

Homework 7

13 March 2024

Part 1

Write a <1 page paper comparing Vagrant vs. Docker from what you have learned in this course or prior experience (no need to go do research). Which do you prefer? Why? Justify your answer.

This course allowed me to have an in-depth, hands-on experience with both technologies. Through the lecture this week, I learned that Vagrant touts itself as a *virtualization automation* tool. Docker, on the other hand, touts itself as an *OS-level virtualization* tool.

Having to choose between the two, I personally prefer Docker in its current state of maturity over Vagrant. Despite that, I do see Vagrant to propel beyond Docker's capabilities in the far future. The assignment made me realize implicitly that Vagrant takes Virtual Machine (VM) provisioning towards the realm of *containerization* (a.k.a., allowing a VM's configuration to be defined as *Code* and be highly and effectively **portable** and **collaborated on**). This reason alone is enough to justify why Vagrant, in its marketed capabilities, are more advanced than Docker for modernizing virtualization techniques, as it supports **BOTH** virtual machines and containers.

I, though, have yet to dive deeper about the scope of access that a Vagrant box has to the host OS (i.e., whether a box is treated to have VM privileges with

the host OS, even if it has Docker as its provider). As a matter of fact, Docker provides a layer of isolation on influencing control over a host OS during its virtualization. This exact value proposition is what I truly love about Docker for when compared to other virtualization techniques: allowing a functioning *host* to run with the least possible footprint and access to its host. This, in my opinion, is the most effective way to run distributed and portable software systems *safely*.

In an event that an enterprise or a project do still see the need to have a hybrid approach to their mini-services architecture for distributed systems, Vagrant will be my recommendation over Docker. With Docker as its provider, it goes to show the potential of Vagrant within the software engineering field as it provides support in both virtual machine and container virtualization capabilities in one platform. Till that point where the Vagrant community will be as mature as the Docker community is to date, my opinion will change definitely to prefer Vagrant over Docker. It has been so cumbersome for me to install vagrant within my Apple Silicon M1 MacBook Pro. With Docker, I have no issues at all in hosting AMD64 images. Being said that, knowing how Hashicorp can create revolutionary products (i.e., Terraform, Vault), I will not be surprised if they expand Vagrant to have its own OS-level virtualization capability as well.

