Running OpenNebula (Frontend-Host):

- **Start opennebula as oneadmin user:**
  one start
  onehost create **node1** im_xen vmm_xen tm_nfs
  onevnet create vm_lan.template
  onevnet show "VM LAN"

  onevm create vm_instance.template
  onevm show debian
  # here is the problem

Frontend:

NFS settings (Frontend-Host)

- **define an export-directory**
  sudo vim /etc/exports
  /srv/cloud node1(rw,sync,no_subtree_check)

Configuration settings (Frontend-Host)

- **change config file etc/oned.conf:**
  sudo vi **/srv/cloud/one/etc/oned.conf**

  [...]
  VM_DIR=/srv/cloud/one/var/images

  # Sample configuration for MySQL
  DB = [backend = "mysql",
  server = "localhost",
  user = "oneadmin",
  passwd = "blabla",
  db_name = "opennebula"]

  IMAGE_REPOSITORY_PATH = /srv/cloud/one/var/images
  # the official documentation suggests the directory:
  # /srv/cloud/images as container for images, right?

  DEFAULT_IMAGE_TYPE = "CDROM"
  # because of iso-image, is this ok?

```
DEFAULT_DEVICE_PREFIX = "hd"
# what does this mean?
# allowed: sd, xvd, vd
# definition disk device mapping:
        # sda: OS type Image.
        # sdb: Contextualization CDROM.
        # sdc: CDROM type Image.
        # sdd: Swap disk.
        # sd[e,f,g…]: DATABLOCK type Images.


IM_MAD = [
        name          = "im_xen",
        executable = "one_im_ssh",
        arguments  = "xen" ]
VM_MAD = [
        name          = "vmm_xen",
        executable = "one_vmm_sh",
        arguments  = "xen",
        default       = "vmm_sh/vmm_sh_xen.conf",
        type    = "xen" ]
# the file vmm_sh_xen.conf doesnt exist in the folder vmm_sh

TM_MAD = [
        name          = "tm_nfs",
        executable = "one_tm",
        arguments  = "tm_nfs/tm_nfs.conf" ]
[...]
```

- **define the virtual network**

  Before we create a virtual machine, we have to define the virtual network. This is done by creating a template file, e.g. vm_lan.template, which should contain something like:

  NAME = "VM LAN"
  TYPE = RANGED

  BRIDGE = **br0** # Replace **br0** with the bridge interface from the cluster nodes

  NETWORK_ADDRESS = **192.168.2.128**
  # Replace with corresponding IP address

NETWORK_SIZE = 126
NETMASK = 255.255.255.0
GATEWAY = 192.168.2.108
NS = x.x.x.x
 # is this ok?

- **define xen default settings:**

  vi /srv/cloud/one/etc/**vmm_sh/vmm_sh_xen.conf**

  CPU = 0.5
  MEMORY = 256

  OS = [KERNEL="/boot/vmlinuz-2.6.26-1-xen-amd64", INITRD="/boot/initrd.img-2.6.26-1-xen-amd64"]
  # , kernel_cmd="ro"
  # , root="sda5"
  # these two attributes are optional for xen, so i comment them out. is this ok?

  CREDIT = 256

- **define a virtual machine template:**

  vi /srv/cloud/one/vm_instance.template
  NAME = debian
  CPU = 1
  MEMORY = 512

  # Disks & NICS
  OS = [boot = "cdrom"]

  # Define your main disk as usual, and tell OpenNebula to keep the changes.
  DISK = [
  TYPE = "disk",
  SOURCE = "/srv/cloud/images/debian_disk.img",
  TARGET = hda,
  CLONE = "no"]
  # this assumes that you have a **plain file for debian_disk.img (e.g. with a dd)**.
  # is this right?

```
# Define an additional DISK for the ISO image with the installation CD
DISK   = [
        TYPE = "cdrom",
        SOURCE = "/srv/cloud/images/debian-506-amd64-netinst.iso",
        TARGET = hdb,
        CLONE   = "no" ]

# swap, sdd
DISK = [
        TYPE     = swap,
        SIZE     = 1024,
        READONLY = "no" ]

DISK = [
        TYPE   = fs,
        SIZE   = 4096,
        FORMAT = ext3,
        SAVE   = yes,
        TARGET = sdg ]


NIC    = [ NETWORK = "VM LAN" ]


GRAPHICS = [
        type = "vnc",
        listen  = "node1",
        port = "5902" ]

FEATURES=[ acpi="no" ]
```

- **create an empty target image**

```
cd /srv/cloud/images
dd if=/dev/zero of=debian_disk.img bs=1024k seek=20480 count=0
```

Execution-Host(s):

NFS settings (Execution-Host)

```
# install req. packages
        sudo apt-get install portmap nfs-common

# In each cluster node create /srv/cloud
```

create a directory to use as a muont point:

sudo mkdir -p /srv/cloud

edit hosts.allow

sudo vim /etc/hosts.allow

portmap : 192.168.2.108 # (frontend_ip_address)

edit hosts.deny files

sudo vim /etc/hosts.deny

portmap : ALL

edit fstab files in order to enable mounting of NFS space during the boot of the OS:

sudo vim /etc/fstab

192.168.2.108:/srv/cloud /srv/cloud nfs rw 0 0

and mount this directory from the front-end:

sudo mount -t nfs 192.168.2.108:/srv/cloud /srv/cloud

Xen installation:

google: install xen on debian lenny

apt-get install xen-linux-system-2.6.26-1-xen-amd64 xen-utils-3.2-1 lvm2 python-xml xen-tools

sudo vi /etc/xen/xend-config.sxp

#(network-script network-dummy)
(network-script network-bridge)
(xend-relocation-server yes)
(vif-script vif-bridge)
(xend-relocation-port 8002)
(xend-relocation-hosts-allow 'host*') # for hostnames like “host01, host02”
[...]

shutdown -r now
sudo xm list

Xen settings:

- **give dom0 512mb ram, otherwise it will took all the ram for itself # (already done)**
- **give user oneadmin and xen enough privilegs**

sudo /usr/sbin/visudo -f /etc/sudoers

```
oneadmin ALL=(ALL) NOPASSWD: ALL
%xen    ALL=(ALL) NOPASSWD: /usr/sbin/xm *
%xen    ALL=(ALL) NOPASSWD: /usr/sbin/xentop *
```

Network Interface (Execution-Host):

# The primary network interface
sudo vi **/etc/network/interfaces**

```
auto eth0
iface eth0 inet manual
[...]

auto br0
iface br0 inet static
    address 192.168.2.102
    netmask 255.255.255.0
    network 192.168.2.0
    broadcast 192.168.2.255
    gateway 192.168.2.108
    dns-nameservers 192.168.2.1
    bridge_ports eth0
    bridge_fd 9
    bridge_hello 2
    bridge_maxage 12
    bridge_stp off

sudo /etc/init.d/networking restart
```