

# TP2 - Cloud Infrastructures

## OpenNebula Configuration

Juan Ángel Lorenzo del Castillo

ICC Cloud Infrastructures

EISTI Pau

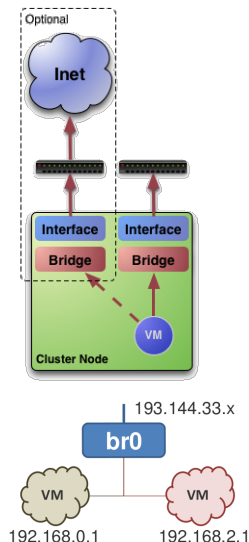
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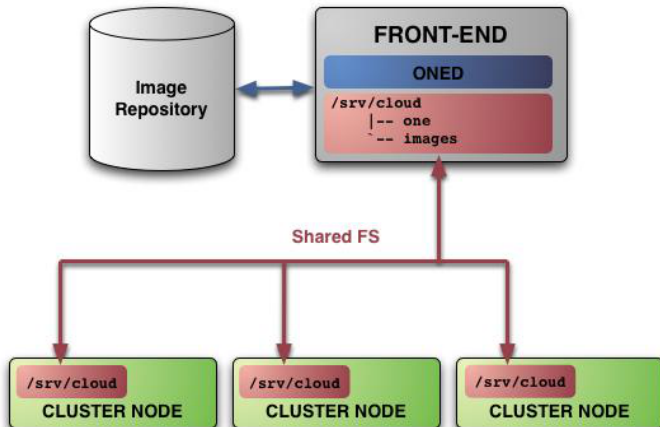
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# OpenNebula Networks

- A Virtual Network, or Vnet, in OpenNebula:
  - ▶ is used to define a MAC/IP address range that can be used by the VMs.
  - ▶ A Vnet is associated to a physical network through a bridge.
  - ▶ Vnets can be isolated (at *layer 2* level)
- How to define a Virtual Network
  - ▶ **Name** of the network
  - ▶ **Type**
    - **Fixed**: a set of IP/MAC *leases*
    - **Ranged**: to define an address range
  - ▶ **Bridge**: Name of the physical bridge in the physical host where the VM must connect its network interface.
- The Virtual networks can be managed also via the CLI:  
onevnet



# OpenNebula Image Repository

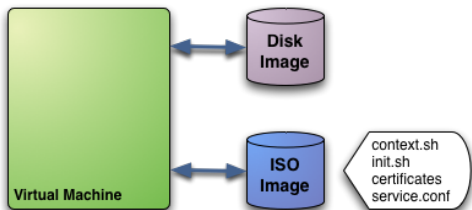


- In OpenNebula repository
  - ▶ A VM hard disk can be used as a device to store either an operating system or data.
  - ▶ Images can be **persistent** and/or public
  - ▶ The modifications performed to an image can be saved as a new image.
- Image types:
  - ▶ **OS** : Contains a working operating system
  - ▶ **CDROM** : Read-only data
  - ▶ **DATABLOCK** : Data storage (hard drive empty or with already existing data)
  - ▶ **RAMDISK** : File to use as a ramdisk
  - ▶ **KERNEL** : File to use as a kernel
  - ▶ **CONTEXT** : File to use in a CDROM drive as a contextualisation file

- Models to define VMs
- The same template can be used to create multiple VMs
- Templates comprise:
  - ▶ **Capacity** : Memory and CPU
  - ▶ **NICs** (Network interfaces) attached to one or several vLANs
  - ▶ A set of **hard drives**
  - ▶ An optional file to store a running VM's memory status plus information about the hypervisor.

# Contextualisation

- Gives configuration information to a VM that has just been created.
- F.ex : Boot scripts, connexion ids, network configuration, etc.



## Some practical information

- The configuration file is on `/etc/one/oned.conf`
- Logs of OpenNebula's daemon (oned) :  
`/var/log/one/oned.log`
- Logs of the scheduler : `/var/log/one/sched.log`
- [▶ opennebula\\_5.2\\_operation\\_guide.pdf](#)

## Hands on!

### 1. Create a new Template...

1. ... that boots from an existing hard disk containing an operating system
2. with two network interfaces
3. with an additional disk in ext3 format
4. that, when creating the VM, asks the user for a welcome message to show in the VMs console at boot time.
5. Once the VM has started make sure that you can access (`mount`) the additional hard disk
6. Using iptables, make sure you give the VMs access to the internet through the frontend (Virtualbox OpenNebula VM)
7. Repeat the process without using Sunstone (OpenNebula's GUI)

## 2. Virtual machine Images

1. Start a new VM with an empty hard disk. Install an operating system of your choice. Explain the steps followed
2. Export the new VM image to make it available for all users

## 3. Contextualisation of virtual machines

- Create a user SSH key
- Create a contextualisation file to apply the following actions to each of your user VMs:
  1. Start the sshd service.
  2. Disable the access by login/password
  3. Insert the user SSH key and enable access by SSH key