Part 2

Install a CMS via Vagrant. WordPress is permitted, Mediawiki is encouraged.

```
Last login: Sun Mar 10 19:17:16 on ttys000
paulvinceabedPauls-MacBook-Pro-3 ~ % brew tap hashicorp/tap
brew install hashicorp/tap/hashicorp-vagrant
Initialized empty Git repository in /usr/local/Homebrew/.git/
%
```

```
* [new tag] 4.0.5          -> 4.0.5
* [new tag] 4.0.6          -> 4.0.6
* [new tag] 4.0.7          -> 4.0.7
* [new tag] 4.0.8          -> 4.0.8
* [new tag] 4.0.9          -> 4.0.9
* [new tag] 4.1.0          -> 4.1.0
* [new tag] 4.1.1          -> 4.1.1
* [new tag] 4.1.10         -> 4.1.10
* [new tag] 4.1.11         -> 4.1.11
* [new tag] 4.1.12         -> 4.1.12
* [new tag] 4.1.13         -> 4.1.13
* [new tag] 4.1.14         -> 4.1.14
* [new tag] 4.1.15         -> 4.1.15
* [new tag] 4.1.16         -> 4.1.16
* [new tag] 4.1.17         -> 4.1.17
* [new tag] 4.1.18         -> 4.1.18
* [new tag] 4.1.19         -> 4.1.19
* [new tag] 4.1.2          -> 4.1.2
* [new tag] 4.1.20         -> 4.1.20
* [new tag] 4.1.21         -> 4.1.21
* [new tag] 4.1.22         -> 4.1.22
* [new tag] 4.1.23         -> 4.1.23
* [new tag] 4.1.24         -> 4.1.24
* [new tag] 4.1.25         -> 4.1.25
* [new tag] 4.1.3          -> 4.1.3
* [new tag] 4.1.4          -> 4.1.4
* [new tag] 4.1.5          -> 4.1.5
* [new tag] 4.1.6          -> 4.1.6
* [new tag] 4.1.7          -> 4.1.7
* [new tag] 4.1.8          -> 4.1.8
* [new tag] 4.1.9          -> 4.1.9
* [new tag] 4.2.0          -> 4.2.0
* [new tag] 4.2.1          -> 4.2.1
* [new tag] 4.2.10         -> 4.2.10
* [new tag] 4.2.11         -> 4.2.11
* [new tag] 4.2.2          -> 4.2.2
* [new tag] 4.2.3          -> 4.2.3
* [new tag] 4.2.4          -> 4.2.4
* [new tag] 4.2.5          -> 4.2.5
* [new tag] 4.2.6          -> 4.2.6
* [new tag] 4.2.7          -> 4.2.7
* [new tag] 4.2.8          -> 4.2.8
* [new tag] 4.2.9          -> 4.2.9
HEAD is now at cd1f04094 Merge pull request #16859 from toobuntu/actionlint
=> Tapping hashicorp/tap...
Cloning into '/usr/local/Homebrew/Library/Taps/hashicorp/homebrew-tap'...
remote: Enumerating objects: 4184, done.
remote: Counting objects: 100% (516/516), done.
remote: Compressing objects: 100% (147/147), done.
remote: Writing objects: 100% (4184/4184), reused 414 (delta 369), pack-reused 3668
Receiving objects: 100% (4184/4184), 762.48 KiB | 1.31 MiB/s, done.
Resolving deltas: 100% (2753/2753), done.
Tapped 2 casks and 28 formulae (87 files, 1MB).
-- Downloading https://releases.hashicorp.com/vagrant/2.4.1/vagrant_2.4.1_darwin_amd64.dmg
#####
##### 100.0%
%
```

```
* [new tag] 4.1.15          -> 4.1.15
* [new tag] 4.1.16          -> 4.1.16
* [new tag] 4.1.17          -> 4.1.17
* [new tag] 4.1.18          -> 4.1.18
* [new tag] 4.1.19          -> 4.1.19
* [new tag] 4.1.2          -> 4.1.2
* [new tag] 4.1.20          -> 4.1.20
* [new tag] 4.1.21          -> 4.1.21
* [new tag] 4.1.22          -> 4.1.22
* [new tag] 4.1.23          -> 4.1.23
* [new tag] 4.1.24          -> 4.1.24
* [new tag] 4.1.25          -> 4.1.25
* [new tag] 4.1.3          -> 4.1.3
* [new tag] 4.1.4          -> 4.1.4
* [new tag] 4.1.5          -> 4.1.5
* [new tag] 4.1.6          -> 4.1.6
* [new tag] 4.1.7          -> 4.1.7
* [new tag] 4.1.8          -> 4.1.8
* [new tag] 4.1.9          -> 4.1.9
* [new tag] 4.2.0          -> 4.2.0
* [new tag] 4.2.1          -> 4.2.1
* [new tag] 4.2.10         -> 4.2.10
* [new tag] 4.2.11         -> 4.2.11
* [new tag] 4.2.2          -> 4.2.2
* [new tag] 4.2.3          -> 4.2.3
* [new tag] 4.2.4          -> 4.2.4
* [new tag] 4.2.5          -> 4.2.5
* [new tag] 4.2.6          -> 4.2.6
* [new tag] 4.2.7          -> 4.2.7
* [new tag] 4.2.8          -> 4.2.8
* [new tag] 4.2.9          -> 4.2.9
HEAD is now at cd1f04094 Merge pull request #16859 from toobuntu/actionlint
=> Tapping hashicorp/tap
Cloning into '/usr/local/Homebrew/Library/Taps/hashicorp/homebrew-tap'...
remote: Enumerating objects: 4184, done.
remote: Counting objects: 100% (516/516), done.
remote: Compressing objects: 100% (147/147), done.
remote: Total 4184 (delta 434), reused 414 (delta 369), pack-reused 3668
Receiving objects: 100% (4184/4184), 762.48 KiB | 1.31 MiB/s, done.
Resolving deltas: 100% (2753/2753), done.
Tapped 2 casks and 28 formulae (87 files, 1MB).
=> Downloading https://releases.hashicorp.com/vagrant/2.4.1/vagrant_2.4.1_darwin_amd64.dmg
#####
==== Installing Case hashicorp-vagrant
==== Running installer for hashicorp-vagrant with sudo; the password may be necessary.
>Password:
installer: Package name is Vagrant
installer: Installing at base path /
installer: The install was successful.
D hashicorp-vagrant was successfully installed!
paulvinceabe@Pauls-MacBook-Pro-3 ~ % vagrant version
Installed Version: 2.4.1
Latest Version: 2.4.1

You're running an up-to-date version of Vagrant!
paulvinceabe@Pauls-MacBook-Pro-3 ~ %
```

```
* [new tag] 4.1.5 > 4.1.5
* [new tag] 4.1.6 > 4.1.6
* [new tag] 4.1.7 > 4.1.7
* [new tag] 4.1.8 > 4.1.8
* [new tag] 4.1.9 > 4.1.9
* [new tag] 4.2.0 > 4.2.0
* [new tag] 4.2.1 > 4.2.1
* [new tag] 4.2.10 > 4.2.10
* [new tag] 4.2.11 > 4.2.11
* [new tag] 4.2.2 > 4.2.2
* [new tag] 4.2.3 > 4.2.3
* [new tag] 4.2.4 > 4.2.4
* [new tag] 4.2.5 > 4.2.5
* [new tag] 4.2.6 > 4.2.6
* [new tag] 4.2.7 > 4.2.7
* [new tag] 4.2.8 > 4.2.8
* [new tag] 4.2.9 -> 4.2.9
HEAD is now at cd1f04094 Merge pull request #16859 from toobuntu/actionlint
=> Tapping hashicorp/tap
Cloning into '/usr/local/Homebrew/Library/Taps/hashicorp/homebrew-tap'...
remote: Enumerating objects: 4184, done.
remote: Counting objects: 100% (516/516), done.
remote: Compressing objects: 100% (147/147), done.
remote: Total 4184 (delta 434), reused 414 (delta 369), pack-reused 3668
Receiving objects: 100% (4184/4184), 762.48 KiB | 1.31 MiB/s, done.
Resolving deltas: 100% (2753/2753), done.
Tapped 2 casks and 28 formulae (87 files, 1MB).
=> Downloading https://releases.hashicorp.com/vagrant/2.4.1/vagrant_2.4.1_darwin_amd64.dmg
#####
=> Installing Cask hashicorp-vagrant
=> Running installer for hashicorp-vagrant with sudo; the password may be necessary.
>Password:
installer: Package name is Vagrant
installer: Installing at base path /
installer: The install was successful.
💡 hashicorp-vagrant was successfully installed!
paulvinceabe@pauls-MacBook-Pro-3 ~ % vagrant version
Installed Version: 2.4.1
Latest Version: 2.4.1

You're running an up-to-date version of Vagrant!
paulvinceabe@pauls-MacBook-Pro-3 ~ % mkdir -p wordpress-vagrant-server
paulvinceabe@pauls-MacBook-Pro-3 ~ % cd wordpress-vagrant-server
paulvinceabe@pauls-MacBook-Pro-3 wordpress-vagrant-server % cd ..
paulvinceabe@pauls-MacBook-Pro-3 ~ % cd vvv*
paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % ls -al
total 0
drwxr-xr-x 2 paulvinceabe staff 64 Mar 10 19:22 .
drwxr-xr-x 65 paulvinceabe staff 2080 Mar 10 19:25 ..
paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % vagrant plugin install vagrant-hostsupdater
Installing the 'vagrant-hostsupdater' plugin. This can take a few minutes...
Fetching vagrant-hostsupdater-1.2.4.gem
Installed the plugin 'vagrant-hostsupdater (1.2.4)'!
paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % git clone -b master git://github.com/Varying-Vagrant-Vagrants/WWW.git ./vagrant-local
Cloning into './vagrant-local'...
```



