Vagrant Basic Commands

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Getting started with Vagrant

Before starting this lesson, make sure you have gone through the previous lessons and that you have vagrant install on your computer

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Overview on Vagrant

What is Vagrant?

Overview on Vagrant

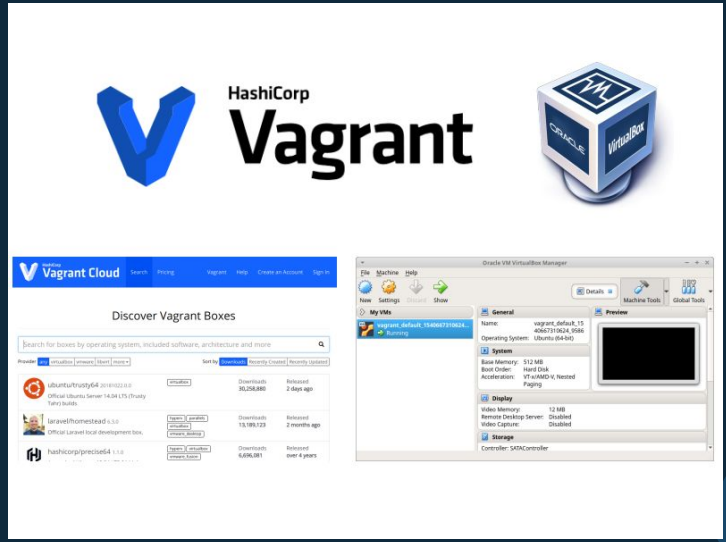
- **Vagrant** is a tool developed by **HashiCorp** for creating and managing **virtual machine environments in a single workflow**
- **Hashicorp** is a software company that provides **open-source** and commercial applications for users in various aspects of the IT field
- A software is called **open-source** when its source code is **accessible to the public for possible modification and redistribution**

Overview on Vagrant

- **Vagrant** helps us to **create and manage virtual machines in no time.**
- A **virtual machine** is a machine that may not exist physically but that can be used just like a physical computer.
- Any task that can be done on a physical machine can also be executed in a virtual machine.

Overview on Vagrant

- With **Vagrant**, machines are created in tools like **virtualbox**
- That is, with **Vagrant commands, we can create and manage machines in virtualbox.**
- **Vagrant** will help us create our mini virtual data center in virtualbox.



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Vagrant boxes

What is a vagrant box

Vagrant boxes

- We can't use **vagrant** without talking about **vagrant boxes**
- A **box** is a format and an extension for **Vagrant environments**
- We use a **vagrant box** to create a specific virtual environment on our computer
- A **box** can be used by anyone on any platform that Vagrant supports to **bring up an identical working environment.**
- There are many **preconfigured Vagrant boxes** available for download in **Vagrant Cloud** public repository at *https://app.vagrantup.com/boxes/search*

Vagrant boxes

- A **vagrant box** also contains a configuration file named **Vagrantfile**
- This file contain the operating system and software requirements needed to create the environment
- That is, it describes the type of virtual machine that will be created and defines the **initialisation parameters** that will be used to create the **vagrant virtual environment**
- The **vagrant box utility** provides all the functionality for managing boxes.

“

As the training goes on, you will better understand this concept. If you don’t understand all for now, that’s fine!

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Vagrant basic commands

Vagrant commands we use often

Vagrant Commands

Before running some vagrant commands, let's create a **Vagrant project directory** on our system:

- Launch your **Visual studio code** and open a **new terminal**
- Now, create a directory called **myvagrants** in the home folder:
  - **mkdir myvagrants**
- Navigate to the newly created folder: **cd myvagrants**
- In this directory, let's create a directory for a new **ubuntu 18 server** called ubuntu18-server: **mkdir ubuntu18-server**
- Navigate to the newly created folder: **cd ubuntu18-server**

Vagrant init:
Initialize Vagrant environment

Initialize vagrant environment

- After creating our project directory, and the directory that will contain our environment, let's initialize a Vagrant environment with the command **vagrant init**
- Let's initialize the environment using a vagrant box called **ubuntu/bionic64**:

  vagrant init ubuntu/bionic64
- When the environment is initialized, you can check with: **ls**
- You can display the content of its Vagrantfile in you Visual studio code using the command: **code Vagrantfile**

NB: Don't make any modification in that file for now!

