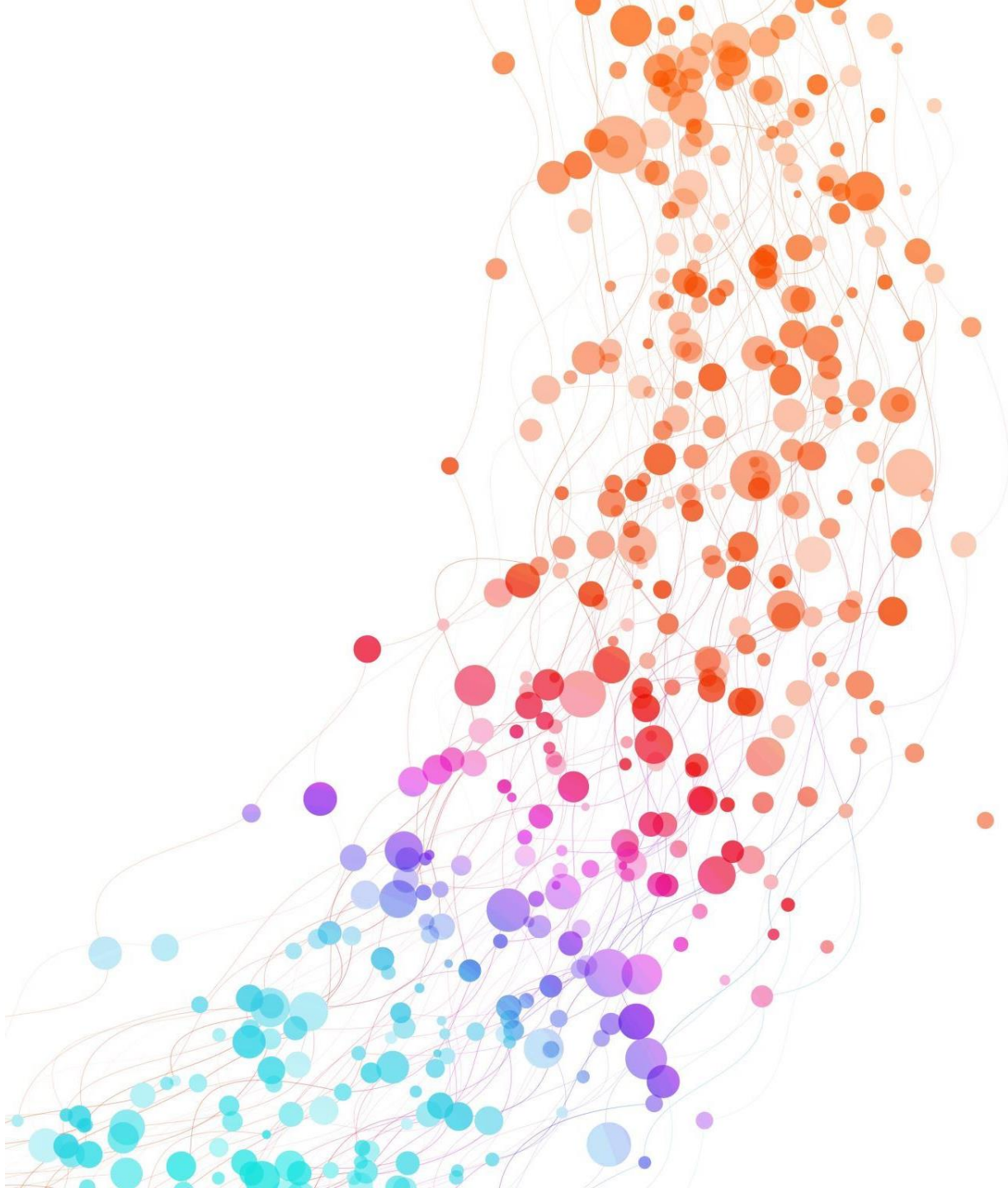
Virtualization



What is a hypervisor?

A hypervisor is software that creates and runs virtual machines (VMs).

The physical hardware, when used as a hypervisor, is called the host, while the many VMs that use its resources are guests.

- Virtualbox
- Kernel-based Virtual Machines (KVM)
- Hyper-V
- VMWare

What is a VM?

A virtual machine (VM) is a virtual environment that functions as a virtual computer system with its own CPU, memory, network interface, and storage, created on a physical hardware system (located off- or on-premises). Software called a hypervisor separates the machine's resources from the hardware and provisions them appropriately so they can be used by the VM.

VirtualBox

VirtualBox is a powerful x86 and AMD64/Intel64 virtualization product for enterprise as well as home use.

VirtualBox is a hypervisor.

What is Vagrant?

- A tool to build development environments based on virtual machines.
- Focused to create environments that are similar as possible or identical with production servers.
- Created by Mitchell Hashimoto.
- Written in Ruby.
- Initially built on top of VirtualBox API, today offers VMWare Fusion support.

How to Install Vagrant

- Get VirtualBox first
- Download installer on Vagrant site
- Get Vagrant box

What is a Vagrant Box?

- Is a previously built Vagrant virtual machine image, ready-to-run
- Available in a lot of platforms.
- You can create one!

How can I add a box?

- Visit box repository
- Run vagrant box command

```
$ vagrant box add <name> <url> <provider>
```

How can I create an environment?

- Creating a Vagrantfile

```
$ vagrant init <your box name>
```

Start to use the VM

```
$ vagrant up
```

How to manage the VM?

- Connect

```
$ vagrant ssh
```

- Stop

```
$ vagrant halt
```

- Restart

```
$ vagrant reload
```

Networking

- IP addresses
- Port forwarding

How can I customize the VM?

- We can change memory, CPU cores and so on

Provision the VM

- We can pre configure the VM with desire software
- We can use:
  1. Chef
  2. Puppet
  3. Shell
  4. Ansible

Using Shell

- We will create a simple bash script to install python, nginx, postgresql, htop