Práctica A1.P3: Ansible, pasos iniciales

En esta práctica vamos a dar los primeros pasos con la herramienta de provisionamiento automático Ansible. Una parte de la práctica se hará de forma guiada en clase.

Se pide realizar las siguientes operaciones:

Primera parte, creación del entorno multimáquina con Vagrant:

- Como el nodo de administración de Ansible **debe** ser una máquina con sistema Linux vamos a crearla utilizando un vagranfile similar al primero de la práctica A1.P2: Usaremos Ubuntu Server 22, con nombre **AnsibleXXX**, 1GB RAM, red privada 192.168.2XX.0/24 donde XX es el puesto de tu equipo, ip 192.168.2XX.254 y carpeta compartida por defecto. *(1 pto.)*

- Añade al vagrantfile anterior dos máquinas virtuales más que serán las que vamos a provisionar y configurar desde Ansible. Estas máquinas tendrán SO Ubuntu 20 y hostname **Nodo1XXX** y **Nodo2XXX**, 1GB RAM e ip 192.168.2XX.100 y 192.168.2XX.110 respectivamente. *(1 pto.)*

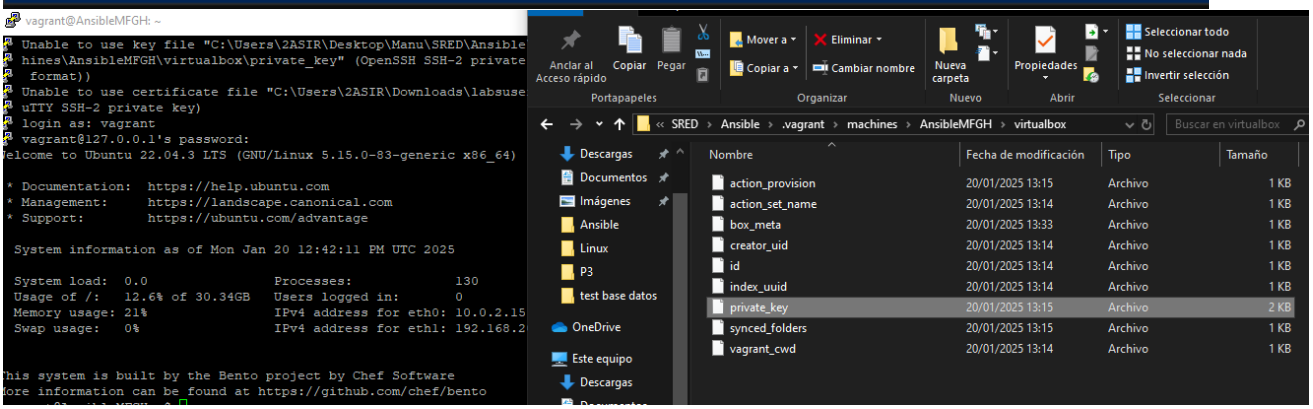
- Accede a la máquina **AnsibleXXX, Nodo1 y Nodo2** desde el anfitrión con las herramientas Putty y WinScp. Utiliza el usuario vagrant:vagrant *(1 pto.)*