Vagrant up:
Start a new Virtual machine

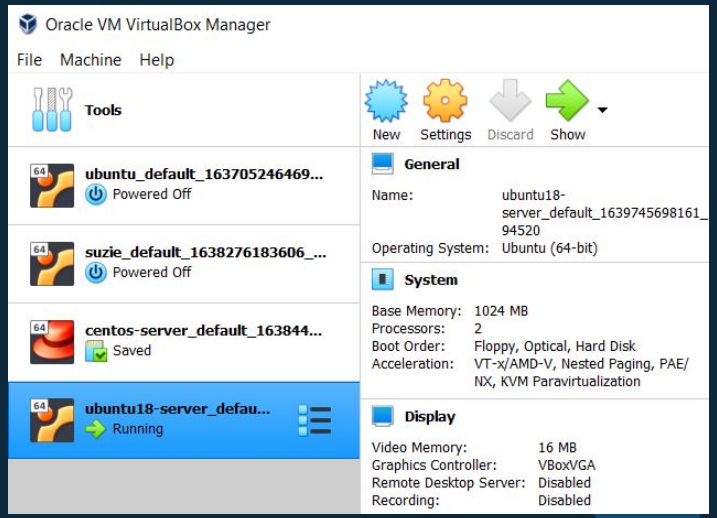
Start a Virtual machine

- To **create and start the virtual machine according to the vagrantfile**, we use the command **vagrant up**
  - Click in your terminal to make sure you will not type anything in the vagrantfile
  - Now, run the command: **vagrant up**

```
PS C:\Users\suzie\myvagrants\ubuntu18-server> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Box 'ubuntu/bionic64' could not be found. Attempting to find and install...
    default: Box Provider: virtualbox
    default: Box Version: >= 0
==> default: Loading metadata for box 'ubuntu/bionic64'
```

Start a Virtual machine

- This command will:
  - **Download** the Ubuntu bionic box from the Vagrant cloud,
  - **Create** a new virtual machine,
  - **Add** it to the **Virtualbox** and
  - **Start** the VM automatically
- After running this command successfully, open your **Virtualbox** and check if the newly created virtual machine is running



Vagrant ssh:
Access a Virtual machine

Access a Virtual machine

- As we saw in previous lessons, we connect and access the running VM using **SSH** with the command: **vagrant ssh**
- Make sure you get the **$** sign
- To exit from the VM's session, you can use the command $ **exit** or the command $ **logout**

```
vagrant@ubuntu-bionic:~$ logout
Connection to 127.0.0.1 closed.
PS C:\Users\suzie\myvagrants\ubuntu18-server>
```

Vagrant status:
Status of a Virtual machine

Status of a Virtual machine

- To display the state of a virtual machine, we run: **vagrant status**
- If the VM is still **running**, you will get the following message

```
PS C:\Users\suzie\myvagrants\ubuntu18-server> vagrant status
Current machine states:

default                   running (virtualbox)

The VM is running. To stop this VM, you can run `vagrant halt` to
shut it down forcefully, or you can run `vagrant suspend` to simply
suspend the virtual machine. In either case, to restart it again,
simply run `vagrant up`.
```

- If the machine is **powered off**, you will get the following output

```
Current machine states:

default                   saved (virtualbox)

To resume this VM, simply run `vagrant up`.
```