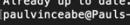
```
Cloning into '/usr/local/Homebrew/Library/Taps/hashicorp/homebrew-tap'...
remote: Enumerating objects: 484, done.
remote: Counting objects: 100% (516/516), done.
remote: Compressing objects: 100% (147/147), done.
remote: Total 4184 (delta 434), reused 414 (delta 369), pack-reused 3668
Receiving objects: 100% (4184/4184), 762.48 KiB | 1.31 MiB/s, done.
Resolving deltas: 100% (2753/2753), done.
Tapped 2 casks and 28 formulae (87 files, 1MB).
=> Downloading https://releases.hashicorp.com/vagrant/2.4.1/vagrant_2.4.1_darwin_amd64.dmg
#####
====> Installing Cask hashicorp-vagrant
====> Running installer for hashicorp-vagrant with sudo; the password may be necessary.
Password:
installer: Package name is Vagrant
installer: Installing at base path /
installer: The install was successful.
D hashicorp-vagrant was successfully installed!
paulvinceabe@pauls-MacBook-Pro-3 ~ % vagrant version
Installed Version: 2.4.1
Latest Version: 2.4.1

You're running an up-to-date version of Vagrant!
[paulvinceabe@pauls-MacBook-Pro-3 ~ % mkdir -p wordpress-vagrant-server
[paulvinceabe@pauls-MacBook-Pro-3 ~ % cd wo*
[paulvinceabe@pauls-MacBook-Pro-3 wordpress-vagrant-server % cd ..
[paulvinceabe@pauls-MacBook-Pro-3 ~ % cd vvv*
[paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % ls -al
total 0
drwxr-xr-x  2 paulvinceabe  staff   64 Mar 10 19:22 .
drwxr-xr-x+ 65 paulvinceabe  staff 2080 Mar 10 19:25 ..
[paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % vagrant plugin install vagrant-hostsupdater
Installing the 'vagrant-hostsupdater' plugin. This can take a few minutes...
Fetching vagrant-hostsupdater-1.2.4.gem
Installed the plugin 'vagrant-hostsupdater (1.2.4)'!
[paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % git clone -b master git://github.com/Varying-Vagrant-Vagrants/VV.git ./vagrant-local
Cloning into './vagrant-local'...
^C
[paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % git clone -b master https://github.com/Varying-Vagrant-Vagrants/VV.git ./vagrant-local
Cloning into './vagrant-local'...
remote: Enumerating objects: 17614, done.
remote: Counting objects: 100% (1080/1080), done.
remote: Compressing objects: 100% (544/544), done.
remote: Total 17614 (delta 680), reused 838 (delta 518), pack-reused 16534
Receiving objects: 100% (17614/17614), 9.21 MiB | 2.94 MiB/s, done.
Resolving deltas: 100% (9538/9538), done.
[paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % cd bags
zsh: no matches found: bags
[paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % cd vagrant-
[paulvinceabe@pauls-MacBook-Pro-3 vagrant-local % vagrant up

The master branch is no longer supported!  
Run these commands to switch to stable:
git checkout stable
git pull

paulvinceabe@pauls-MacBook-Pro-3 vagrant-local %
```

```
Fetching vagrant-hostsupdater-1.2.4.gem
Installed the plugin 'vagrant-hostsupdater (1.2.4)'!
paulvinceabe@Pauls-MacBook-Pro-3 vvv-vagrant-server % git clone -b master git://github.com/Varying-Vagrant-Vagrants/WWW.git ..vagrant-local
Cloning into '..vagrant-local'...
```
paulvinceabe@Pauls-MacBook-Pro-3 vvv-vagrant-server % git clone -b master https://github.com/Varying-Vagrant-Vagrants/WWW.git ..vagrant-local
Cloning into '..vagrant-local'...
remote: Enumerating objects: 17614, done.
remote: Counting objects: 100% (1088/1088), done.
remote: Compressing objects: 100% (544/544), done.
remote: Total 17614 (delta 687), reused 838 (delta 518), pack-reused 16534
Receiving objects: 100% (17614/17614), 9.21 MiB | 2.94 MiB/s, done.
Resolving deltas: 100% (9538/9538), done.
paulvinceabe@Pauls-MacBook-Pro-3 vvv-vagrant-server % cd bagz
zsh: no matches found: bagz
paulvinceabe@Pauls-MacBook-Pro-3 vvv-vagrant-server % cd vagrant-*
paulvinceabe@Pauls-MacBook-Pro-3 vagrant-local % vagrant up

The master branch is no longer supported!
Run these commands to switch to stable: 
git checkout stable
git pull
paulvinceabe@Pauls-MacBook-Pro-3 vagrant-local % git checkout stable && git pull
Branch 'stable' set up to track remote branch 'stable' from 'origin'.
Switched to a new branch 'stable'
Already up to date.
paulvinceabe@Pauls-MacBook-Pro-3 vagrant-local % vagrant up
 v3.12 Ruby:3.1.4, Path:"/Users/paulvinceabe/vvv-vagrant-server/vagrant-local"
git:stable(aee9a695)

Copying config/default-config.yml to config/config.yml
IMPORTANT NOTE: Make all modifications to config/config.yml in future so that they are not lost when WWW updates.

Platform: darwin shell:/bin/sh vagrant-hostsupdater shared_db_folder_disabled
Vagrant: v2.4.1, virtualbox: v7.0.14

Docs: https://varyingvagrantvagrants.org/
Contribute: https://github.com/varying-vagrant-vagrants/www
Dashboard: http://www.test

Vagrant has detected project local plugins configured for this
project which are not installed.

vagrant-goodhosts
Install local plugins (Y/N) [N]: Y
Installing the 'vagrant-goodhosts' plugin. This can take a few minutes...
Fetching os-1.1.4.gem
Fetching vagrant-goodhosts-1.1.7.gem
Installed the plugin 'vagrant-goodhosts (1.1.7)'!

Vagrant has completed installing local plugins for the current Vagrant
project directory. Please run the requested command again.
paulvinceabe@Pauls-MacBook-Pro-3 vagrant-local %
```

```
git checkout stable
git pull
[paulvinceabe@pauls-MacBook-Pro-3 vagrant-local] % git checkout stable && git pull
Branch 'stable' set up to track remote branch 'stable' from 'origin'.
Switched to a new branch 'stable'
Already up to date.
[paulvinceabe@pauls-MacBook-Pro-3 vagrant-local] % vagrant up

VVVVVV v3.12 Ruby:3.1.4, Path:"/Users/paulvinceabe/vvv-vagrant-server/vagrant-local"
\ \ \ \ \ \ git::stable(aee9a695)

Copying config/default->config.yml
IMPORTANT NOTE: Make all modifications to config/config.yml in future so that they are not lost when VVV updates.

