
- Intro To Puppet
- Intro to Chef

https://github.com/svpernova09/VagrantTutorial

For Further Reading





https://leanpub.com/ansible-for-devops

https://leanpub.com/vagrantcookbook

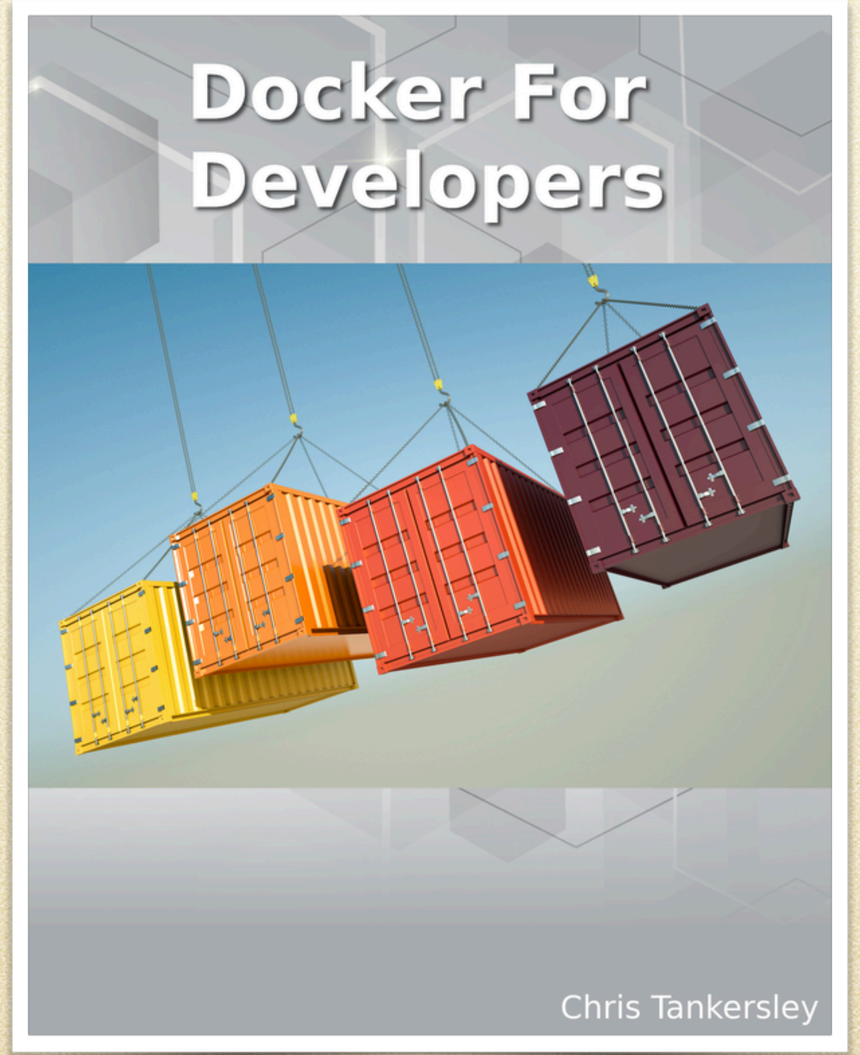
Do you already have a development environment?

You need a development environment

docker

WHY NOT?

For Further Reading



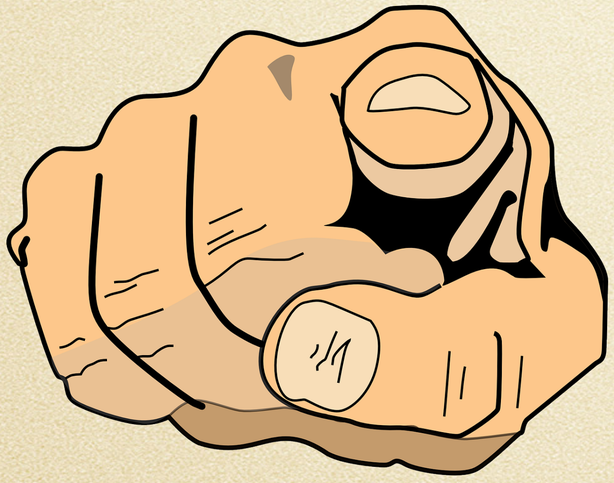
https://leanpub.com/dockerfordevs

Why Vagrant?

Version control your environment

Vagrant is written in Ruby

You don’t have to <3 Ruby



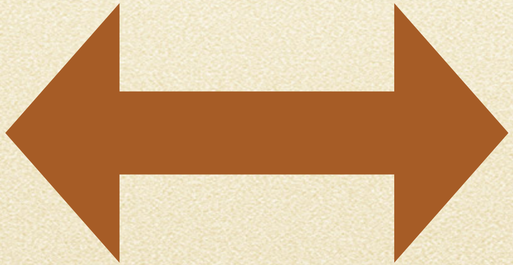
Vagrant Providers

vmware®

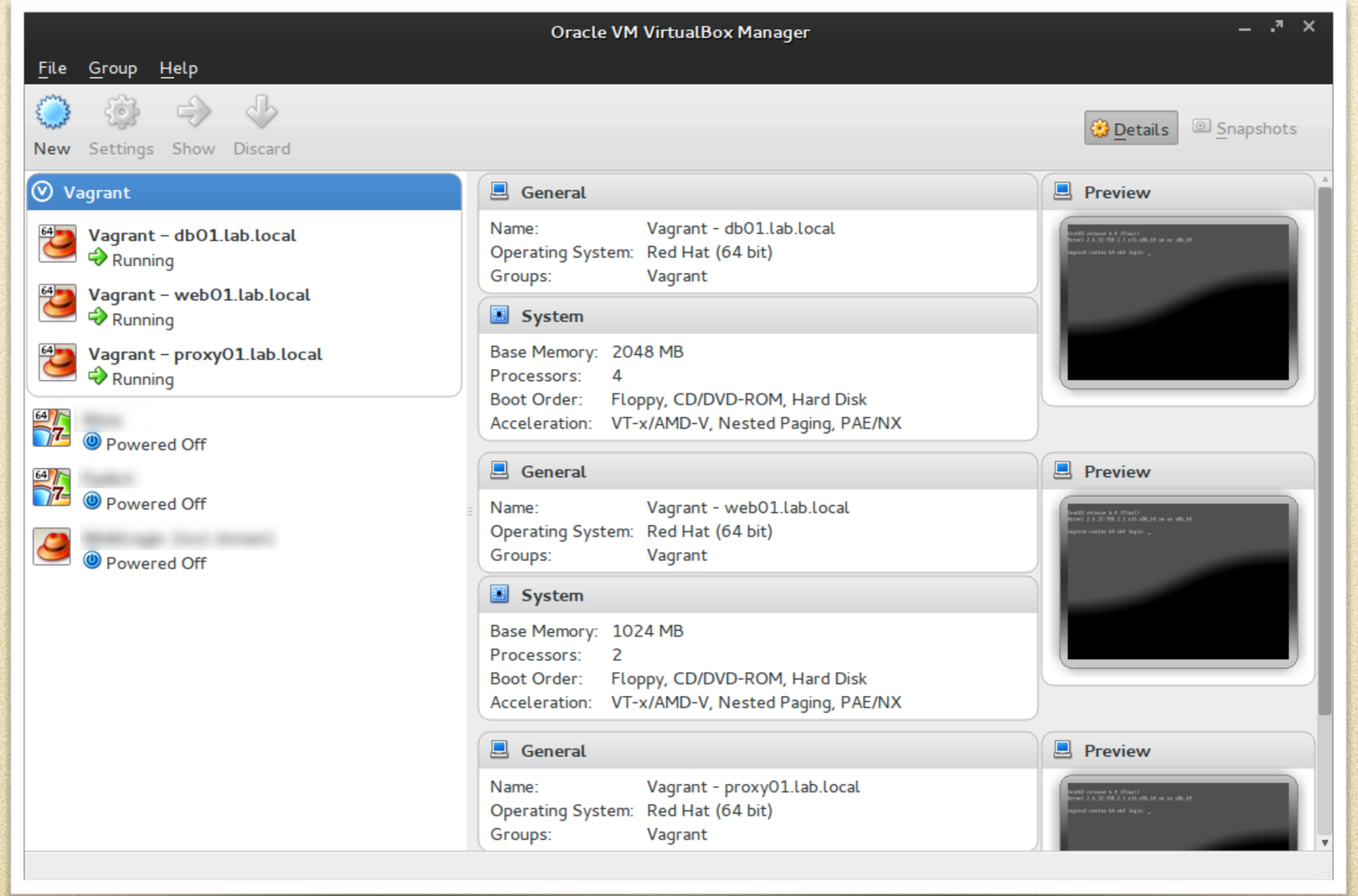
Microsoft
Hyper-V

docker

Vagrant uses Virtualbox's API



Vagrant Boxes



atlas.hashicorp.com

Discover Vagrant Boxes

This page lets you discover and use Vagrant Boxes created by the community. You can search by operating system, architecture or provider.

Search for boxes by operating system, included software, architecture and more

Provider filter: virtualbox | vmware_desktop | aws | digitalocean | docker | google | hyperv | rackspace | parallels | veertu

Sort by: **Downloads** | Recently Created | Recently Updated

- ubuntu/trusty64
  Official Ubuntu Server 14.04 LTS (Trusty Tahr) builds
- laravel/homestead Official Laravel local development box.
- hashicorp/precise64 A standard Ubuntu 12.04 LTS 64-bit box.
- centos/7 CentOS Linux 7 x86_64 Vagrant Box
- hashicorp/precise32 A standard Ubuntu 12.04 LTS 32-bit box.

Adding Vagrant Boxes

```
┌─(halo@Joes-MacBook-Pro.local)(~/PhpstormProjects/VagrantTutorial/FirstVagrantMachine)
└─(13:49:27)(1)─ vagrant box add ubuntu/trusty64
^C%
```

Updating Vagrant Boxes

```
┌(halo@Joes-MacBook-Pro.local)(~/PhpstormProjects/VagrantTutorial/FirstVagrantMachine)
└(13:51:14)(1)- vagrant box update
==> default: Checking for updates to 'ubuntu/trusty64'
    default: Latest installed version: 20160919.0.0
    default: Version constraints:
    default: Provider: virtualbox
==> default: Box 'ubuntu/trusty64' (v20160919.0.0) is running the latest version.
```

Installed Vagrant Boxes

```
┌─(halo@Joes-MacBook-Pro.local)(~/PhpstormProjects/VagrantT
└─(13:51:23)─ vagrant box list
asgrim/rmq-vm            (virtualbox, 0)
laravel/homestead        (virtualbox, 0.3.0)
laravel/homestead        (virtualbox, 0.4.4)
puphpet/ubuntu1404-x64 (virtualbox, 20151201)
ubuntu/trusty64          (virtualbox, 20160714.0.0)
ubuntu/trusty64          (virtualbox, 20160826.0.1)
ubuntu/trusty64          (virtualbox, 20160919.0.0)
```

VagrantTutorial/ FirstVagrantMachine

Vagrantfile

```ruby
# -*- 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 = "ubuntu/xenial64"

  # 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
```

Vagrantfile

```
13  # Every Vagrant development environment requires a box. You can search for
14  # boxes at https://atlas.hashicorp.com/search.
15  config.vm.box = "ubuntu/xenial64"
16
17  # Disable automatic box update checking. If you disable this, then
18  # boxes will only be checked for updates when the user runs
19  # `vagrant box outdated`. This is not recommended.
20  # config.vm.box_check_update = false
```

Vagrantfile

```
22  # Create a forwarded port mapping which allows access to a specific port
23  # within the machine from a port on the host machine. In the example below,
24  # accessing "localhost:8080" will access port 80 on the guest machine.
25    config.vm.network "forwarded_port", guest: 80, host: 8080
26
27  # Create a private network, which allows host-only access to the machine
28  # using a specific IP.
29    config.vm.network "private_network", ip: "192.168.33.10"
30
31  # Create a public network, which generally matched to bridged network.
32  # Bridged networks make the machine appear as another physical device on
33  # your network.
34  # config.vm.network "public_network"
```