Status of a Virtual machine

- To display the status of all your vagrant virtual environments, you can run: **vagrant global-status**

```
PS C:\Users\suzie\myvagrants\ubuntu18-server> vagrant global-status
--------------------------------------------------------------------------------
f45ea7f  default virtualbox saved   C:/Users/suzie/ubuntu
f2b7e05  default virtualbox running C:/Users/suzie
1d3bd4a  default virtualbox saved   C:/Users/suzie/centos-server
7e00c21  default virtualbox running C:/Users/suzie/myvagrants/ubuntu18-server
```

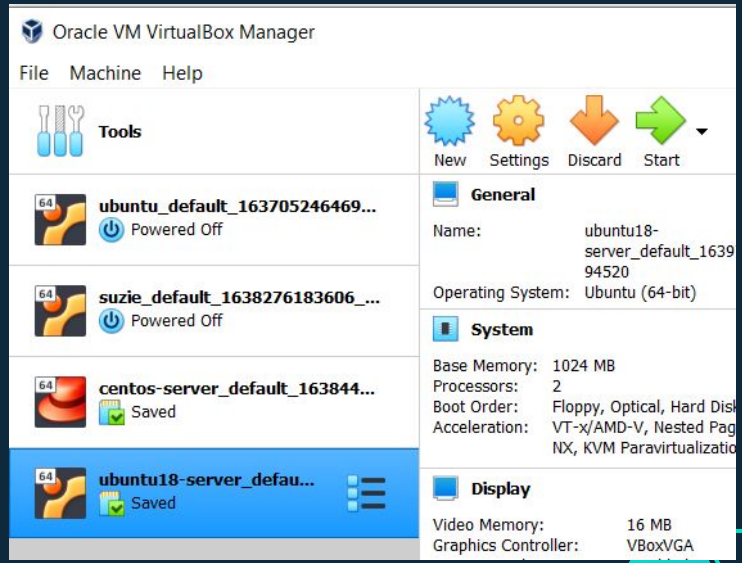
Vagrant suspend and vagrant resume

Suspend a Virtual machine

- To suspend our **running** virtual machine, run the command:
  - **vagrant suspend**

```
PS C:\Users\suzie\myvagrants\ubuntu18-server> vagrant suspend
==> default: Saving VM state and suspending execution...
```

- This command will save the machine current state and suspend it's execution



Resume a Virtual machine

- To resume a suspended VM in the current virtual environment, run the command: **vagrant resume**
- This command will start the suspended machine

```
PS C:\Users\suzie\myvagrants\ubuntu18-server1> vagrant resume
==> default: Resuming suspended VM...
==> 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: Machine booted and ready!
```

Restart/stop a Virtual machine

Vagrant reload and vagrant halt

Restart a Virtual machine

- To restart a running VM, run the command: **vagrant reload**
- This command will **gracefully shutdown a running VM and start it** again

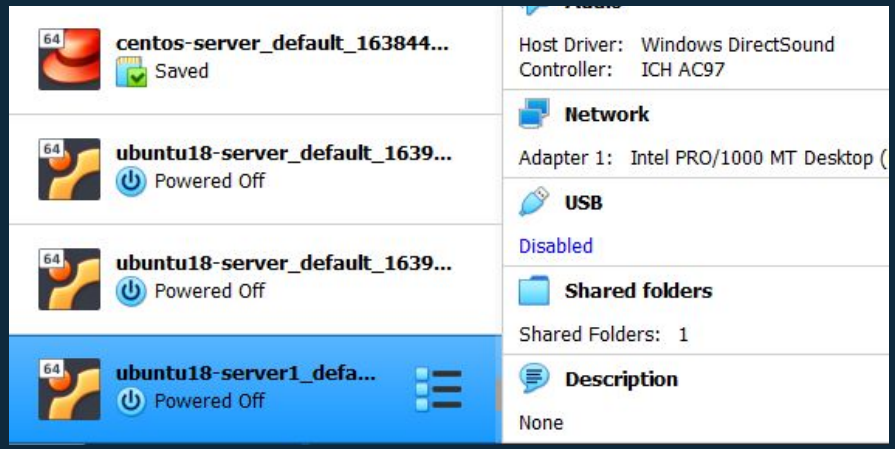
```
PS C:\Users\suzie\myvagrants\ubuntu18-server1> vagrant reload
==> default: Attempting graceful shutdown of VM...
==> default: Checking if box 'ubuntu/bionic64' version '20211216.0.0' is up to date
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
```