Platform: darwin shell:/bin/zsh vagrant-hostsupdater shared_db_folder_disabled
Vagrant: v2.4.1, virtualbox: v7.0.14

Docs: https://varyingvagrantvagrants.org/
Contribute: https://github.com/varying-vagrant-vagrants/vvv
Dashboard: http://vvv.test

Vagrant has detected project local plugins configured for this
project which are not installed.

_vagrant-goodhosts
Install local plugins (Y/N) [N]: Y
Installing the 'vagrant-goodhosts' plugin. This can take a few minutes...
Fetching os-1.1.4.gem
Fetching vagrant-goodhosts-1.1.7.gem
Installed the plugin 'vagrant-goodhosts (1.1.7)'!

Vagrant has completed installing local plugins for the current Vagrant
project directory. Please run the requested command again.
[paulvinceabe@pauls-MacBook-Pro-3 vagrant-local] % vagrant up

VVVVVV v3.12 Ruby:3.1.4, Path:"/Users/paulvinceabe/vvv-vagrant-server/vagrant-local"
\ \ \ \ \ \ git::stable(aee9a695)

Platform: darwin shell:/bin/zsh vagrant-hostsupdater shared_db_folder_disabled
Vagrant: v2.4.1, virtualbox: v7.0.14

Docs: https://varyingvagrantvagrants.org/
Contribute: https://github.com/varying-vagrant-vagrants/vvv
Dashboard: http://vvv.test

Bringing machine 'default' up with 'virtualbox' provider...
=> default: Box 'bento/ubuntu-20.04' could not be found. Attempting to find and install...
 default: Box Provider: virtualbox
 default: Box Version: >= 0
=> default: Loading metadata for box 'bento/ubuntu-20.04'
 default: URL: https://vagrantcloud.com/api/v2/vagrant/bento/ubuntu-20.04
=> default: Adding box 'bento/ubuntu-20.04' (v202401.31.0) for provider: virtualbox (amd64)
 default: Downloading: https://vagrantcloud.com/bento/boxes/ubuntu-20.04/versions/202401.31.0/providers/virtualbox/amd64/vagrant.box
Progress: 3% (Rate: 3233K/s, Estimated time remaining: 0:05:03)
```

```
up starts and provisions the vagrant environment
upload upload to machine via communicator
validate validates the Vagrantfile
version prints current and latest Vagrant version
winrm executes commands on a machine via WinRM
winrm-config outputs WinRM configuration to connect to the machine
paulvinceabe@pauls-MacBook-Pro-3 vagrant-local % vagrant destroy
==> default: Running action triggers before destroy ...
==> default: Running trigger: VVV Pre-Destroy...
default: Running: inline script
==> default: Trigger run failed
==> default: The SSH connection was unexpectedly closed by the remote end. This
 usually indicates that SSH within the guest machine was unable to
 properly start up. Please boot the VM in GUI mode to check whether
 it is booting properly.
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
==> default: [vagrant-goodhosts] Removing hosts
Password:
==> default: [vagrant-goodhosts] Finished processing
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...
paulvinceabe@pauls-MacBook-Pro-3 vagrant-local % cd ..
paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % rm -rf ./*
zsh: sure you want to delete the only file in /Users/paulvinceabe/vvv-vagrant-server/. [yn]? y
paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % ls -al
total 16
drwxr-xr-x 3 paulvinceabe staff 96 Mar 10 20:19 .
drwxr-xr-x+ 66 paulvinceabe staff 2112 Mar 10 19:48 ..
-rw-r--r--@ 1 paulvinceabe staff 6148 Mar 10 20:18 .DS_Store
paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % rm -rf .DS_Store
paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % ls @al
ls: @al: No such file or directory
paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % ls -al
total 0
drwxr-xr-x 2 paulvinceabe staff 64 Mar 10 20:19 .
drwxr-xr-x+ 66 paulvinceabe staff 2112 Mar 10 19:48 ..
paulvinceabe@pauls-MacBook-Pro-3 vvv-vagrant-server % git clone -b stable https://github.com/Varying-Vagrant-Vagrants/WWW.git ~/vvv-local
cd ~/vvv-local
vagrant plugin install --local
Cloning into '/Users/paulvinceabe/vvv-local'...
remote: Enumerating objects: 17614, done.
remote: Counting objects: 100% (1088/1088), done.
remote: Compressing objects: 100% (531/531), done.
Receiving objects: 71% (12506/17614), 7.64 MiB | 861.00 KiB/s
```

```

>>> default: it is booting properly.
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
>>> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
>>> default: [vagrant-goodhosts] Removing hosts
>Password:
>>> default: [vagrant-goodhosts] Finished processing
>>> 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...
paulvinceabe@Pauls-MacBook-Pro-3:~$ vagrant-local % cd ..
paulvinceabe@Pauls-MacBook-Pro-3:~$ vvv-vagrant-server % rm -rf ./*
zsh: sure you want to delete the only file in /Users/paulvinceabe/vvv-vagrant-server/. [yn]? y
paulvinceabe@Pauls-MacBook-Pro-3:~$ vvv-vagrant-server % ls -al
total 16
drwxr-xr-x 3 paulvinceabe staff 96 Mar 10 20:19 .
drwxr-xr-x+ 66 paulvinceabe staff 2112 Mar 10 19:40 ..
-rw-r--r--@ 1 paulvinceabe staff 6148 Mar 10 20:18 .DS_Store
paulvinceabe@Pauls-MacBook-Pro-3:~$ vvv-vagrant-server % rm -rf .DS_Store
paulvinceabe@Pauls-MacBook-Pro-3:~$ vvv-vagrant-server % ls @al
ls: @al: No such file or directory
paulvinceabe@Pauls-MacBook-Pro-3:~$ vvv-vagrant-server % ls -al
total 0
drwxr-xr-x 2 paulvinceabe staff 64 Mar 10 20:19 .
drwxr-xr-x+ 66 paulvinceabe staff 2112 Mar 10 19:40 ..
paulvinceabe@Pauls-MacBook-Pro-3:~$ vvv-vagrant-server % git clone -b stable https://github.com/Varying-Vagrants/VVV.git ~/vvv-local
cd ~/vvv-local
vagrant plugin install --local
Cloning into '/Users/paulvinceabe/vvv-local'...
remote: Enumerating objects: 17614, done.
remote: Counting objects: 100% (1080/1080), done.
remote: Compressing objects: 100% (531/531), done.
remote: Total 17614 (delta 684), reused 849 (delta 531), pack-reused 16534
Receiving objects: 100% (17614/17614), 9.22 MiB | 872.00 KiB/s, done.
Resolving deltas: 100% (9537/9537), done.
Copying config/default-config.yml to config/config.yml
IMPORTANT NOTE: Make all modifications to config/config.yml in future so that they are not lost when VVV updates.