Vagrantfile

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

Vagrantfile

```
42  # Provider-specific configuration so you can fine-tune various
43  # backing providers for Vagrant. These expose provider-specific options.
44  # Example for VirtualBox:
45  #
46    config.vm.provider "virtualbox" do |vb|
47  #   # Display the VirtualBox GUI when booting the machine
48  #   vb.gui = true
49  #
50  #   # Customize the amount of memory on the VM:
51      vb.memory = "1024"
52    end
53  #
54  # View the documentation for the provider you are using for more
55  # information on available options.
```

Vagrantfile

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

Vagrantfile

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

$ vagrant up

```
┌─(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/FirstVagrantMachine)(master M:1)──
└─(11:46:35)─ vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'ubuntu/xenial64'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'ubuntu/xenial64' is up to date...
==> default: Setting the name of the VM: FirstVagrantMachine_default_1485625623886_19653
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: hostonly
==> default: Forwarding ports...
    default: 80 (guest) => 8080 (host) (adapter 1)
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> 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: ubuntu
    default: SSH auth method: password
    default: Warning: Remote connection disconnect. Retrying...
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: The guest additions on this VM do not match the installed version of
    default: VirtualBox! In most cases this is fine, but in rare cases it can
    default: prevent things such as shared folders from working properly. If you see
    default: shared folder errors, please make sure the guest additions within the
    default: virtual machine match the version of VirtualBox you have installed on
    default: your host and reload your VM.
```

$ vagrant up

```
┌─(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/FirstVagrantMachine)(master M:1)──
└─(11:46:35)─ vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
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==> default: Setting the name of the VM: FirstVagrantMachine_default_1485625623886_19653
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: hostonly
==> default: Forwarding ports...
    default: 80 (guest) => 8080 (host) (adapter 1)
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> 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: ubuntu
    default: SSH auth method: password
    default: Warning: Remote connection disconnect. Retrying...
    default:
```

$ vagrant up

```
default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
default: The guest additions on this VM do not match the installed version of
default: VirtualBox! In most cases this is fine, but in rare cases it can
default: prevent things such as shared folders from working properly. If you see
default: shared folder errors, please make sure the guest additions within the
default: virtual machine match the version of VirtualBox you have installed on
default: your host and reload your VM.
default:
default: Guest Additions Version: 5.0.24
default: VirtualBox Version: 5.1
==> default: Configuring and enabling network interfaces...
==> default: Mounting shared folders...
default: /vagrant => /Users/joferguson16/PhpstormProjects/VagrantTutorial/FirstVagrantMachine
vagrant up: 01:51
```

$ vagrant ssh

```
┌(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/FirstVagrantMachine)(master ??:1 M:2)
└(11:52:33)- vagrant ssh
Welcome to Ubuntu 16.04.1 LTS (GNU/Linux 4.4.0-59-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  Get cloud support with Ubuntu Advantage Cloud Guest:
    http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.


ubuntu@ubuntu-xenial:~$
```

Default Shared Folder

```
http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.


ubuntu@ubuntu-xenial:~$ cd /vagrant
ubuntu@ubuntu-xenial:/vagrant$ ll
total 52
drwxr-xr-x  1 ubuntu ubuntu   170 Jan 28 17:47 ./
drwxr-xr-x 24 root   root    4096 Jan 28 17:48 ../
-rw-------  1 ubuntu ubuntu 44705 Jan 28 17:49 ubuntu-xenial-16.04-cloudimg-console.log
drwxr-xr-x  1 ubuntu ubuntu   102 Sep 29 01:16 .vagrant/
-rw-r--r--  1 ubuntu ubuntu  3019 Jan 28 17:46 Vagrantfile
ubuntu@ubuntu-xenial:/vagrant$
```

Stopping The Vagrant

```
ubuntu@ubuntu-xenial:/vagrant$ exit
logout
Connection to 127.0.0.1 closed.
vavagrant ssh: 01:40

┌─(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/FirstVagra
└─(11:54:15)─ vagrant halt
==> default: Attempting graceful shutdown of VM...
```

Reloading The Vagrant

```
┌(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/FirstVagrantMachine)(master ??:1 M:2)
└(11:54:27)- vagrant reload
==> default: Checking if box 'ubuntu/xenial64' is up to date...
==> 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: hostonly
==> default: Forwarding ports...
    default: 80 (guest) => 8080 (host) (adapter 1)
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> 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: ubuntu
    default: SSH auth method: password
    default: Warning: Remote connection disconnect. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: The guest additions on this VM do not match the installed version of
    default: VirtualBox! In most cases this is fine, but in rare cases it can
    default: prevent things such as shared folders from working properly. If you see
    default: shared folder errors, please make sure the guest additions within the
    default: virtual machine match the version of VirtualBox you have installed on
    default: your host and reload your VM.
    default:
    default: Guest Additions Version: 5.0.24
    default: VirtualBox Version: 5.1
```

Destroy The Vagrant

```
┌(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/FirstVagrantMachine)
└(11:56:37)- vagrant destroy
  default: Are you sure you want to destroy the 'default' VM? [y/N] y
==> default: Forcing shutdown of VM...
==> default: Destroying VM and associated drives...

┌(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/FirstVagrantMachine)
└(11:57:59)- vagrant destroy -f
==> default: VM not created. Moving on...
```

What's Running?

```
┌─(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/FirstVagrantMachine)(master ??:1 M:2)──────(en0
└─(11:58:10)─ vagrant global-status
id       name          provider   state    directory
--------------------------------------------------------------------------------------------------------
7028afe  default       virtualbox poweroff /Users/joferguson16/PhpstormProjects/ampdev
bdd41a5  default       virtualbox poweroff /Users/joferguson16/PhpstormProjects/SayWhat-FE
ecd1bbb  testrunner-56 virtualbox running  /Users/joferguson16/PhpstormProjects/amp-test-runner-vagrant-56

The above shows information about all known Vagrant environments
on this machine. This data is cached and may not be completely
up-to-date. To interact with any of the machines, you can go to
that directory and run Vagrant, or you can use the ID directly
with Vagrant commands from any directory. For example:
"vagrant destroy 1a2b3c4d"
```

Questions?

Run vagrant destroy in
VagrantTutorial/FirstVagrantMachine

Shell Script Provisioning

VagrantTutorial/ ShellScriptProvisioning

Add Shell Script

```
63
64    # Enable provisioning with a shell script. Additional provisioners such as
65    # Puppet, Chef, Ansible, Salt, and Docker are also available. Please see the
66    # documentation for more information about their specific syntax and use.
67      config.vm.provision "shell", path: "provision.sh"
68  end
```

provision.sh

```
#!/usr/bin/env bash


export DEBIAN_FRONTEND=noninteractive
apt-get update
apt-get -y upgrade


echo "LC_ALL=en_US.UTF-8" >> /etc/default/locale
locale-gen en_US.UTF-8


```

$ vagrant up

```
==> default: Running provisioner: shell...
    default: Running: /var/folders/2t/b5wscgh12gq22m_cb0_rbmpcb9cql5/T/vagrant-shell20170128-27388-1mbfky8.sh
==> default: mesg:
==> default: ttyname failed
==> default: :
==> default: Inappropriate ioctl for device
==> default: Hit:1 http://archive.ubuntu.com/ubuntu xenial InRelease
==> default: Get:2 http://security.ubuntu.com/ubuntu xenial-security InRelease [102 kB]
==> default: Get:3 http://archive.ubuntu.com/ubuntu xenial-updates InRelease [102 kB]
==> default: Get:4 http://security.ubuntu.com/ubuntu xenial-security/main Sources [55.8 kB]
==> default: Get:5 http://archive.ubuntu.com/ubuntu xenial-backports InRelease [102 kB]
==> default: Get:6 http://security.ubuntu.com/ubuntu xenial-security/restricted Sources [1,800 B]
==> default: Get:7 http://archive.ubuntu.com/ubuntu xenial/main Sources [868 kB]
==> default: Get:8 http://security.ubuntu.com/ubuntu xenial-security/universe Sources [18.5 kB]
==> default: Get:9 http://security.ubuntu.com/ubuntu xenial-security/multiverse Sources [1,144 B]
==> default: Get:10 http://security.ubuntu.com/ubuntu xenial-security/main amd64 Packages [202 kB]
==> default: Get:11 http://archive.ubuntu.com/ubuntu xenial/restricted Sources [4,808 B]
==> default: Get:12 http://security.ubuntu.com/ubuntu xenial-security/main Translation-en [85.0 kB]
```

```
==> default: Setting up apt-transport-https (1.2.19) ...
==> default: Setting up virtualbox-guest-utils (5.0.32-dfsg-0ubuntu1.16.04.2) ...
==> default: Processing triggers for libc-bin (2.23-0ubuntu5) ...
==> default: Generating locales (this might take a while)...
==> default:   en_US.UTF-8
==> default: ...
==> default:  done
==> default: Generation complete.
vagrant up: 02:05
```

We haven’t done much

- No PHP
- No Webserver
- No Database

Add PPAs and Basics

```
# Install Some PPAs
apt-get install -y software-properties-common curl
apt-add-repository ppa:nginx/development -y
apt-add-repository ppa:chris-lea/redis-server -y
apt-add-repository ppa:ondrej/php -y
apt-get update

# Install Some Basic Packages
apt-get install -y build-essential dos2unix gcc git libmcrypt4 libpcre3-dev \
make python2.7-dev python-pip re2c supervisor unattended-upgrades whois vim libnotify-bin

# Set My Timezone
ln -sf /usr/share/zoneinfo/UTC /etc/localtime
```

Install PHP

```
# Install PHP 7.1
apt-get install -y --force-yes php7.1-cli php7.1-dev \
php7.1-pgsql php7.1-sqlite3 php7.1-gd \
php7.1-curl php7.1-memcached \
php7.1-imap php7.1-mysql php7.1-mbstring \
php7.1-xml php7.1-zip php7.1-bcmath php7.1-soap \
php7.1-intl php7.1-readline php-xdebug

# Install Composer
curl -sS https://getcomposer.org/installer | php
mv composer.phar /usr/local/bin/composer
# Add Composer Global Bin To Path
printf "\nPATH=\"$(sudo su - vagrant -c 'composer config -g home 2>/dev/null')/vendor/b

# Set Some PHP CLI Settings
sudo sed -i "s/error_reporting = .*/error_reporting = E_ALL/" /etc/php/7.1/cli/php.ini
sudo sed -i "s/display_errors = .*/display_errors = On/" /etc/php/7.1/cli/php.ini
```

Install nginx & FPM

```
# Install Nginx & PHP-FPM
apt-get install -y --force-yes nginx php7.1-fpm
rm /etc/nginx/sites-enabled/default
rm /etc/nginx/sites-available/default
service nginx restart


# Setup Some PHP-FPM Options
echo "xdebug.remote_enable = 1" >> /etc/php/7.1/mods-available/xdebug.ini
echo "xdebug.remote_connect_back = 1" >> /etc/php/7.1/mods-available/xdebug.ini
echo "xdebug.remote_port = 9000" >> /etc/php/7.1/mods-available/xdebug.ini
echo "xdebug.max_nesting_level = 512" >> /etc/php/7.1/mods-available/xdebug.ini
echo "opcache.revalidate_freq = 0" >> /etc/php/7.1/mods-available/opcache.ini

sed -i "s/error_reporting = .*/error_reporting = E_ALL/" /etc/php/7.1/fpm/php.ini
sed -i "s/display_errors = .*/display_errors = On/" /etc/php/7.1/fpm/php.ini
sed -i "s/;cgi.fix_pathinfo=1/cgi.fix_pathinfo=0/" /etc/php/7.1/fpm/php.ini
sed -i "s/memory_limit = .*/memory_limit = 512M/" /etc/php/7.1/fpm/php.ini
sed -i "s/upload_max_filesize = .*/upload_max_filesize = 100M/" /etc/php/7.1/fpm/php.ini
sed -i "s/post_max_size = .*/post_max_size = 100M/" /etc/php/7.1/fpm/php.ini
```