- Check your **Virtualbox** after that to make sure the server is **running**

Stop a Virtual machine

- To **stop or shutdown a running VM**, run the command: **vagrant halt**
- In Virtualbox, the server will be **Powered Off**

```
PS C:\Users\suzie\myvagrants\ubuntu18-server1> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\Users\suzie\myvagrants\ubuntu18-server1>
```



Delete/reset a Virtual machine

Delete a Virtual machine

- To stop and delete all traces of a virtual machine, run the command: **vagrant destroy**
- Type **y** and hit **Enter** to delete the VM
- After that check in your virtualbox to make sure the server got remove from the list
- If you want to delete without any confirmation message, run: **vagrant destroy -f**

Reset a Virtual machine

- To **reset** a VM to its original state, we run the following commands successively:
  - **vagrant destroy then**
  - **vagrant up**
- The first command will **shutdown the running virtual machine and delete all the resources associated to it**.
- The second command will **re-create a new Virtual machine using the existing vagrant box**.

Run vagrant commands from any directory

Run vagrant machine from any directory

- Usually, we **start, stop, reload and delete** a vagrant machine **from it's project directory**
- However, we can run vagrant commands from any directory using the **vagrant machine's ID**
- To find that ID, we use the command: **vagrant global-status**.

```
PS C:\Users\suzie\myvagrants\ubuntu18-server1> vagrant global-status
id       name    provider   state    directory
-----------------------------------------------------------------------------
f45ea7f  default virtualbox saved    C:/Users/suzie/ubuntu
f2b7e05  default virtualbox running  C:/Users/suzie
1d3bd4a  default virtualbox saved    C:/Users/suzie/centos-server
b8488ec  default virtualbox poweroff C:/Users/suzie/myvagrants/ubuntu18-server
```

- The first column shows the **IDs** of the various VMs

Run vagrant machine from any directory

- With the VM's ID, you can run it from any location.
- Let's check the status of one of our VM using its ID (**use an ID that you see on your own computer here**)
- Example: **vagrant status f45ea7f**

```
PS C:\Users\suzie\myvagrants\ubuntu18-server1> vagrant status f45ea7f
Current machine states:

default                   poweroff (virtualbox)

The VM is powered off. To restart the VM, simply run `vagrant up`
```

Run vagrant machine from any directory

- Now, let's move to the current user's home directory and run the same command:
  - **cd ~** then run **vagrant status f45ea7f**

```
PS C:\Users\suzie\myvagrants\ubuntu18-server1> cd ~
PS C:\Users\suzie> vagrant status f45ea7f
Current machine states:

default                   poweroff (virtualbox)

The VM is powered off. To restart the VM, simply run `vagrant up`
```

- We can run any other vagrant command this way: **vagrant resume ID, vagrant ssh ID, vagrant reload ID, vagrant suspend ID** ....

Other Vagrant Commands

Other vagrant commands

- For help on any individual command run: **vagrant COMMAND -h**
  - **Example: vagrant status -h**
- To see all subcommands, run the command: **vagrant list-commands**
- Typing **vagrant** in the terminal will also **display a list of available vagrant commands**
- The command **vagrant -v displays the version of vagrant** that is installed on the system
- The command **vagrant box remove** will **delete a box from the machine**

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Centos server Installation with vagrant