Vagrant will now install the following plugins to the local project
which have been defined in current Vagrantfile:

vagrant-goodhosts (> 0)

Press ctrl-c to cancel...

Installing the 'vagrant-goodhosts' plugin. This can take a few minutes...

```



```
paulvinceabe@Pauls-MacBook-Pro-3 vvv-local % cd ~vvv-local
\ vagrant up
\VV\VV\VV\VV v3.12 Ruby:3.1.4, Path:"/Users/paulvinceabe/vvv-local"
 \VV\VV\VV\VV git:stable(aee9a695)

Platform: darwin shell/bin/zsh vagrant-hostsupdater vagrant-goodhosts shared_db_folder_disabled
Vagrant: v2.4.1, virtualbox: V7.0.14

Docs: https://varvingvagrantvagrants.org/
Contribute: https://github.com/varving-vagrant-vagrants/vvv
Dashboard: http://vvv.test

Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'bento/ubuntu-20.04'...
==> default: Matching MAC address for NAT networking...
==> default: Setting the name of the VM: vvv-local_6acf3ace896
==> 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: 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: vagrant
 default: SSH auth method: private key
 default: Warning: Connection reset. Retrying...
 default: Warning: Remote connection disconnect. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 vvv.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 one.wordpress.test
==> default: [vagrant-goodhosts] - found entry for: 192.168.56.4 two.wordpress.test
==> default: [vagrant-goodhosts] Checking for host entries
==> default: [vagrant-goodhosts] Finished processing
==> default: [vagrant-hostsupdater] Checking for host entries
==> default: [vagrant-hostsupdater] Writing the following entries to /etc/hosts)
==> default: [vagrant-hostsupdater] 192.168.56.4 vvv # VAGRANT: d5b377e786621474776bc530065a3d7 (default) / 4a8c6339-5bd7-4dcc-809e-30ae15b2243d
==> default: [vagrant-hostsupdater] This operation requires administrative access. You may skip it by manually adding equivalent entries to the hosts file.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Mounting shared folders...
 default: /srv/www => /Users/paulvinceabe/vvv-local/www
```

```
--> default: Setting hostname...
--> default: Configuring and enabling network interfaces...
--> default: Mounting shared folders...
default: /srv/www => /Users/paulvinceabe/vvv-local/www
default: /srv/config => /Users/paulvinceabe/vvv-local/config
default: /var/www/php => /Users/paulvinceabe/vvv-local/www/php
default: /srv/databases => /Users/paulvinceabe/vvv-local/www/database/sql
default: /var/log/nginx => /Users/paulvinceabe/vvv-local/www/nginx
default: /srv/provision => /Users/paulvinceabe/vvv-local/provision
default: /srv/certificates => /Users/paulvinceabe/vvv-local/certificates
default: /var/log/memcached => /Users/paulvinceabe/vvv-local/log/memcached
default: /var/log/provisioners => /Users/paulvinceabe/vvv-local/log/provisioners
--> default: Detected mount owner ID within mount options. (uid: 0 guestpath: /var/log/memcached)
--> default: Detected mount group ID within mount options. (gid: 0 guestpath: /var/log/memcached)
--> default: Detected mount owner ID within mount options. (uid: 0 guestpath: /var/log/nginx)
--> default: Detected mount group ID within mount options. (gid: 0 guestpath: /var/log/nginx)
--> default: Detected mount owner ID within mount options. (uid: 0 guestpath: /var/log/php)
--> default: Detected mount group ID within mount options. (gid: 0 guestpath: /var/log/php)
--> default: Detected mount owner ID within mount options. (uid: 0 guestpath: /var/log/provisioners)
--> default: Detected mount group ID within mount options. (gid: 0 guestpath: /var/log/provisioners)
--> default: Detected mount owner ID within mount options. (uid: 1000 guestpath: /srv/www)
--> default: Detected mount group ID within mount options. (gid: 33 guestpath: /srv/www)
--> default: Running provisioner: file...
default: /Users/paulvinceabe/vvv-local/version => /home/vagrant/version
--> default: Running provisioner: pre-provision-script (shell)...
default: Running: inline script
default:
default: 
A full provision will take a bit.
Sit back, relax, and have some tea.
default:
default: If you didn't want to provision you can
default: turn VVV on with 'vagrant up'.
default:
default:
--> default: Running provisioner: default (shell)...
default: Running: /var/folders/f0/fifdklc4d1ly0y5mrv3fr0000gn/T/vagrant-shell20240310-20196-6zpgkb.sh
default: - skipping ntpdate clock sync, not installed yet
default: > Running the main provisioner...
default: > Running init hook
default: > Bash profile setup and directories.
default: > Reloading SSH Daemon
default: > Checking Ubuntu version
default: > Copying /srv/provision/core/vvv/apt-conf-d/99hashmismatch to /etc/apt/apt.conf.d/99hashmismatch
default: > Finished init hook in 1s
default: > Testing network connection to https://ppa.launchpadcontent.net with wget -q --spider --timeout=5 --tries=3 https://ppa.launchpadcontent.net
default: * Successful Network connection to https://ppa.launchpadcontent.net detected
default: > Testing network connection to https://wordpress.org with wget -q --spider --timeout=5 --tries=3 https://wordpress.org
default: * Successful Network connection to https://wordpress.org detected
default: > Testing network connection to https://github.com with wget -q --spider --timeout=5 --tries=3 https://github.com
default: * Successful Network connection to https://github.com detected
default: > Testing network connection to https://raw.githubusercontent.com with wget -q --spider --timeout=5 --tries=3 https://raw.githubusercontent.com
default: * Successful Network connection to https://raw.githubusercontent.com detected
default: * Testing network connection to https://getcomposer.org with wget -q --spider --timeout=5 --tries=3 https://getcomposer.org
default: * Successful Network connection to https://getcomposer.org detected
default: * Testing network connection to https://deb.nodesource.com with wget -q --spider --timeout=5 --tries=3 https://deb.nodesource.com
```