Configure nginx & FPM

```
# Set The Nginx & PHP-FPM User
sed -i "s/user www-data;/user vagrant;/" /etc/nginx/nginx.conf
sed -i "s/# server_names_hash_bucket_size.*/server_names_hash_bucket_size 64;/" /etc
sed -i "s/user = www-data/user = vagrant/" /etc/php/7.1/fpm/pool.d/www.conf
sed -i "s/group = www-data/group = vagrant/" /etc/php/7.1/fpm/pool.d/www.conf
sed -i "s/listen\.owner.*/listen.owner = vagrant/" /etc/php/7.1/fpm/pool.d/www.conf
sed -i "s/listen\.group.*/listen.group = vagrant/" /etc/php/7.1/fpm/pool.d/www.conf
sed -i "s/;listen\.mode.*/listen.mode = 0666/" /etc/php/7.1/fpm/pool.d/www.conf
service nginx restart
service php7.1-fpm restart

# Add Vagrant User To WWW-Data
usermod -a -G www-data vagrant
id vagrant
groups vagrant
```

Install & Configure MySQL

```
110 # Install MySQL
111 debconf-set-selections <<< "mysql-community-server mysql-community-server/data-dir selec
112 debconf-set-selections <<< "mysql-community-server mysql-community-server/root-pass pass
113 debconf-set-selections <<< "mysql-community-server mysql-community-server/re-root-pass p
114 apt-get install -y mysql-server
115 # Configure MySQL Password Lifetime
116 echo "default_password_lifetime = 0" >> /etc/mysql/mysql.conf.d/mysqld.cnf
117 # Configure MySQL Remote Access
118 sed -i '/^bind-address/s/bind-address.*=.*/bind-address = 0.0.0.0/' /etc/mysql/mysql.con
119 mysql --user="root" --password="secret" -e "GRANT ALL ON *.* TO root@'0.0.0.0' IDENTIFIE
120 service mysql restart
121 mysql --user="root" --password="secret" -e "CREATE USER 'vagrant'@'0.0.0.0' IDENTIFIED B
122 mysql --user="root" --password="secret" -e "GRANT ALL ON *.* TO 'vagrant'@'0.0.0.0' IDEN
123 mysql --user="root" --password="secret" -e "GRANT ALL ON *.* TO 'vagrant'@'%' IDENTIFIED
124 mysql --user="root" --password="secret" -e "FLUSH PRIVILEGES;"
125 mysql --user="root" --password="secret" -e "CREATE DATABASE vagrant;"
126 service mysql restart
```

$ vagrant up

```
└─(12:20:36)─ vagrant up
```

http://localhost:8080

Check PHP

sudo vi /var/www/html/index.php

```
<?php
phpinfo();

~
~
~
~
~
~
~
```

Check PHP

```
ubuntu@ubuntu-xenial:~$ php -v
PHP 7.1.1-1+deb.sury.org~xenial+1 (cli) (built: Jan 20 2017 09:20:20) ( NTS )
Copyright (c) 1997-2017 The PHP Group
Zend Engine v3.1.0, Copyright (c) 1998-2017 Zend Technologies
    with Zend OPcache v7.1.1-1+deb.sury.org~xenial+1, Copyright (c) 1999-2017, by Zend Technologies
ubuntu@ubuntu-xenial:~$
```

Check MySQL

```
    with Zend OPcache v7.1.1-1+deb.sury.org~xenial+1, Copyright (c) 1999-2017, by Zend
ubuntu@ubuntu-xenial:~$ mysql -u ubuntu -psecret
mysql: [Warning] Using a password on the command line interface can be insecure.
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 5.7.17-0ubuntu0.16.04.1 (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 |
| sys                |
| ubuntu             |
+--------------------+
5 rows in set (0.00 sec)

mysql>
```
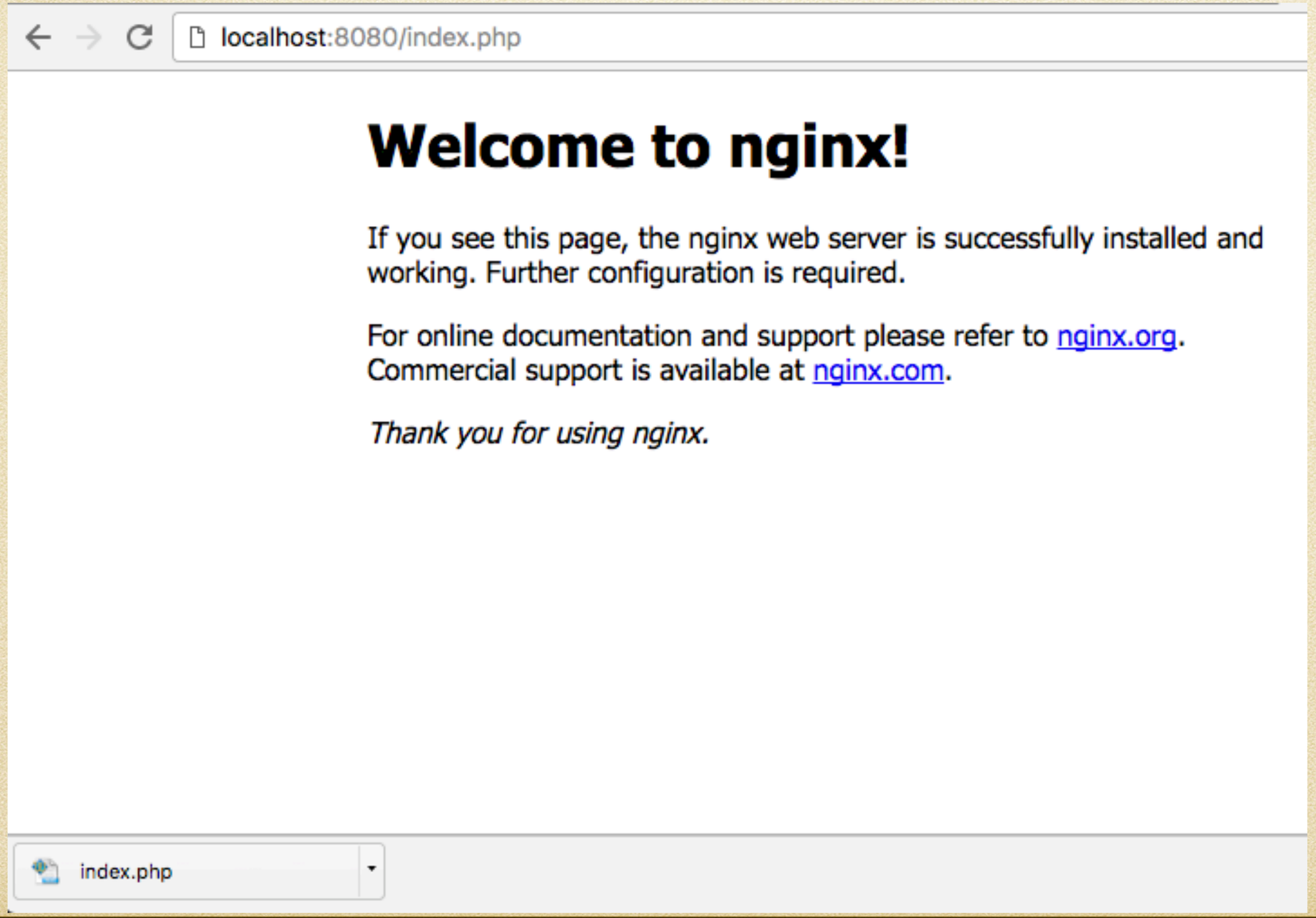

Check nginx+fpm



files/nginx.vhost.conf

```
server {
    listen 80;
    server_name test.app;
    root "/home/ubuntu/test/public";

    index index.html index.htm index.php;

    charset utf-8;

    location / {
        try_files $uri $uri/ /index.php?$query_string;
    }

    location = /favicon.ico { access_log off; log_not_found off; }
    location = /robots.txt  { access_log off; log_not_found off; }

```

src/index.php

```
1   <?php
2   phpinfo();
3
```

Copy our host to nginx

```
99  sed -i "s/;listen\.mode.*/listen.mode = 0666/" /etc/php/7.1/fpm/pool.d/www.conf
100
101 echo "Configure our test site"
102 cp /vagrant/files/nginx.vhost.conf /etc/nginx/sites-available/test.app
103 ln -s /etc/nginx/sites-available/test.app /etc/nginx/sites-enabled/test.app
104
105 service nginx restart
106 service php7.1-fpm restart
```

ShellScriptProvisioning/provision.sh

Add a synced folder

```
36  # Share an additional folder to the guest VM. The first argument is
37  # the path on the host to the actual folder. The second argument is
38  # the path on the guest to mount the folder. And the optional third
39  # argument is a set of non-required options.
40      config.vm.synced_folder "src", "/home/ubuntu/test/public"
```

ShellScriptProvisioning/Vagrantfile

Vagrant Destroy & Up

```
┌(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/ShellScriptProvisioning)(master M:5)-
└(13:16:23)- vagrant destroy -f && vagrant up
==> default: Forcing shutdown of VM...
==> default: Destroying VM and associated drives...
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'ubuntu/xenial64'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'ubuntu/xenial64' is up to date...
==> default: Setting the name of the VM: ShellScriptProvisioning_default_1485631002198_43582
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: hostonly
==> default: Forwarding ports...
    default: 80 (guest) => 8080 (host) (adapter 1)
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
```

Update /etc/hosts

```
1 ##
2 # Host Database
3 #
4 # localhost is used to configure the loopback interface
5 # when the system is booting.  Do not change this entry.
6 ##
7 127.0.0.1   localhost
8 255.255.255.255 broadcasthost
9 ::1             localhost
10
11 192.168.33.10 test.app
12
```

Check nginx+fpm

test.app

PHP Version 7.1.1-1+deb.sury.org~xenial+1

System	Linux ubuntu-xenial 4.4.0-59-generic #80-Ubuntu SMP Fri Jan 6 17:47:47 UTC 20
Build Date	Jan 20 2017 09:20:20
Server API	FPM/FastCGI
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/7.1/fpm
Loaded Configuration File	/etc/php/7.1/fpm/php.ini
Scan this dir for additional .ini files	/etc/php/7.1/fpm/conf.d
Additional .ini files parsed	/etc/php/7.1/fpm/conf.d/10-mysqlnd.ini, /etc/php/7.1/fpm/conf.d/10-opcache.ini, /etc /etc/php/7.1/fpm/conf.d/15-xml.ini, /etc/php/7.1/fpm/conf.d/20-bcmath.ini, /etc/php/7 /etc/php/7.1/fpm/conf.d/20-ctype.ini, /etc/php/7.1/fpm/conf.d/20-curl.ini, /etc/php/7.1 /etc/php/7.1/fpm/conf.d/20-exif.ini, /etc/php/7.1/fpm/conf.d/20-fileinfo.ini, /etc/php/7 /etc/php/7.1/fpm/conf.d/20-gd.ini, /etc/php/7.1/fpm/conf.d/20-gettext.ini, /etc/php/7.1 /etc/php/7.1/fpm/conf.d/20-igbinary.ini, /etc/php/7.1/fpm/conf.d/20-imap.ini, /etc/php /etc/php/7.1/fpm/conf.d/20-json.ini, /etc/php/7.1/fpm/conf.d/20-mbstring.ini, /etc/php /etc/php/7.1/fpm/conf.d/20-mysqli.ini, /etc/php/7.1/fpm/conf.d/20-pdo_mysql.ini, /et pdo_pgsql.ini, /etc/php/7.1/fpm/conf.d/20-pdo_sqlite.ini, /etc/php/7.1/fpm/conf.d/20-

Questions?