CentOS 7

Centos installation

- In the **Visual Studio code** terminal, make sure you are in your home directory
- **cd ~**
- Navigate to the myvagrants folder and create a new folder for the centos server.
- **cd myvagrants**

```
PS C:\Users\suzie> cd myvagrants
PS C:\Users\suzie\myvagrants> mkdir centos-server
```

- **mkdir centos-server**
- Navigate to that folder with the command: **cd centos-server**

```
PS C:\Users\suzie\myvagrants> cd centos-server
PS C:\Users\suzie\myvagrants\centos-server>
```

Centos installation

- Now, let's initialize the **centos** virtual environment using a vagrant box called: **centos/7**

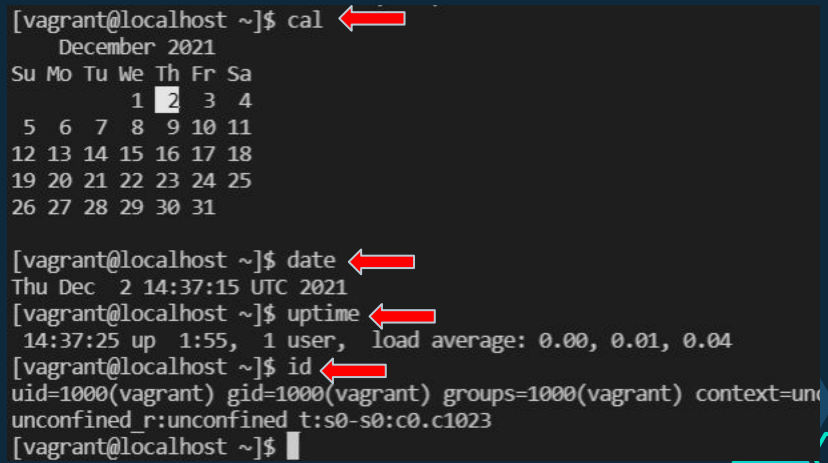
  $ **vagrant init centos/7**

- When the initialisation is done, run the command : $ **vagrant up** to install and start the new server in **Virtualbox**
- Open your **Virtualbox** to make sure there is a brand new server in there!
- In our Visual studio code terminal, let's connect remotely to our **Centos 7** server using the command: **vagrant ssh**

Centos installation

Just like in a ubuntu server, run some basic linux commands:

- **$ cal** to display the calendar for the current month
- **$ date** to display the date
- **$ uptime** to display the time the system has been up
- **$ id** to display the information on the logged in user



Exit and suspend the server

Remote connection

- To logout of the server, run the command: $ **exit**

```
[vagrant@localhost ~]$ exit
logout
Connection to 127.0.0.1 closed.
```

- To stop the server and save its current state, run the command: **$ vagrant suspend**

```
PS C:\Users\suzie\centos-server> vagrant suspend
==> default: Saving VM state and suspending execution...
PS C:\Users\suzie\centos-server>
```

Exercise

Exercice

- Resume the **Centos 7** server and apply all the vagrant commands we learn on it
- Run the vagrant commands from any directory using the centos 7 server's **ID**
- Make sure to leave a centos server in your virtualbox at the end of the process.

Important note!

- In the company, we use a different way to connect remotely to servers.
- This is because **company servers are not created using the vagrant technology**.
- To be able to connect to a normal server, you need to have the **credentials** of a user that is created on the system. That is:
  - **The login and**
  - **The password**

Important note!

- You must also know either the **IP address** or the **domain name** of the server to which you want to connect
- **Example:** to connect to the school server, we will use a command like $ **ssh student@unixtrainings.tk**

We will learn these notions in future lessons. Don't bother about it now!

Don’t try to memorize all of this!

Just try to understand how it works, practise it and have fun playing around with some vagrant commands ”

NB: Don’t forget to exit and suspend the server when you are done

See you guys in the next lesson!

Thanks!

Any questions?

You can find us at:

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Click on the link below to contact the support team for any issue!

utrains.org/support/

Create a ticket for your problem and we will get back to you soon!