```
~/vvv-local -- zsh ~/crafter-vagrant-server -- curl -v vagrant up ~/gitlab-vagrant-server -- curl -v vagrant up
--> default: > Running the 'site-wordpress-one' provisioner...
default: * Pulling down the master branch of https://github.com/Varying-Vagrant-Vagrants/custom-site-template.git
default: From https://github.com/Varying-Vagrant-Vagrants/custom-site-template
default: * branch master -> FETCH_HEAD
default: * sourcing of vvv-init.sh reported success
default: * VVV is adding an Nginx config from /srv/www/wordpress-one/provision/vvv-nginx.conf
default: nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
default: nginx: configuration file /etc/nginx/nginx.conf test is successful
default: > Installed vvv-wordpress-one-60730e70.com
default: > The 'site-wordpress-one' provisioner completed in 10 seconds.
--> default: Running provisioner: site-wordpress-one (shell)...
default: Running: /var/folders/f0/fifdklc4d1ly0y5mrv3fr0000gn/T/vagrant-shell20240310-21035-9hwbps.sh
default: > Running the 'site-wordpress-one' provisioner...
default: > Pulling down the master branch of https://github.com/Varying-Vagrant-Vagrants/custom-site-template.git
default: From https://github.com/Varying-Vagrant-Vagrants/custom-site-template
default: * branch master -> FETCH_HEAD
default: * sourcing of vvv-init.sh reported success
default: * VVV is adding an Nginx config from /srv/www/wordpress-one/provision/vvv-nginx.conf
default: nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
default: nginx: configuration file /etc/nginx/nginx.conf test is successful
default: > Installed vvv-wordpress-one-bbb8c8485.com
default: > The 'site-wordpress-one' provisioner completed in 10 seconds.
--> default: Running provisioner: post-provision-script (shell)...
default: Running: /var/folders/f0/fifdklc4d1ly0y5mrv3fr0000gn/T/vagrant-shell20240310-21035-9waok1
default: > Post provision script
default: * Restarting Nginx service
default: * Restarting MariaDB service
default: * Syncing clocks
default: 11 Mar 00:42:23 ntpdate[61193]: adjust time server 185.125.190.57 offset 0.449595 sec
default: * clocks synced
default: > Success!
default: > Provisioning has finished!
default: Visit http://vvv.test
default:
--> default: Running action triggers after up ...
--> default: Running trigger: VVV Post-Up...
default: Running: inline script
default: * Restarting Nginx
default: * Restarting MariaDB
default: * Syncing clocks
default: 11 Mar 00:42:33 ntpdate[61428]: adjust time server 185.125.190.58 offset 0.223071 sec
default: * clocks synced
default: > Thanks for using 
default: > Vagrant Up has finished! Visit http://vvv.test
default:
```

VVV Dashboard    x    +

Not Secure | vvv.test

Paused    Update

# VVV v3.12

**wordpress-one**

[/srv/www/wordpress-one] PHP: 7.4

A standard WP install, useful for building plugins, testing things, etc

<http://one.wordpress.test>

**wordpress-two**

[/srv/www/wordpress-two] PHP: 7.4

A standard WP install, useful for building plugins, testing things, etc

<http://two.wordpress.test>

► Disabled Sites

► Advanced

**Tools**

[phpMyAdmin](#) [MailHog](#)

[PHP Info](#) [PHP Status](#)

**Search the Documentation**

Check [Official Documentation](#), or get help on [Slack](#).

**Ukraine needs your help**

 [saveukraine.org](http://saveukraine.org)

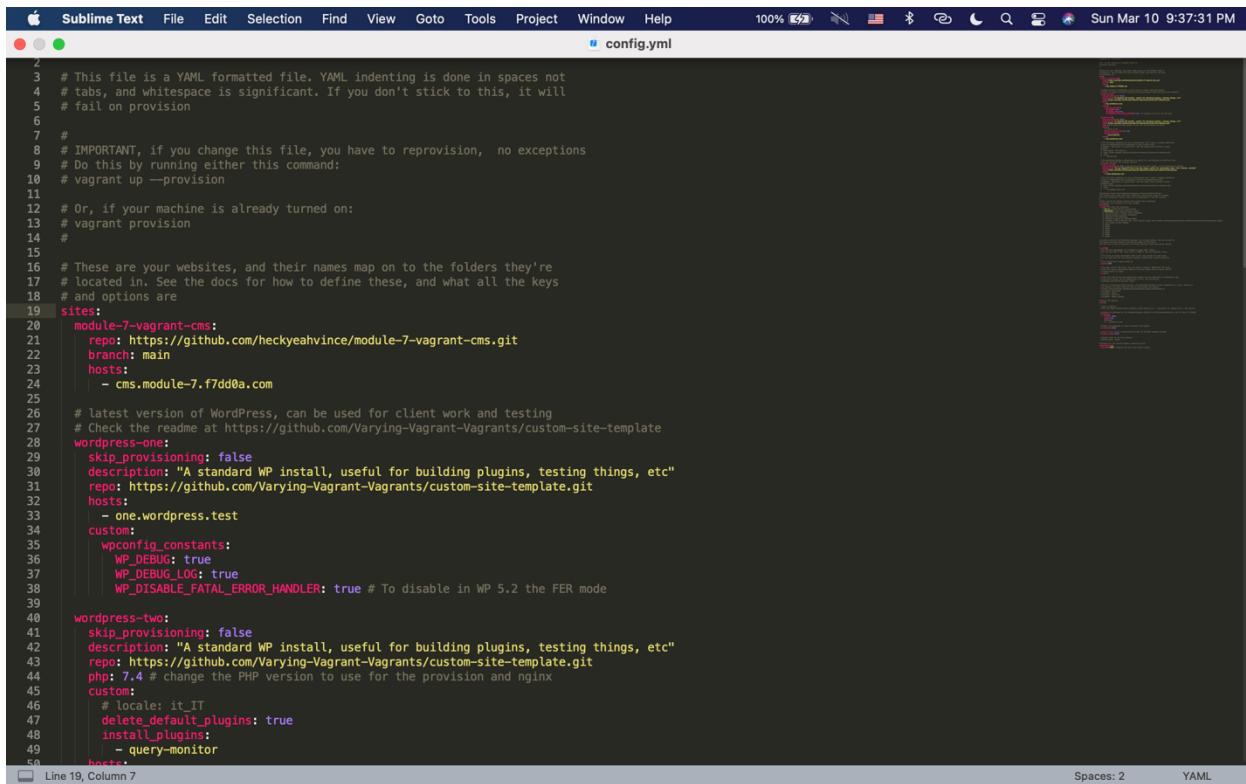
The VVV Code of

## Figures 7.1

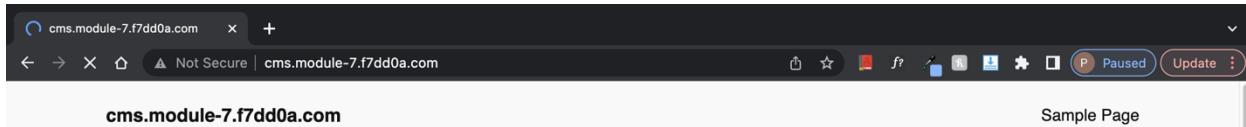
*Installation Screens for Vagrant on macOS Intel*

### Part 3

Post your paper from Part 1 in the CMS and screenshot it. Submit the screenshot.