Go ahead and run vagrant destroy in
VagrantTutorial/ShellScriptProvisioning

VagrantTutorial/
AnsibleBasics

ANSIBLE

pip install ansible

Ansible Concepts

- Modules
  - Standalone work units to perform a task
- Inventory Configuration
  - Declaration of target systems to perform tasks upon
- Playbooks
  - Complete set of roles / list of actions to take

Create Ansible Playbook

Project

- ansible ~/ansible
  - .vagrant
  - inventory
    - vagrant
  - roles
    - install-vim
      - tasks
        - main.yml
  - vagrant.yml
  - Vagrantfile
- External Libraries

```
1  default ansible_ssh_host=192.168.1.13
2
3  [vagrant]
4  default
5
6  [vagrant:vars]
7  system_user="vagrant"
```

vagrant

```
1  ---
2  - name: Configure Vagrant
3    hosts: vagrant
4    user: vagrant
5    roles:
6      - install-vim
```

vagrant.yml

```
1  ---
2
3  - name: Installing vim
4    apt: pkg=vim state=present
```

Running Our Ansible Playbook

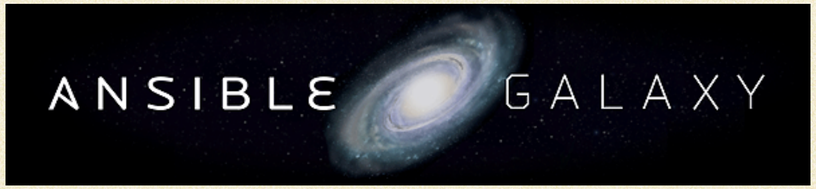
```
┌─(halo@Joes-MacBook-Pro.local)(~/ansible)─(en0:192.168.1.3/24 vboxnet1:192.168.56.1/24
└─(18:45:04)─ ansible-playbook vagrant.yml -i inventory/vagrant

PLAY [Configure Vagrant] ***********************************************************

TASK [setup] ***********************************************************************
ok: [default]

TASK [install-vim : Installing vim] ************************************************
ok: [default]

PLAY RECAP *************************************************************************
default                    : ok=2    changed=0    unreachable=0    failed=0
```

Ansible Variable Precedence

http://docs.ansible.com/ansible/playbooks_variables.html

Ansible Variable Precedence

- Role Defaults (In your role folder)
- Inventory (Your inventory File)
- Inventory Group (Inventory Group variables)
- Inventory Host (In Inventory Host)
- …many more



Reusing Playbooks from others

Ansible Galaxy Authors

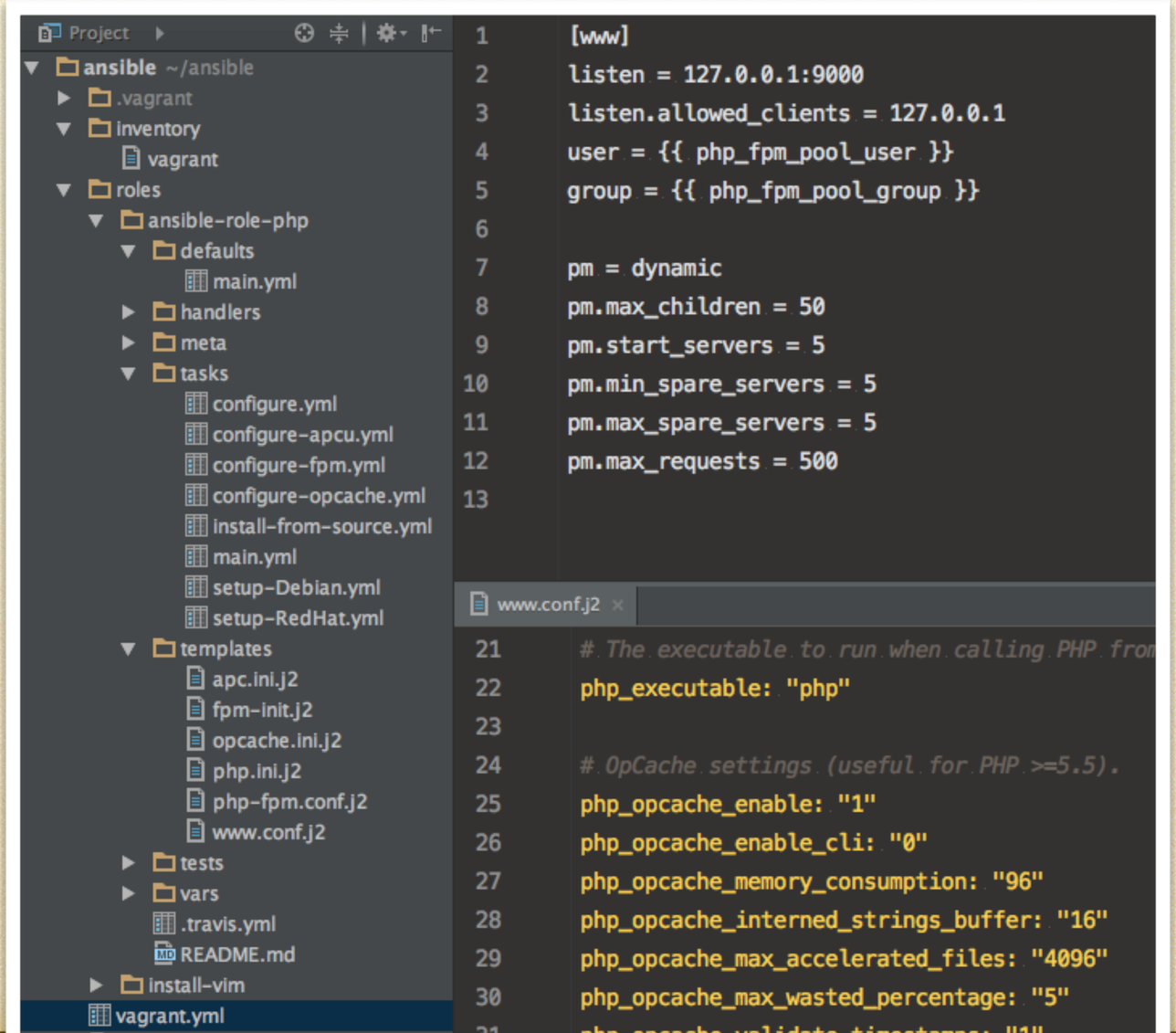
geerlingguy

Jeff Geerling
@acquia
St. Louis, MO
Followers: 856

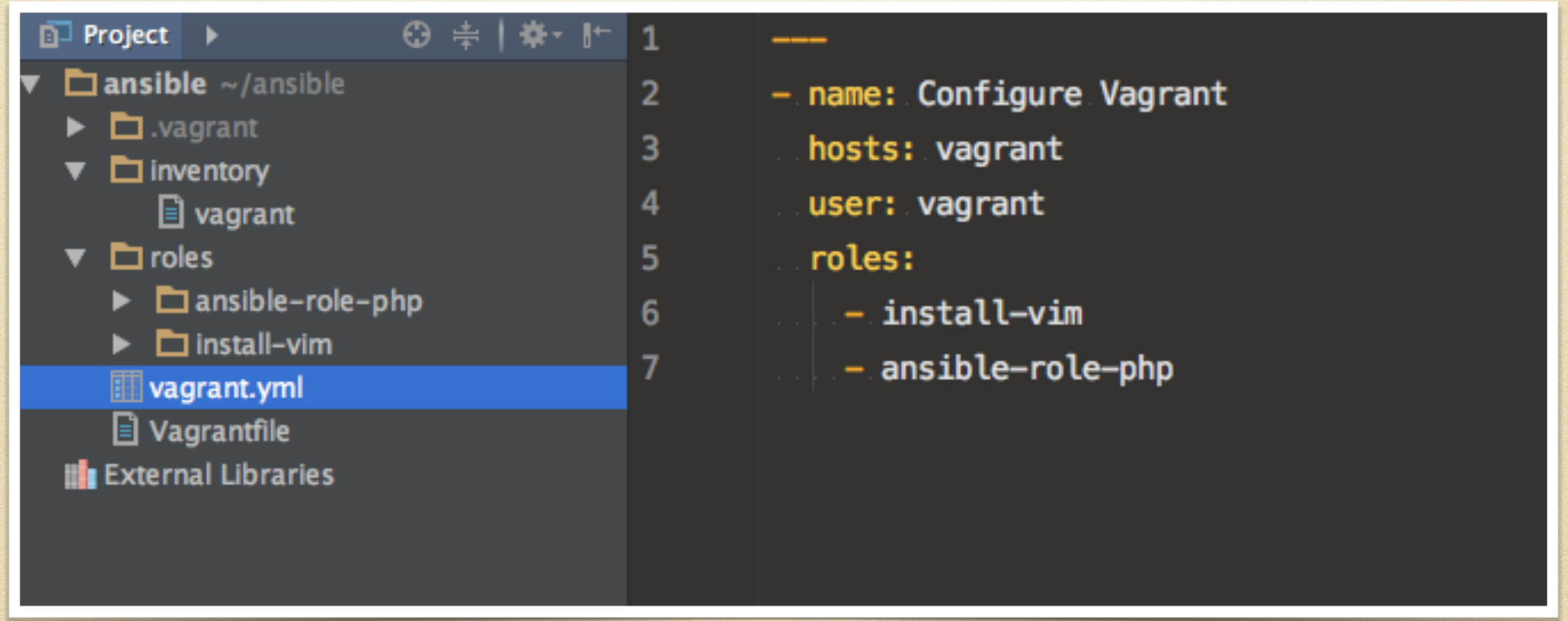
Search roles

Role	Description
adminer	Installs Adminer for Database management.
ansible	Ansible for RedHat/CentOS/Debian/Ubuntu.
apache	Apache 2.x for RedHat/CentOS/Debian/Ubuntu/Solaris/Suse.
apache-php-fpm	Apache 2.4+ PHP-FPM support for Linux.
blackfire	Blackfire installation for Linux
certbot	Certbot (for Let's Encrypt) for RHEL/CentOS and Debian/Ubuntu.
composer	Composer PHP Dependency Manager
daemonize	Daemonize for Unix-like operating systems
dotfiles	Dotfile installation for UNIX/Linux.
drupal	Install Drupal - a world class CMS
drupal-console	Drupal Console

Adding ansible-role-php



Adding ansible-role-php



Running ansible-role-php

```
┌(halo@Joes-MacBook-Pro.local)(~/ansible)-(en0:192.168.1.3/24 vboxnet1:192.168.56.1/24 vbox
└(19:03:54)- ansible-playbook vagrant.yml -i inventory/vagrant

PLAY [Configure Vagrant] *******************************************************

TASK [setup] *******************************************************************
ok: [default]

TASK [install-vim : Installing vim] ********************************************
ok: [default]

TASK [ansible-role-php : Include OS-specific variables.] ***********************
ok: [default]

TASK [ansible-role-php : Define php_packages.] *********************************
ok: [default]

TASK [ansible-role-php : Define php_webserver_daemon.] *************************
ok: [default]

TASK [ansible-role-php : Define php_conf_paths.] *******************************
ok: [default]

TASK [ansible-role-php : Define php_extension_conf_paths.] *********************
ok: [default]

TASK [ansible-role-php : Define php_apc_conf_filename.] ************************
ok: [default]

TASK [ansible-role-php : Define php_opcache_conf_filename (Ubuntu 16.04).] *****
skipping: [default]

TASK [ansible-role-php : Define php_opcache_conf_filename.] ********************
ok: [default]
```

$ vagrant up

```
─(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/AnsibleBasics)(master M:6)──(en0
─(13:28:24)(127)─ vagrant up
```