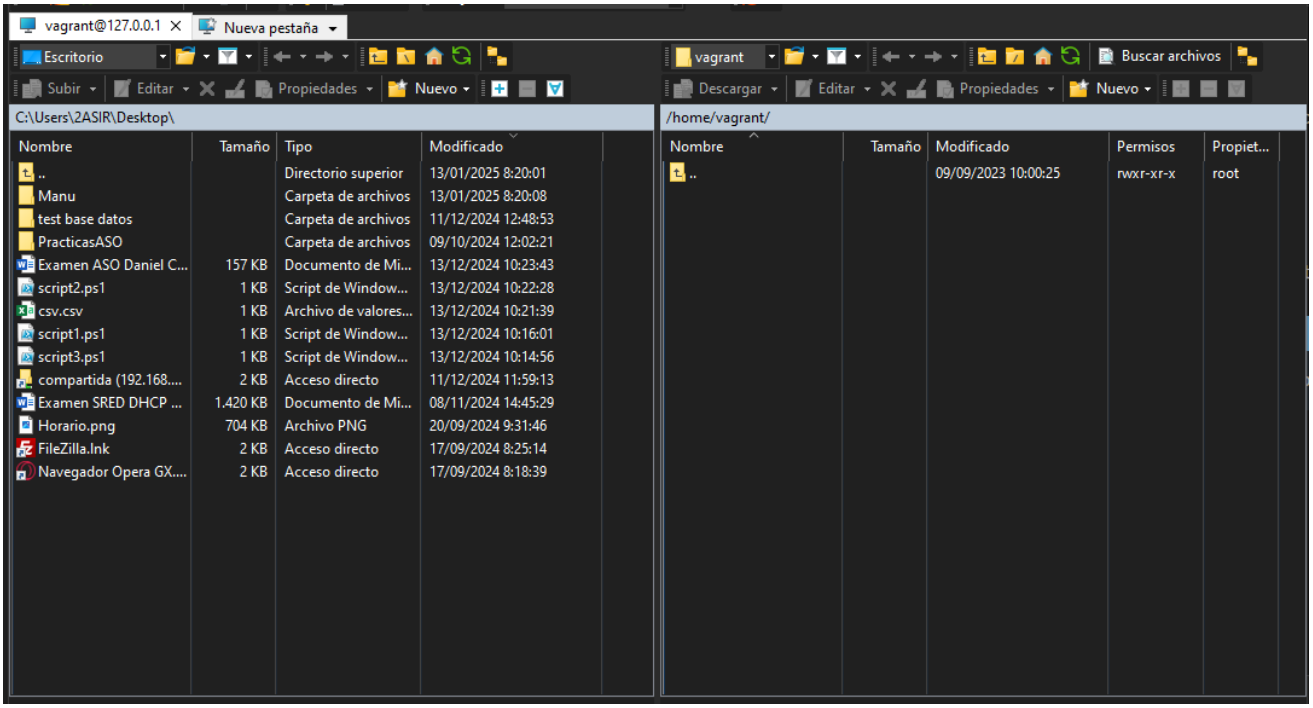
- Accede a la máquina **AnsibleXXX** desde el anfitrión con las herramientas Putty y WinScp. Utiliza el certificado generado por vagrant en la creación de **AnsibleXXX**. **Pista**: *vagrant ssh-config* *(1 pto.)*

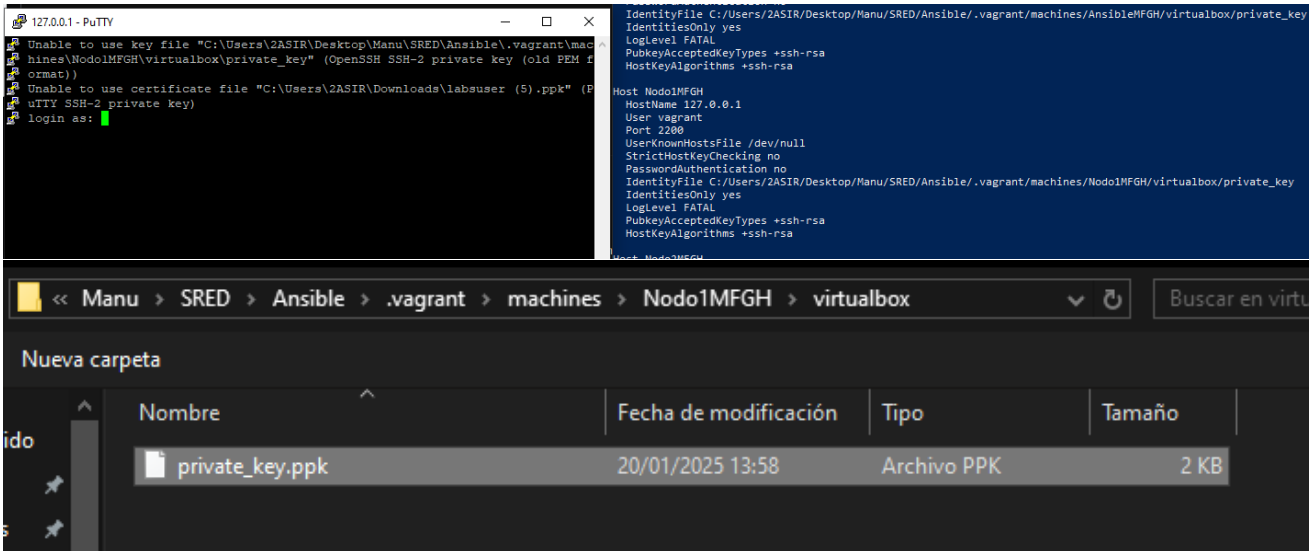
C: > Users > 2ASIR > Desktop > Manu > SRED > Ansible > Vagrantfile