```
2 # This file is a YAML formatted file. YAML indenting is done in spaces not
3 # tabs, and whitespace is significant. If you don't stick to this, it will
4 # fail on provision
5 #
6 #
7 # IMPORTANT, if you change this file, you have to reprovision, no exceptions
8 # Do this by running either this command:
9 # vagrant up --provision
10 #
11 # Or, if your machine is already turned on:
12 # vagrant provision
13 #
14 #
15 # These are your websites, and their names map on to the folders they're
16 # located in. See the docs for how to define these, and what all the keys
17 # and options are
18 sites:
19 module-7-vagrant-cms:
20 repo: https://github.com/heckyeahvince/module-7-vagrant-cms.git
21 branch: main
22 hosts:
23 - cms.module-7.f7dd0a.com
24
25 # latest version of WordPress, can be used for client work and testing
26 # Check the readme at https://github.com/Varying-Vagrant-Vagrants/custom-site-template
27 wordpress-one:
28 skip_provisioning: false
29 description: "A standard WP install, useful for building plugins, testing things, etc"
30 repo: https://github.com/Varying-Vagrant-Vagrants/custom-site-template.git
31 hosts:
32 - one.wordpress.test
33 custom:
34 wpconfig_constants:
35 WP_DEBUG: true
36 WP_DEBUG_LOG: true
37 WP_DISABLE_FATAL_ERROR_HANDLER: true # To disable in WP 5.2 the FER mode
38
39 wordpress-two:
40 skip_provisioning: false
41 description: "A standard WP install, useful for building plugins, testing things, etc"
42 repo: https://github.com/Varying-Vagrant-Vagrants/custom-site-template.git
43 php: 7.4 # Change the PHP version to use for the provision and nginx
44 custom:
45 # locale: it_IT
46 delete_default_plugins: true
47 install_plugins:
48 - query-monitor
49 hosts:
50 - cms.module-7.f7dd0a.com
```

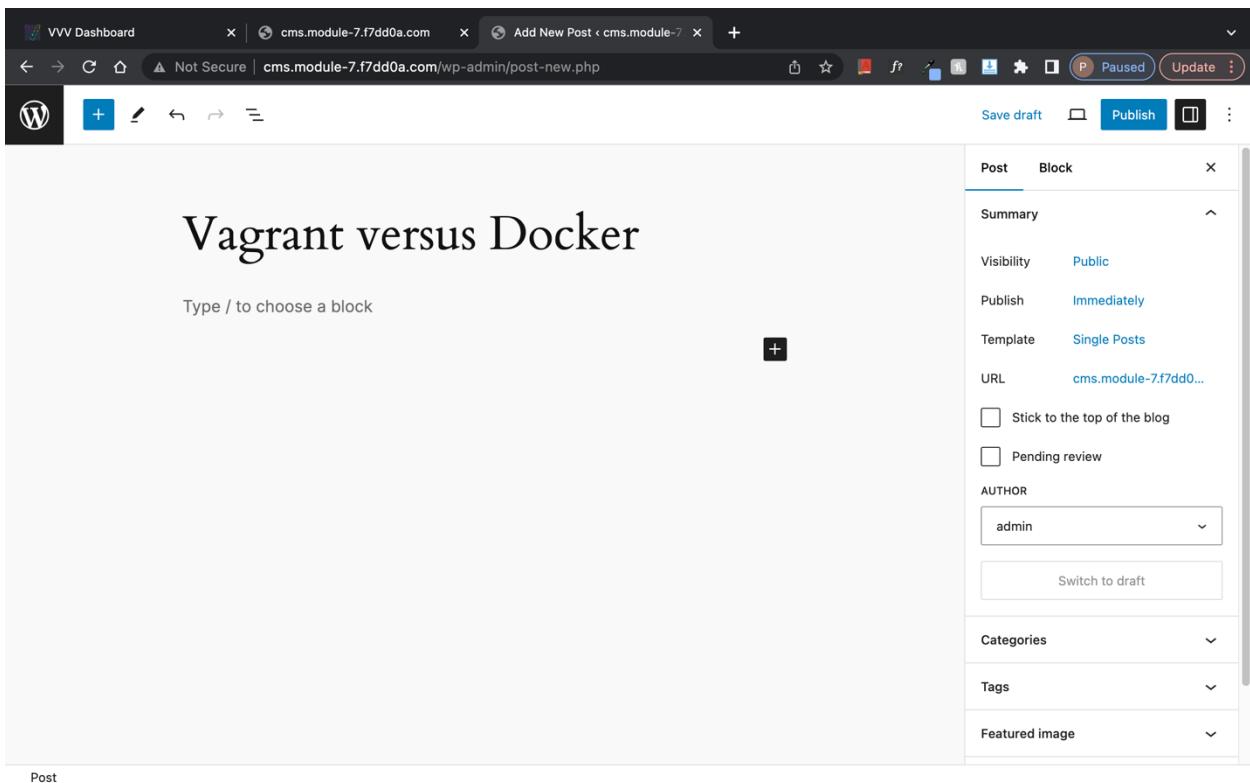
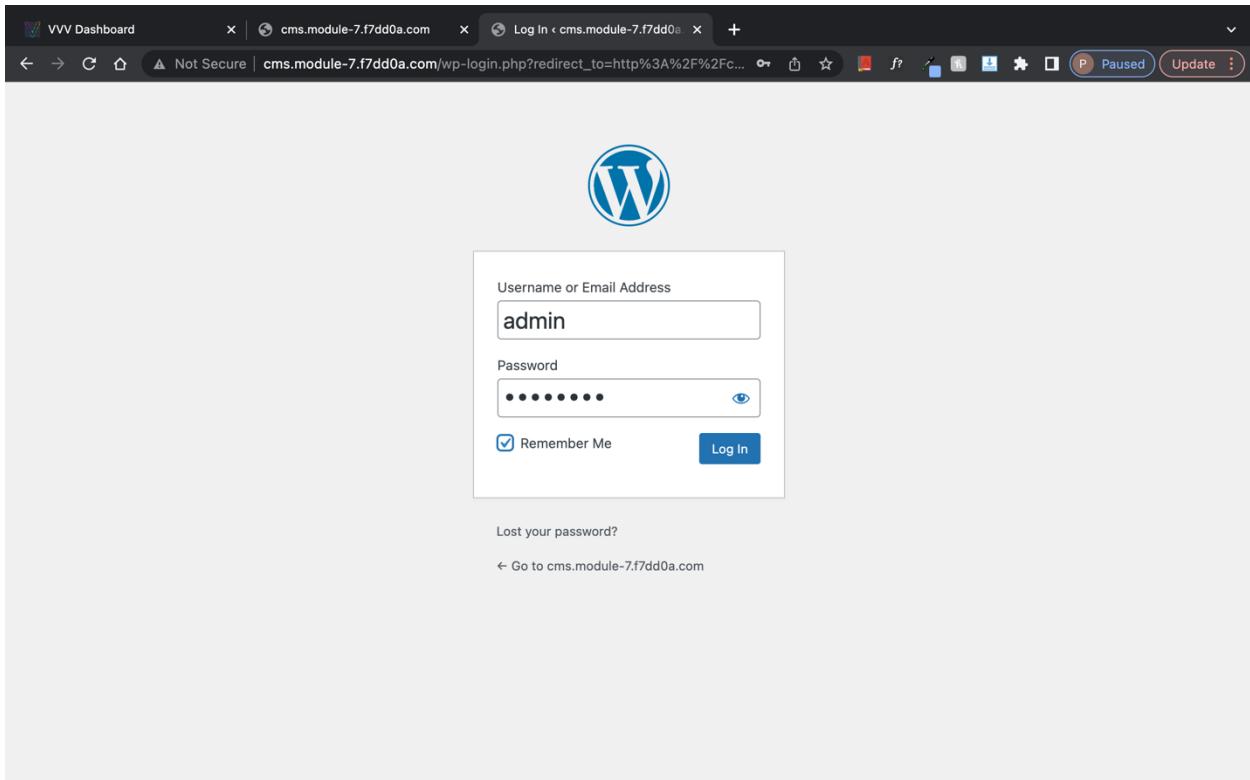


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Post

The screenshot shows the VVV Dashboard interface for editing a WordPress post. The main content area displays the following text:

In an event that an enterprise or a project do still see the need to have a hybrid approach to their mini-services architecture for distributed systems, Vagrant will be my recommendation over Docker. With Docker as its provider, it goes to show the potential of Vagrant within the software engineering field as it provides support in both virtual machine and container virtualization capabilities in one platform. Till that point where the Vagrant community will be as mature as the Docker community is to date, my opinion will change definitely to prefer Vagrant over Docker. It has been so cumbersome for me to install vagrant within my Apple Silicon M1 MacBook Pro. With Docker, I have no issues at all in hosting AMD64 images. Being said that, knowing how Hashicorp can create revolutionary products (i.e., Terraform, Vault), I will not be surprised if they expand Vagrant to have its own OS-level virtualization capability as well.