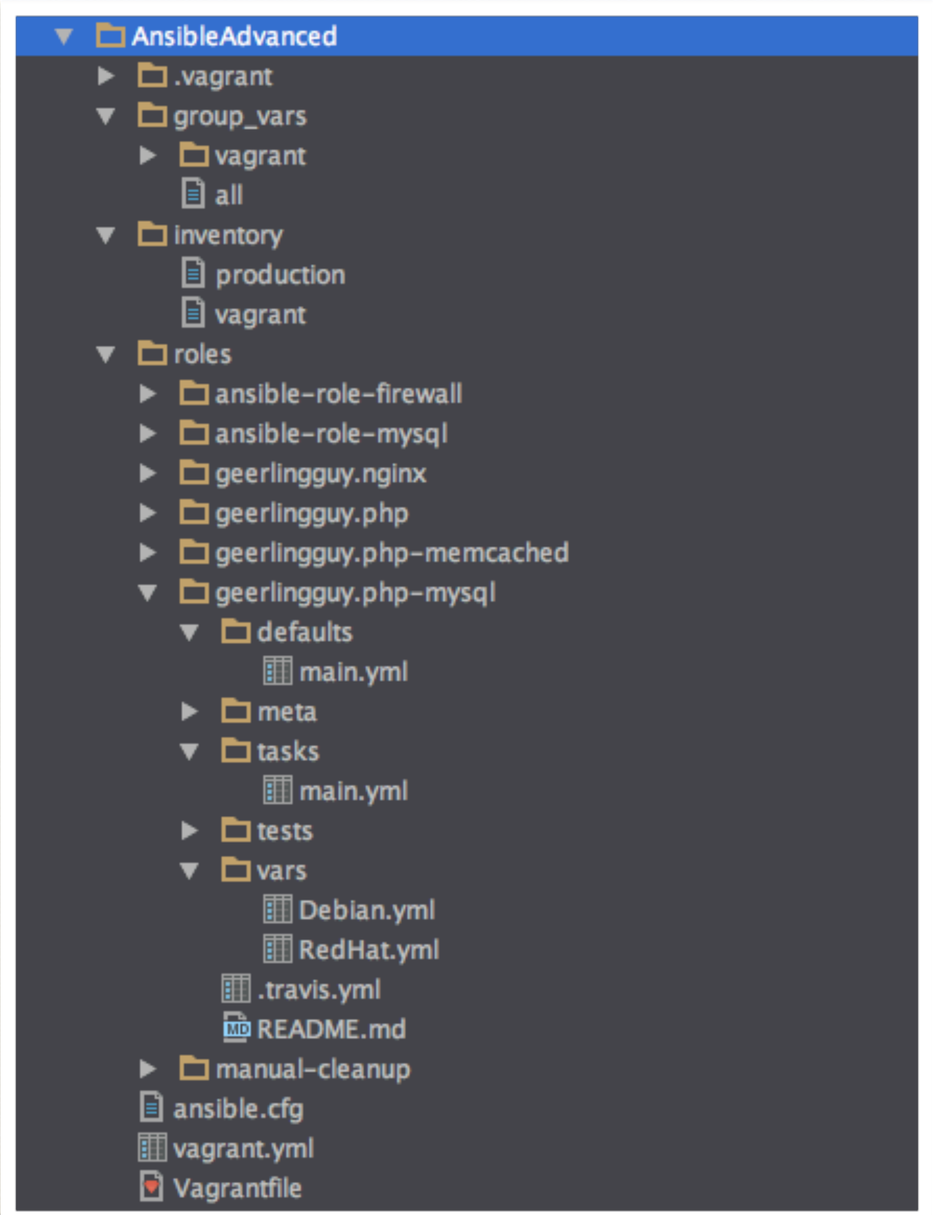
Ansible can deploy your code

Questions?

Go ahead and run vagrant destroy in VagrantTutorial/AnsibleBasics

VagrantTutorial/ AnsibleAdvanced

Ansible Advanced



Vagrant Playbook

```yaml
---
- name: Prep and configure
  hosts: vagrant
  user: "vagrant"
  become: yes
  become_method: sudo

  roles:
    - geerlingguy.php
    - geerlingguy.nginx
    - ansible-role-firewall
    - geerlingguy.php-mysql
    - geerlingguy.php-memcached
    - ansible-role-mysql
    - manual-cleanup
```

$ vagrant up

```
┌─(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/AnsibleAdvanced)(master ??:38
2.168.1.6/24)─┐
└─(13:39:00)─ vagrant up
```

Questions?

Go ahead and run vagrant destroy in VagrantTutorial/AnsibleAdvanced

VagrantTutorial/
Homestead

Laravel Homestead

+

What's in Homestead

- Ubuntu 16.04
- PHP 7.1
- HHVM
- Nginx
- MySQL
- MariaDB
- Sqlite3
- Postgres
- Composer
- NodeJS
- Bower
- Grunt
- Gulp
- Beanstalkd
- Memcached
- Redis

How I use Homestead

```
┌(halo@Joes-MacBook-Pro.local)(~/PhpstormProjects/quickstart-basic-5.3)
└(10:20:08)- composer require --dev laravel/homestead
Using version ^3.0 for laravel/homestead
./composer.json has been updated
Loading composer repositories with package information
Updating dependencies (including require-dev)
  - Installing laravel/homestead (v3.0.2)
    Loading from cache

Writing lock file
Generating autoload files
> Illuminate\Foundation\ComposerScripts::postUpdate
> php artisan optimize
```

composer require —dev laravel/homestead

Make Homestead

```
┌─(halo@Joes-MacBook-Pro.local)(~/PhpstormProjects/quickstart-basic-5.3)
└─(10:46:04)(1)─ ./vendor/bin/homestead make --aliases
Homestead Installed!
```

./vendor/bin/homested make —aliases

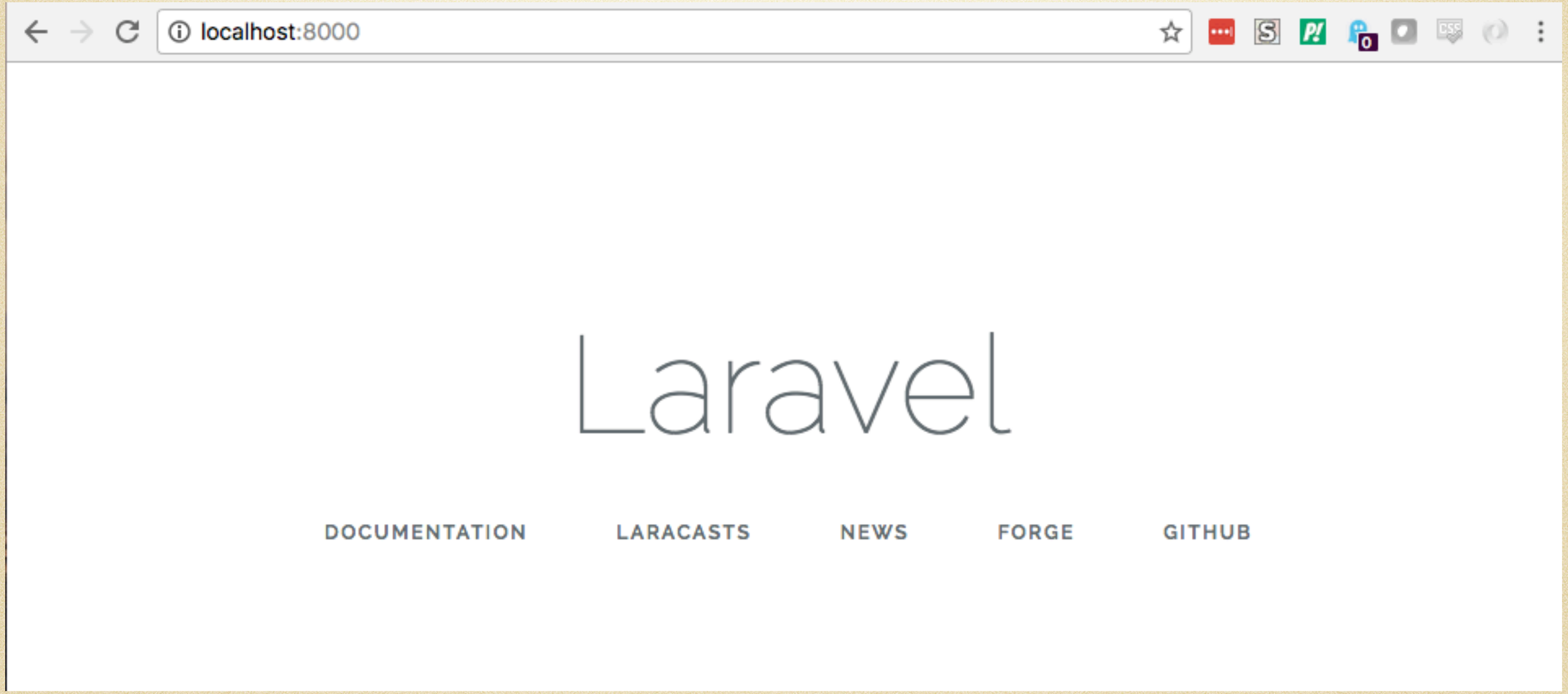
Configuring Homestead

```yaml
---
ip: "192.168.10.10"
memory: 2048
cpus: 1
hostname: quickstart-basic-5-3
name: quickstart-basic-5-3
provider: virtualbox

authorize: ~/.ssh/id_rsa.pub

keys:
    - ~/.ssh/id_rsa

folders:
    - map: "/Users/halo/PhpstormProjects/quickstart-basic-5.3"
      to: "/home/vagrant/quickstart-basic-5-3"

sites:
    - map: homestead.app
      to: "/home/vagrant/quickstart-basic-5-3/public"

databases:
    - homestead
```

$ vagrant up

```
┌─(joferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/Homestead)(master ??:38 A:2 D:6
1.6/24)─┐
└─(13:52:00)─ vagrant up
```

Inspecting Homestead



Stopping Homestead

```
┌─(halo@Joes-MacBook-Pro.local)(~/PhpstormProjects/quickstart-basic-5.3)─
└─(11:16:41)─ vagrant halt
==> default: Attempting graceful shutdown of VM...

┌─(halo@Joes-MacBook-Pro.local)(~/PhpstormProjects/quickstart-basic-5.3)─
└─(11:16:51)─ vagrant destroy
    default: Are you sure you want to destroy the 'default' VM? [y/N] y
==> default: Destroying VM and associated drives...
```

Don’t version control
Homestead.yaml

Old Homestead Versions

	Homestead Version	Box Version
PHP 5.5	2.1.8	Svpernova09/homestead-legacy
PHP 7.0	3.1.0	0.6.0
PHP 7.1	4.0.0	>= 1.0.0

Questions?

Go ahead and run vagrant destroy in VagrantTutorial/Homestead

VagrantTutorial/
Puppet

PuPHPet.com

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- Deploy Target
- System
- Web Servers
- Languages
- Databases
- Mail Tools
- Work Queues
- Search Servers
- Create Archive

Welcome to PuPHPet

A simple GUI to set up virtual machines for Web development.

Easily share with friends and coworkers

Everything is controlled via a simple-to-read YAML file, and comes packaged in a small ZIP archive.

Deploy to any server in the world!

Native support for Rackspace, Digital Ocean, Linode, and more! Free plugin to deploy to any SSH-enabled server.

Open sourced, MIT licensed.

Want to help out?

Important Notices

- Minimum required Vagrant version is **1.8.6**
- **The official recommended Virtualbox version is 5.0.26!**

Latest news

- Ubuntu 16.04, CentOS 7, PHP 7.1 support added, Debia
  Ubuntu 12.04 support dropped
- Multi-Machine Support Added
- Symlink Support in Windows and Virtualbox
- Better SSL Security
- PHP7 support added
- Drag & drop BC breaking changes

Get started right away. It's free!