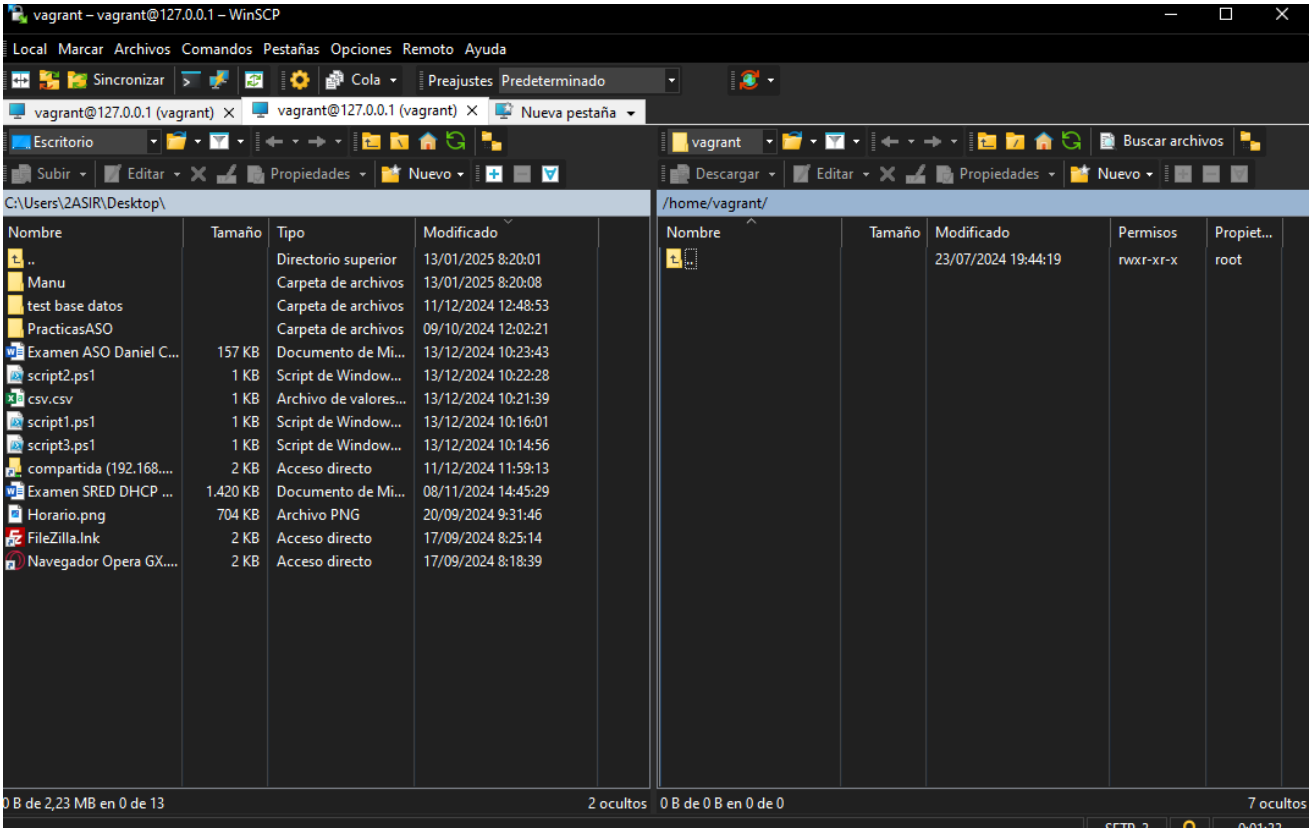
```
Vagrant.configure("2") do |config|
    config.vm.define "AnsibleMFGH" do |ansible|
      ansible.vm.box = "bento/ubuntu-22.04"
      ansible.vm.hostname = "AnsibleMFGH"
      ansible.vm.network "private_network", ip: "192.168.206.254"
      ansible.vm.provider "virtualbox" do |vb|
        vb.memory = "1024"
        vb.cpus = 1
      end

      ansible.vm.synced_folder ".", "/vagrant"
    end

    config.vm.define "Nodo1MFGH" do |nodo1|
      nodo1.vm.box = "bento/ubuntu-20.04"
      nodo1.vm.hostname = "Nodo1MFGH"
      nodo1.vm.network "private_network", ip: "192.168.206.100"
      nodo1.vm.provider "virtualbox" do |vb|
        vb.memory = "1024"
        vb.cpus = 1
      end
    end

    config.vm.define "Nodo2MFGH" do |nodo2|
      nodo2.vm.box = "bento/ubuntu-20.04"
      nodo2.vm.hostname = "Nodo2MFGH"
      nodo2.vm.network "private_network", ip: "192.168.206.110"
      nodo2.vm.provider "virtualbox" do |vb|
        vb.memory = "1024"
        vb.cpus = 1
      end
    end
  end