Below the text is a toolbar with icons for bold, italic, underline, etc. At the bottom of the content area, there is a progress bar with a blue slider and a plus sign icon. The URL in the address bar is <http://cms.module-7.f7dd0a.com/wp-admin/post.php?post=6&action=edit>. The status bar at the bottom left says "Waiting for cms.module-7.f7dd0a.com...".

The right sidebar contains a message "Vagrant versus Docker is now live.", a "What's next?" section with a "POST ADDRESS" input field containing "http://cms.module-7.f7dd0a.com/", and buttons for "View Post" and "Add New Post". A vertical sidebar on the far right shows a preview of the post as a sample page.

At the bottom of the dashboard, there are two buttons: "Site updated. View site" and "Post published. View Post". A checked checkbox "Always show pre-publish checks." is also present.

The screenshot shows a web browser window with the URL [cms.module-7.f7dd0a.com/?page\\_id=10](http://cms.module-7.f7dd0a.com/?page_id=10). The page title is "Vagrant versus Docker". The content of the page discusses the differences between Vagrant and Docker, mentioning their strengths and weaknesses. It also includes a note about the assignment requirements.

**Vagrant versus Docker**

**ABE, Paul Vince A. | pabe2@jhu.edu**  
EN.605.609.81.SP23 – DevOps and Secure Software Development

Write a <1 page paper comparing Vagrant versus Docker from what you have learned in this course or prior experience(no need to go do research). Which do you prefer? Why? Justify your answer.

This course allowed me to have an in-depth, hands-on experience with both technologies. Through the lecture this week, I learned that Vagrant touts itself as a *virtualization automation* tool. Docker, on the other hand, touts itself as an *OS-level virtualization* tool.

Having to choose between the two, I personally prefer Docker in its current state of maturity over Vagrant. Despite that, I do see Vagrant to propel beyond Docker's capabilities in the far future. The assignment made me realize implicitly that Vagrant takes Virtual Machine (VM) provisioning towards the realm of *containerization* (a.k.a., allowing a VM's configuration to be defined as *Code* and be highly and effectively **portable** and **collaborated on**). This reason alone is enough to justify why Vagrant, in its marketed capabilities, are more advanced than Docker for modernizing virtualization techniques, as it supports **BOTH** virtual machines and containers.

I, though, have yet to dive deeper about the scope of access that a Vagrant box has to the host OS (i.e., whether a box is treated to have VM privileges

## Figures 7.2

*Creating and Publishing a WordPress Page*