Deploy Target

PuPHPet About Help! Blog

- Deploy Target
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- Web Servers
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- Search Servers
- Create Archive

Deploy to Local Host

The virtual machine will live inside your local PC. Click here for instructions.

Provider

- (●) VirtualBox
- ( ) VMWare Fusion
- ( ) VMWare Workstation
- ( ) Parallels Desktop

Distro

- ( ) CentOS 6 x64 (PHP **7.1, 7, 5.6, 5.5, HHVM**)
- ( ) CentOS 7 x64 (PHP **7.1, 7, 5.6, 5.5, HHVM**)
- ( ) Ubuntu Trusty 14.04 LTS x64 (PHP **7.1, 7, 5.6, 5.5, HHVM**)
- (●) Ubuntu Xenial 16.04 LTS x64 (PHP **7.1, 7, 5.6, 5.5, HHVM**)
- ( ) Ubuntu Xenial 16.04 LTS i386 (PHP **7.1, 7, 5.6, 5.5, HHVM**)

System Packages

PuPHPet About Help! Blog

Deploy Target
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System Packages

Install system packages.

System Packages

vim htop

Some common packages are (do not mix!):

Ubuntu:

- vim
- htop

CentOS:

- vim-common
- htop

← Local Deployment Target

Users & Groups →

Web Servers

PuPHPet About Help! Blog

- Deploy Target
- System
- Web Servers
  - Nginx
  - Apache
  - Let's Encrypt
- Languages
- Databases
- Mail Tools
- Work Queues
- Search Servers
- Create Archive

Install Nginx

You cannot install Apache with Nginx. Apache will be deselected.

Proxy Buffers

4 256k

Proxy Buffer Size

128k

Virtual Host

Server Name

awesome.dev

Server Aliases

PHP Version

PuPHPet About Help! Blog

- Deploy Target
- System
- Web Servers
- Languages
  - PHP
  - Ruby
  - Python
  - Node.Js
  - HHVM
- Databases
- Mail Tools
- Work Queues
- Search Servers
- Create Archive

Install PHP

If you install PHP, you cannot install HHVM.

PHP Version

- (•) 7.1
- ( ) 7.0
- ( ) 5.6
- ( ) 5.5

System-Wide Composer

- [x] Install Composer

INI Settings

display_errors = On [×] error_reporting = -1 [×]
session.save_path = /var/lib/php/session [×] date.timezone = UTC [×]

PHP-FPM INI Settings

error_log = /var/log/php-fpm.log [×]

Databases

PuPHPet About Help! Blog

- Deploy Target
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- Languages
- Databases
  - MariaDB
  - MySQL
  - PostgreSQL
  - MongoDB
  - Redis
  - SQLite
- Mail Tools
- Work Queues
- Search Servers
- Create Archive

Install MariaDB

If you install MariaDB, you cannot install MySQL.

Version

10.1

Root Password

123

Adminer

☐ Install Adminer

The preferred way to connect to your database is using a dedicated application like Sequel Pro (OS X), HeidiSQL (Windows), and MySQL Workbench (Cross Platform).

Connect using SSH tunnel, username `vagrant` and SSH key generated at `puphpet/files/dot/ssh/id_rsa`. This key is generated **after** your initial `$ vagrant up`!

Work Queues

PuPHPet About Help! Blog

- Deploy Target
- System
- Web Servers
- Languages
- Databases
- Mail Tools
- Work Queues
  - Beanstalkd
  - RabbitMQ
- Search Servers
- Create Archive

Install RabbitMQ

Open source message broker software that implements AMQP.

Listen Port

5672

Plugins

Virtual Hosts

↳ Add another user

← Beanstalkd Elastic Search →

Search Servers

PuPHPet About Help! Blog

- Deploy Target
- System
- Web Servers
- Languages
- Databases
- Mail Tools
- Work Queues
- Search Servers
  - Elastic Search
  - Apache Solr
- Create Archive

Install Elastic Search

A search server based on Lucene.

Version

- (●) 2.3.1
- ( ) 2.2.2
- ( ) 2.1.2
- ( ) 2.0.2

Elastic Search will be installed and the service will start automatically. Java will also be installed if not already present on the vagrant box. The default port is `9200`.

Instance

Name

es-01

Download

PuPHPet About Help! Blog #puphpet on Freenode Issues?

- Deploy Target
- System
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- Mail Tools
- Work Queues
- Search Servers
- Create Archive

Download Your Customized Archive

Your server is ready to be spun up!

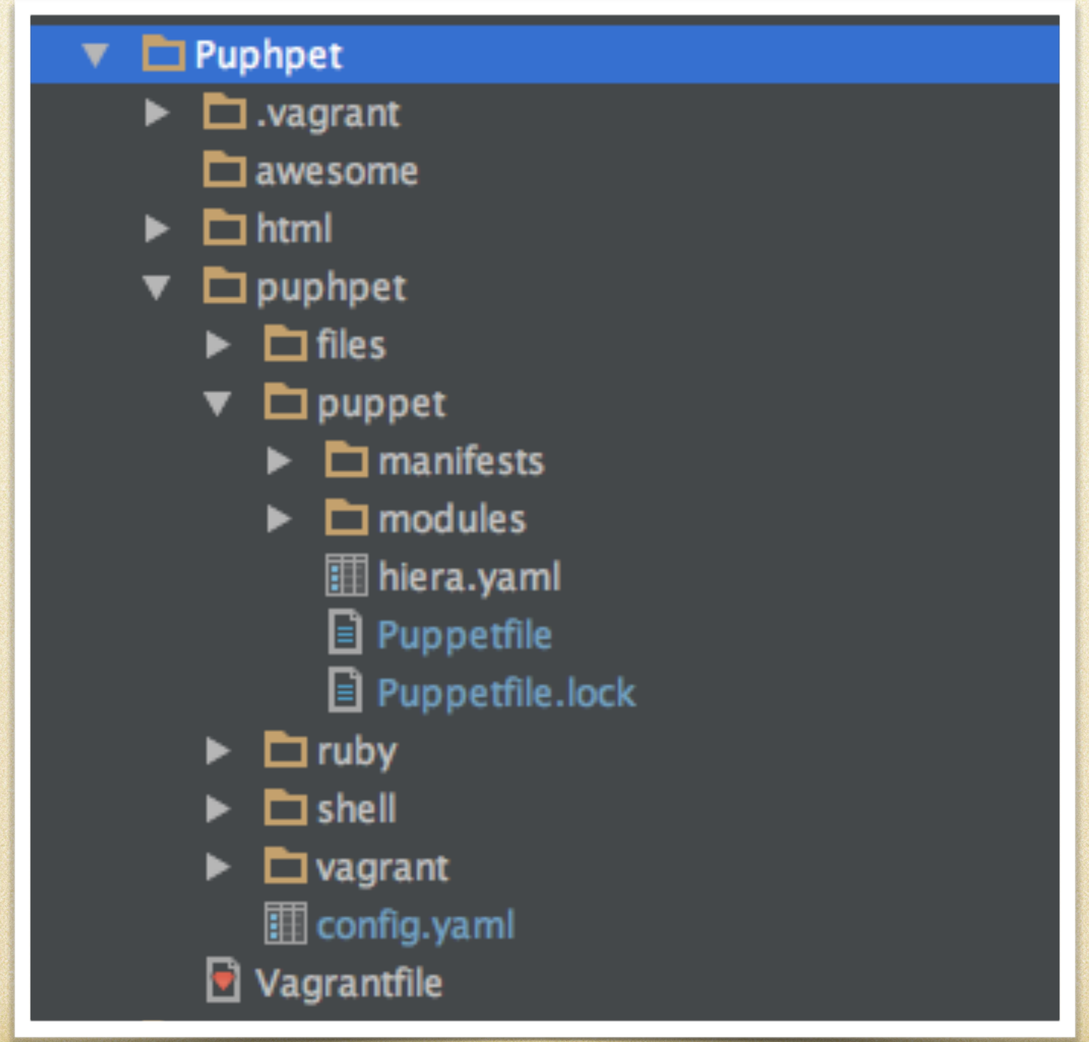
Download your custom server config!

Or see your custom YAML config file here

Great! Now what?

The config file

Puphpet Files



$ vagrant up

```
ferguson16@us164916)(~/PhpstormProjects/VagrantTutorial/Puphpet)(master ??:39
.168.10.1/24 en6:192.168.1.6/24)
:00:31)- vagrant up
```

puppet

Download the Puppet Learning VM

https://puppet.com/download-learning-vm

Puppet Learning VM

learning [Running]

```
To get started with the Quest Guide, go to the following page in a web browser
      (Be sure to use http, as https will take you to the PE console)

                          http://192.168.1.10

    If you cannot access the Quest Guide, your IP address may have changed.
     To get the correct address, log in as root and type: facter ipaddress

         If you have any issues, please refer to the readme.rtf file
                 included in the Zip archive with this VM

        You are also welcome to email us at learningvm@puppetlabs.com


Use SSH to log in with the randomly generated password below.

    IP: 192.168.1.10
    username: root
    password: ihlen.onemo

The password can be found in /var/local/password as well as this screen.
To set a new password, run the command: reset_password.rb

learning login: _
```

Left ⌘

Puppet Learning VM

Introduction · GitBook

192.168.1.10

Type to search

puppet

Introduction
Setup
QUESTS
Welcome
Power of Puppet
Resources
Manifests and Classes
Modules
NTP
MySQL
Variables and Parameters
Conditional Statements
Resource Ordering
Defined Resource Types
Agent Setup
Application Orchestrator
APPENDIX

Quest Guide v1.2.3

Quest Guide for the Puppet Learning VM

About the Learning VM and this Quest Guide

The Learning VM (Virtual Machine) is a self-contained learning environment that includes everything a new user needs to get started learning Puppet. Because learning Puppet requires making changes to a system's configuration, it's not wise to play with it directly on your own laptop or desktop. Not everyone who wants to learn Puppet, however, has easy access to a system where he or she can experiment freely. And even those who do will benefit from an environment with Puppet Enterprise pre-installed and a set of tools to help guide you through the basics of configuration management with Puppet.

This guide is the companion to the Learning VM. The content of the guide is paired with a `quest` command line tool on the VM that will provide live feedback as you progress through the list of tasks associated with each quest in this guide. By breaking each concept into a series of incremental and validated steps, we can ensure that you stay on track as you progress through the guide.

Puppet Learning VM

1. halo@Joes-MacBook-Pro:~ (ssh)

```
root@learning:~ # ntpdate pool.ntp.org
25 Jul 13:42:53 ntpdate[3878]: step time server 216.75.56.132 offset -7198.261442 sec
root@learning:~ #
```

[1] 0:bash* Quest: welcome - Progress: 0 of 3 Tasks.

Puppet Learning VM

1. halo@Joes-MacBook-Pro:~ (ssh)

```
root@learning:~ # ntpdate pool.ntp.org
25 Jul 13:42:53 ntpdate[3878]: step time server 216.75.56.132 offset -7198.261442 sec
root@learning:~ # quest begin welcome
You are now on the welcome quest.
root@learning:~ # puppet -V
4.5.2
root@learning:~ # quest --help
NAME
    quest - Track the status of quests and tasks.

SYNOPSIS
    quest [global options] command [command options] [arguments...]

GLOBAL OPTIONS
    --help - Show this message

COMMANDS
    begin  - Begin a quest
    help   - Shows a list of commands or help for one command
    list   - List available quests
    status - Show status of the current quest
root@learning:~ # quest status
Quest: welcome
√ Task 1: Use puppet -V to check the puppet version
√ Task 2: View the options for the quest tool
X Task 3: Check the quest status
root@learning:~ #

[1] 0:bash*                                          Quest: welcome - Progress: 3 of 3 Tasks.
```

Puppet Learning VM

```
root@learning:~ # puppet module search graphite
[1] 0:bash*                                          Quest: power_of_puppet
```

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puppetforge

Search from 4,315 modules Find

Publish a Module Sign Up Log In

Welcome to the Puppet Forge

A repository of modules written by our community for Open Source Puppet and Puppet Enterprise IT automation software

Writing Great Modules

Modules are reusable, sharable units of Puppet code. You can use modules to extend Puppet across your infrastructure by automating tasks such as setting up a database, web server, or mail server.

Puppet Supported

puppetlabs/azure

puppetlabs/powershell

puppetlabs/sqlserver

puppetlabs/concat

huawei/netdev_stdlib_ce

Puppet Learning VM

Learning VM | Classificatio

https://192.168.1.10/#/node_groups/groups/7d6b4c96-50b8-4965-8dc3-c266c921e382/classes

puppet

Configuration

Nodes

License

Access control

Help

My account

(Log out)

v2016.2.0

Node Management

View your Puppet-managed nodes, create node groups, and apply classification data.

Inventory

Classification

Unsigned Certificates

Learning VM

Parent All Nodes

Environment production

Edit node group metadata

Remove node group

Rules | Matching nodes | Classes | Variables | Activity

Add or modify classes that apply to this group and its child groups.

Class definitions updated 4 minutes ago

Refresh

Add new class Class name Add class

Class: graphite

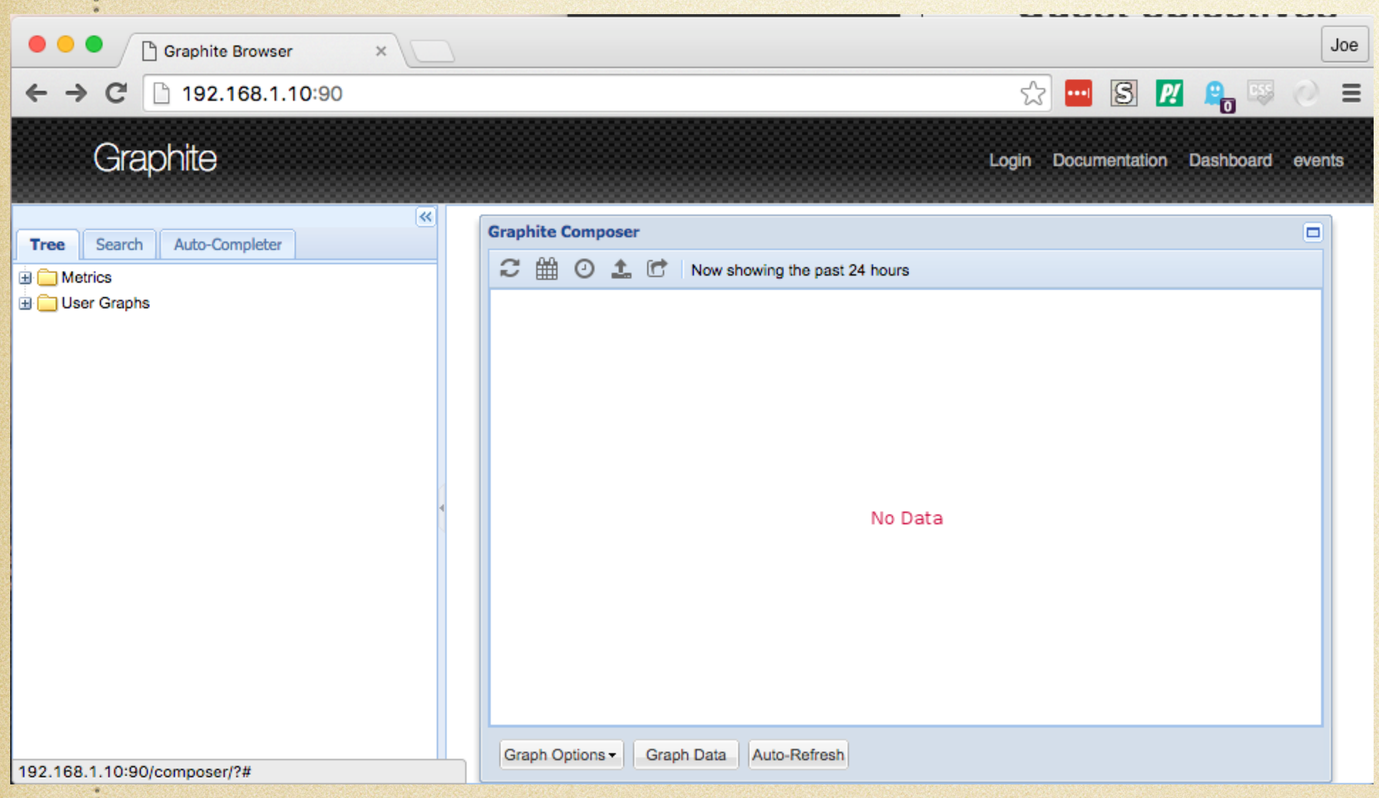
Parameter		Value	
Parameter name	=		Add parameter
gr_django_ver	=	"1.5"	Edit Remove
gr_django_provider	=	"pip" Converted to string	Edit Remove
gr_django_pkg	=	"django" Converted to string	Edit Remove
gr_web_server	=	"none" Converted to string	Edit Remove

Remove this class

Running puppet agent —test

```
Notice: /Stage[main]/Graphite::Install/Package[graphite-web]/ensure: created
Notice: /Stage[main]/Graphite::Install/Package[whisper]/ensure: created
Notice: /Stage[main]/Graphite::Install/File[carbon_hack]/ensure: created
Notice: /Stage[main]/Graphite::Install/File[gweb_hack]/ensure: created
Info: Class[Graphite::Install]: Scheduling refresh of Class[Graphite::Config]
Info: Class[Graphite::Install]: Scheduling refresh of Exec[Initial django db creation]
Info: Class[Graphite::Config]: Scheduling refresh of Exec[Initial django db creation]
Info: Class[Graphite::Config]: Scheduling refresh of Service[carbon-cache]
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/webapp/graphite/local_settings.py]/ensure: defined content
as '{md5}c730fd32df46c9baa07c38a6de821626'
Notice: /Stage[main]/Graphite::Config/Exec[Initial django db creation]: Triggered 'refresh' from 2 events
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage]/owner: owner changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage]/group: group changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/lists]/owner: owner changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/lists]/group: group changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/log]/owner: owner changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/log]/group: group changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/log/webapp]/owner: owner changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/log/webapp]/group: group changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/rrd]/owner: owner changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/rrd]/group: group changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/run]/ensure: created
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/whisper]/owner: owner changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/whisper]/group: group changed 'root' to 'apache'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/log/carbon-cache]/ensure: created
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/graphite.db]/owner: owner changed 'root' to 'apache
'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/storage/graphite.db]/group: group changed 'root' to 'apache
'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/conf/graphite.wsgi]/ensure: defined content as '{md5}4714e0
1760eaec667ccab3bb747397af'
Notice: /Stage[main]/Graphite::Config/File[/opt/graphite/conf/storage-schemas.conf]/ensure: defined content as '{md5
}c9e2cc2b133ffe704015d91d4876817e'
Info: /Stage[main]/Graphite::Config/File[/opt/graphite/conf/storage-schemas.conf]: Scheduling refresh of Service[car
bon-cache]
```

Checking our Graphite App



Graphite installed

Graphite Displaying Sample Data

CHEF™

https://learn.chef.io/tutorials/

LEARN CHEF | TUTORIALS | SKILLS LIBRARY | DOCS | TRAINING | COMMUNITY

Get started with Chef

New to Chef?

Explore Chef learning resources that fit your interests and learning style.

How to learn Chef »

Set up a machine to manage

10 minutes

The normal Chef workflow involves managing servers remotely from your workstation. But in this tutorial, you'll log in to a server and manage it directly to get a feel for how Chef works.

Learn more about the Chef workflow »

The easiest way to get started is to use a free trial Ubuntu 14.04 virtual machine that we provide. The virtual machine runs in your browser and has the set of Chef tools, called the Chef DK, and several popular text editors pre-installed. You can also set up your own server to use with this tutorial.

1. Launch a free trial Ubuntu 14.04 virtual machine

Let us provide an Ubuntu virtual machine with the Chef DK installed for you. Just click the button below.

Launch an Ubuntu virtual machine

Set up a machine to manage

Configure a resource

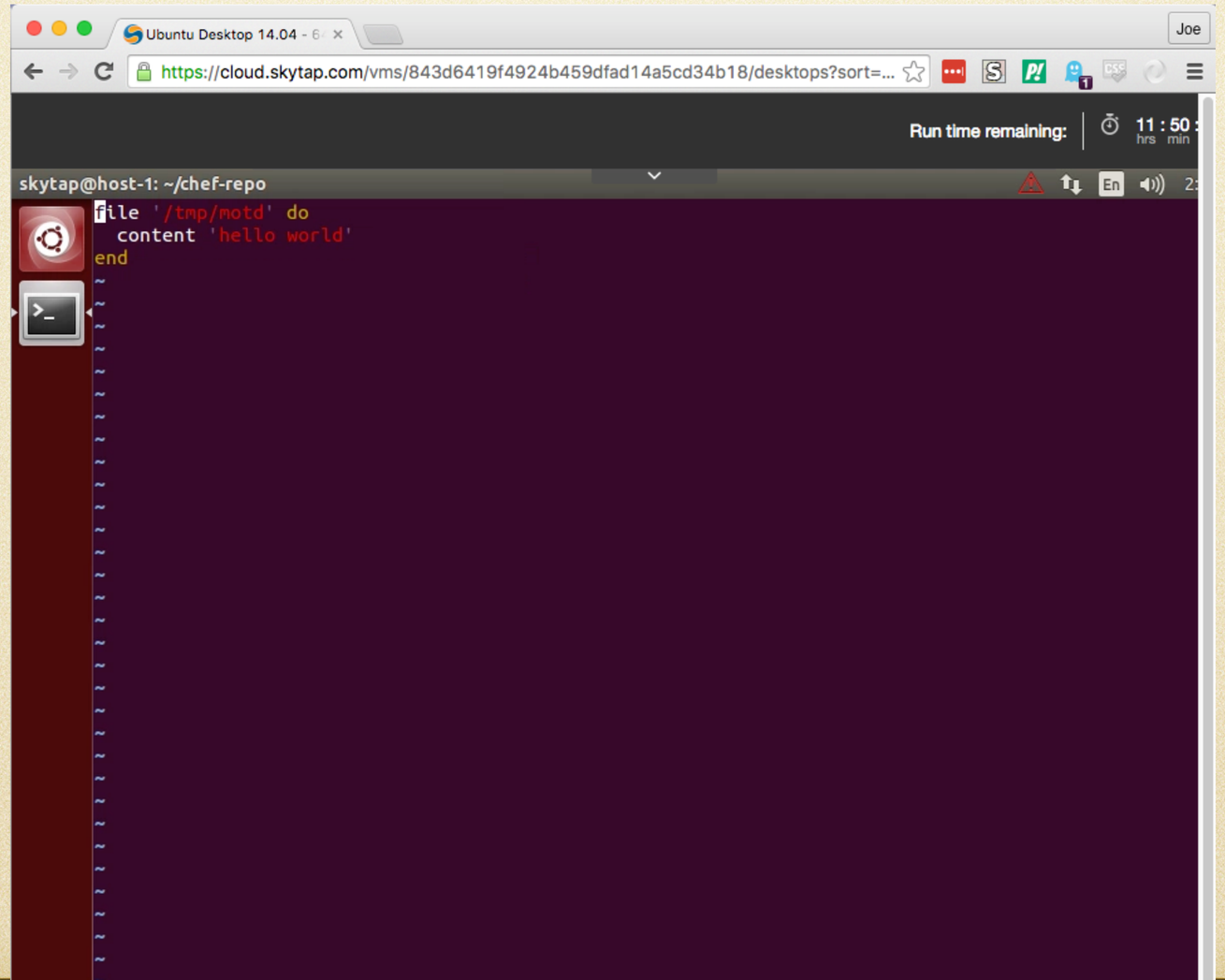
Configure a package and service

Make your recipe more manageable

Appendix: Set up your own server to manage

Want help?

Creating a motd via Chef

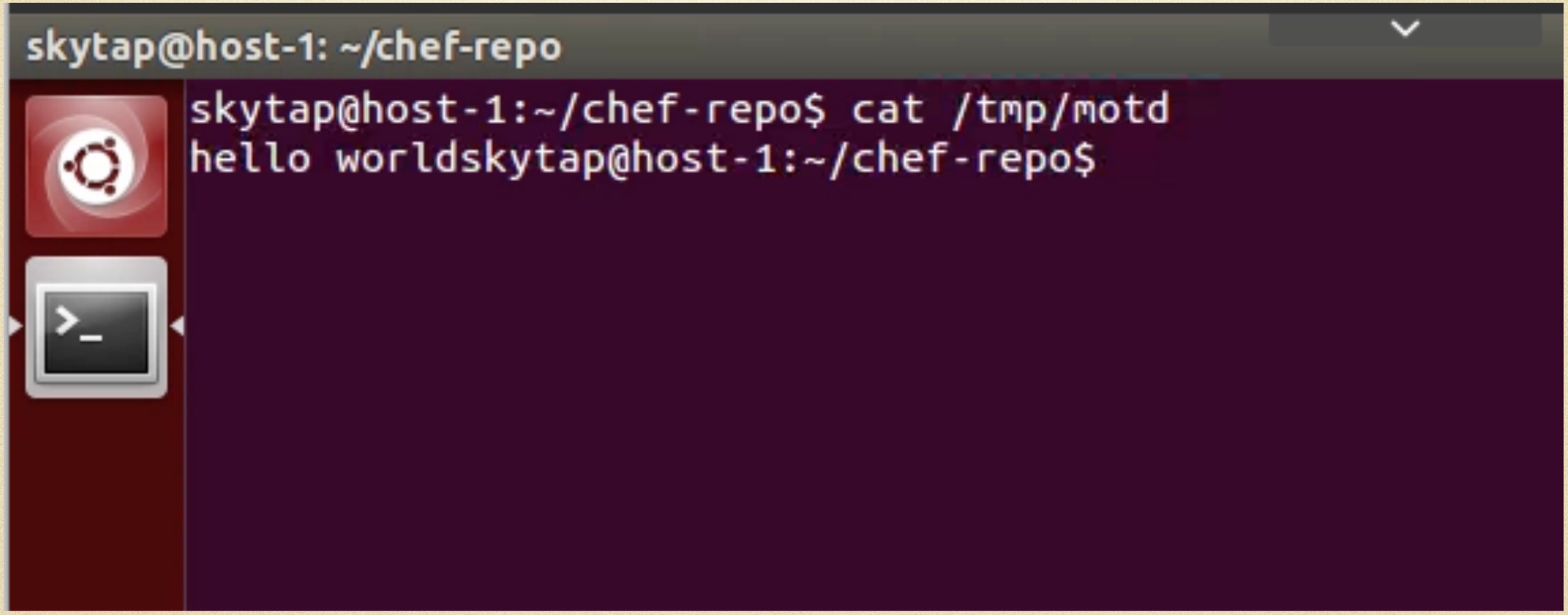


Running our hello.rb

```
skytap@host-1: ~/chef-repo
skytap@host-1:~/chef-repo$ vi hello.rb
skytap@host-1:~/chef-repo$ chef-client --local-mode hello.rb
[2016-07-25T14:50:50-07:00] WARN: No config file found or specified on command line, using comman
tions.
[2016-07-25T14:50:50-07:00] WARN: No cookbooks directory found at or above current directory.  As
ome/skytap/chef-repo.
Starting Chef Client, version 12.7.2
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Compiling Cookbooks...
[2016-07-25T14:50:54-07:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 1 resources
Recipe: @recipe_files::/home/skytap/chef-repo/hello.rb
  * file[/tmp/motd] action create
    - create new file /tmp/motd
    - update content in file /tmp/motd from none to b94d27
    --- /tmp/motd       2016-07-25 14:50:54.493112593 -0700
    +++ /tmp/.motd20160725-6734-1why9j9 2016-07-25 14:50:54.493112593 -0700
    @@ -1 +1,2 @@
    +hello world

Running handlers:
Running handlers complete
Chef Client finished, 1/1 resources updated in 02 seconds
skytap@host-1:~/chef-repo$
```

Check the contents of our file



Running our hello.rb again

skytap@host-1: ~/chef-repo

```
skytap@host-1:~/chef-repo$ chef-client --local-mode hello.rb
[2016-07-25T14:53:30-07:00] WARN: No config file found or specified on command line, using commanc
tions.
[2016-07-25T14:53:30-07:00] WARN: No cookbooks directory found at or above current directory.  Ass
ome/skytap/chef-repo.
Starting Chef Client, version 12.7.2
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Compiling Cookbooks...
[2016-07-25T14:53:31-07:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 1 resources
Recipe: @recipe_files::/home/skytap/chef-repo/hello.rb
  * file[/tmp/motd] action create (up to date)

Running handlers:
Running handlers complete
Chef Client finished, 0/1 resources updated in 01 seconds
skytap@host-1:~/chef-repo$
```

Chef Concepts

- Resources describe the what, not the how
  - Recipe is a file that holds one or more resources
  - hello.rb was our resource
- Resources have actions
  - :create is the default action. We didn’t have to specify.
- Recipes organize resources

Configure a package and service

Creating webserver.rb

skytap@host-1: ~/chef-repo

```
apt_update 'Update the apt cache daily' do
    frequency 86_400
    action :periodic
end
~
~
~
~
~
~
~
~
```

Creating webserver.rb

skytap@host-1: ~/chef-repo

```
apt_update 'Update the apt cache daily' do
    frequency 86_400
    action :periodic
end

package 'apache2'
~
~
~
~
~
~
```

Running webserver.rb

```
skytap@host-1: ~/chef-repo
skytap@host-1:~/chef-repo$ vi webserver.rb
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode webserver.rb
[2016-07-25T15:08:41-07:00] WARN: No config file found or specified on command line, using commanc
tions.
[2016-07-25T15:08:41-07:00] WARN: No cookbooks directory found at or above current directory.  Ass
ome/skytap/chef-repo.
Starting Chef Client, version 12.7.2
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Compiling Cookbooks...
[2016-07-25T15:08:45-07:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 2 resources
Recipe: @recipe_files::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic
    * directory[/var/lib/apt/periodic] action create (up to date)
    * directory[/etc/apt/apt.conf.d] action create (up to date)
    * file[/etc/apt/apt.conf.d/15update-stamp] action create_if_missing (up to date)
    - update new lists of packages
  * apt_package[apache2] action install
    - install version 2.4.7-1ubuntu4 of package apache2

Running handlers:
Running handlers complete
Chef Client finished, 2/5 resources updated in 56 seconds
skytap@host-1:~/chef-repo$
```

Running webserver.rb again

```
skytap@host-1: ~/chef-repo
[2016-07-25T15:08:41-07:00] WARN: No config file found or specified on command line, using comma
tions.
[2016-07-25T15:08:41-07:00] WARN: No cookbooks directory found at or above current directory.  A
ome/skytap/chef-repo.
Starting Chef Client, version 12.7.2
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Compiling Cookbooks...
[2016-07-25T15:08:45-07:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 2 resources
Recipe: @recipe_files::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic
    * directory[/var/lib/apt/periodic] action create (up to date)
    * directory[/etc/apt/apt.conf.d] action create (up to date)
    * file[/etc/apt/apt.conf.d/15update-stamp] action create_if_missing (up to date)
    - update new lists of packages
  * apt_package[apache2] action install
    - install version 2.4.7-1ubuntu4 of package apache2

Running handlers:
Running handlers complete
Chef Client finished, 2/5 resources updated in 56 seconds
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode webserver.rb
[2016-07-25T15:11:19-07:00] WARN: No config file found or specified on command line, using comma
tions.
[2016-07-25T15:11:19-07:00] WARN: No cookbooks directory found at or above current directory.  A
ome/skytap/chef-repo.
Starting Chef Client, version 12.7.2
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Compiling Cookbooks...
[2016-07-25T15:11:21-07:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 2 resources
Recipe: @recipe_files::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic (up to date)
  * apt_package[apache2] action install (up to date)

Running handlers:
Running handlers complete
Chef Client finished, 0/2 resources updated in 02 seconds
skytap@host-1:~/chef-repo$
```

Configure Service for apache2

skytap@host-1: ~/chef-repo

```
apt_update 'Update the apt cache daily' do
    frequency 86_400
    action :periodic
end

package 'apache2'

service 'apache2' do
    supports :status => true
    action [:enable, :start]
end
~
~
~
~
~
```

Running webserver.rb

```
skytap@host-1: ~/chef-repo
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode webserver.rb
[2016-07-25T15:18:22-07:00] WARN: No config file found or specified on command line, using commanc
tions.
[2016-07-25T15:18:22-07:00] WARN: No cookbooks directory found at or above current directory.  Ass
ome/skytap/chef-repo.
Starting Chef Client, version 12.7.2
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Compiling Cookbooks...
[2016-07-25T15:18:25-07:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 3 resources
Recipe: @recipe_files::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic (up to date)
  * apt_package[apache2] action install (up to date)
  * service[apache2] action enable (up to date)
  * service[apache2] action start (up to date)

Running handlers:
Running handlers complete
Chef Client finished, 0/4 resources updated in 02 seconds
skytap@host-1:~/chef-repo$
```

Add default html to apache

skytap@host-1: ~/chef-repo

```
apt_update 'Update the apt cache daily' do
    frequency 86_400
    action :periodic
end

package 'apache2'

service 'apache2' do
    supports :status => true
    action [:enable, :start]
end

file '/var/www/html/index.html' do
  content '<html>
  <body>
    <h1>hello world</h1>
  </body>
</html>'
end
~
```

Running webserver.rb

```
skytap@host-1: ~/chef-repo
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode webserver.rb
[2016-07-25T15:22:24-07:00] WARN: No config file found or specified on command line, using commanc
tions.
[2016-07-25T15:22:24-07:00] WARN: No cookbooks directory found at or above current directory.  As
ome/skytap/chef-repo.
Starting Chef Client, version 12.7.2
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Compiling Cookbooks...
[2016-07-25T15:22:27-07:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 4 resources
Recipe: @recipe_files::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic (up to date)
  * apt_package[apache2] action install (up to date)
  * service[apache2] action enable (up to date)
  * service[apache2] action start (up to date)
  * file[/var/www/html/index.html] action create
    - update content in file /var/www/html/index.html from 538f31 to 2914aa
    --- /var/www/html/index.html        2016-07-25 15:09:29.273794131 -0700
    +++ /var/www/html/.index.html20160725-9160-a8htv3   2016-07-25 15:22:27.470685713 -0700
    @@ -1,379 +1,6 @@
    -
    -<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/D
1-transitional.dtd">
    -<html xmlns="http://www.w3.org/1999/xhtml">
    -  <!--
    -    Modified from the Debian original for Ubuntu
```

Verify file contents updated

```
Running handlers:
Running handlers complete
Chef Client finished, 1/5 resources updated in 03 seconds
skytap@host-1:~/chef-repo$ curl localhost
<html>
  <body>
    <h1>hello world</h1>
  </body>
</html>skytap@host-1:~/chef-repo$
```

Chef works in the order you specify

Questions?

Go ahead and run vagrant destroy in VagrantTutorial/Homestead

Feedback!

https://joind.in/talk/e4161

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