```

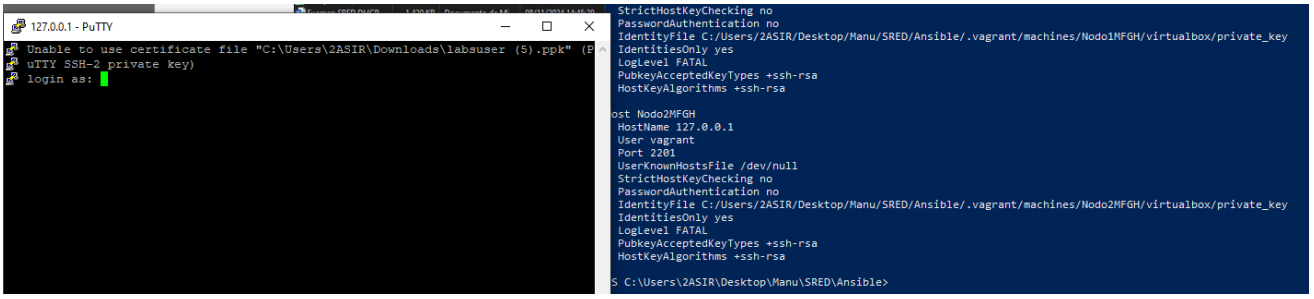
```
PS C:\Users\2ASIR\Desktop\Manu\SRED\Ansible> vagrant up
Bringing machine 'AnsibleMFGH' up with 'virtualbox' provider...
Bringing machine 'Nodo1MFGH' up with 'virtualbox' provider...
Bringing machine 'Nodo2MFGH' up with 'virtualbox' provider...
==> AnsibleMFGH: Checking if box 'bento/ubuntu-22.04' version '202309.08.0' is up to d
==> AnsibleMFGH: Machine already provisioned. Run `vagrant provision` or use the `--pr
==> AnsibleMFGH: flag to force provisioning. Provisioners marked to run always will st
==> Nodo1MFGH: Importing base box 'bento/ubuntu-20.04'...
==> Nodo1MFGH: Matching MAC address for NAT networking...
==> Nodo1MFGH: Setting the name of the VM: Ansible_Nodo1MFGH_1737376439419_31542
==> Nodo1MFGH: Fixed port collision for 22 => 2222. Now on port 2200.
==> Nodo1MFGH: Clearing any previously set network interfaces...
==> Nodo1MFGH: Preparing network interfaces based on configuration...
    Nodo1MFGH: Adapter 1: nat
    Nodo1MFGH: Adapter 2: hostonly
==> Nodo1MFGH: Forwarding ports...
    Nodo1MFGH: 22 (guest) => 2200 (host) (adapter 1)
==> Nodo1MFGH: Running 'pre-boot' VM customizations...
==> Nodo1MFGH: Booting VM...
==> Nodo1MFGH: Waiting for machine to boot. This may take a few minutes...
    Nodo1MFGH: SSH address: 127.0.0.1:2200
    Nodo1MFGH: SSH username: vagrant
    Nodo1MFGH: SSH auth method: private key
    Nodo1MFGH:
    Nodo1MFGH: Vagrant insecure key detected. Vagrant will automatically replace
    Nodo1MFGH: this with a newly generated keypair for better security.
    Nodo1MFGH:
    Nodo1MFGH: Inserting generated public key within guest...
    Nodo1MFGH: Removing insecure key from the guest if it's present...
    Nodo1MFGH: Key inserted! Disconnecting and reconnecting using new SSH key...
==> Nodo1MFGH: Machine booted and ready!
==> Nodo1MFGH: Checking for guest additions in VM...
==> Nodo1MFGH: Setting hostname...
==> Nodo1MFGH: Configuring and enabling network interfaces...
==> Nodo1MFGH: Mounting shared folders...
    Nodo1MFGH: /vagrant => C:/Users/2ASIR/Desktop/Manu/SRED/Ansible
==> Nodo2MFGH: Importing base box 'bento/ubuntu-20.04'...
==> Nodo2MFGH: Matching MAC address for NAT networking...
==> Nodo2MFGH: Setting the name of the VM: Ansible_Nodo2MFGH_1737376501985_85330
==> Nodo2MFGH: Fixed port collision for 22 => 2222. Now on port 2201.
==> Nodo2MFGH: Clearing any previously set network interfaces...
==> Nodo2MFGH: Preparing network interfaces based on configuration...
    Nodo2MFGH: Adapter 1: nat
    Nodo2MFGH: Adapter 2: hostonly
==> Nodo2MFGH: Forwarding ports...
    Nodo2MFGH: 22 (guest) => 2201 (host) (adapter 1)
==> Nodo2MFGH: Running 'pre-boot' VM customizations...
==> Nodo2MFGH: Booting VM...
==> Nodo2MFGH: Waiting for machine to boot. This may take a few minutes...
    Nodo2MFGH: SSH address: 127.0.0.1:2201
```

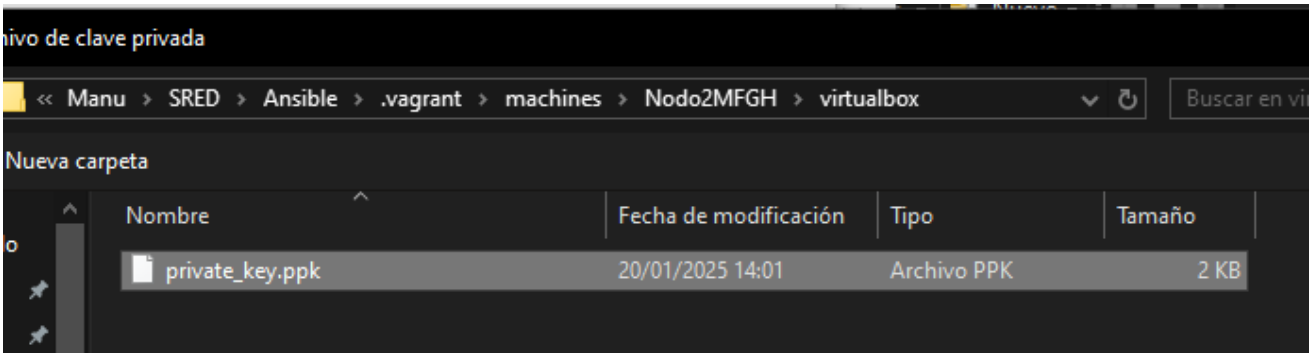


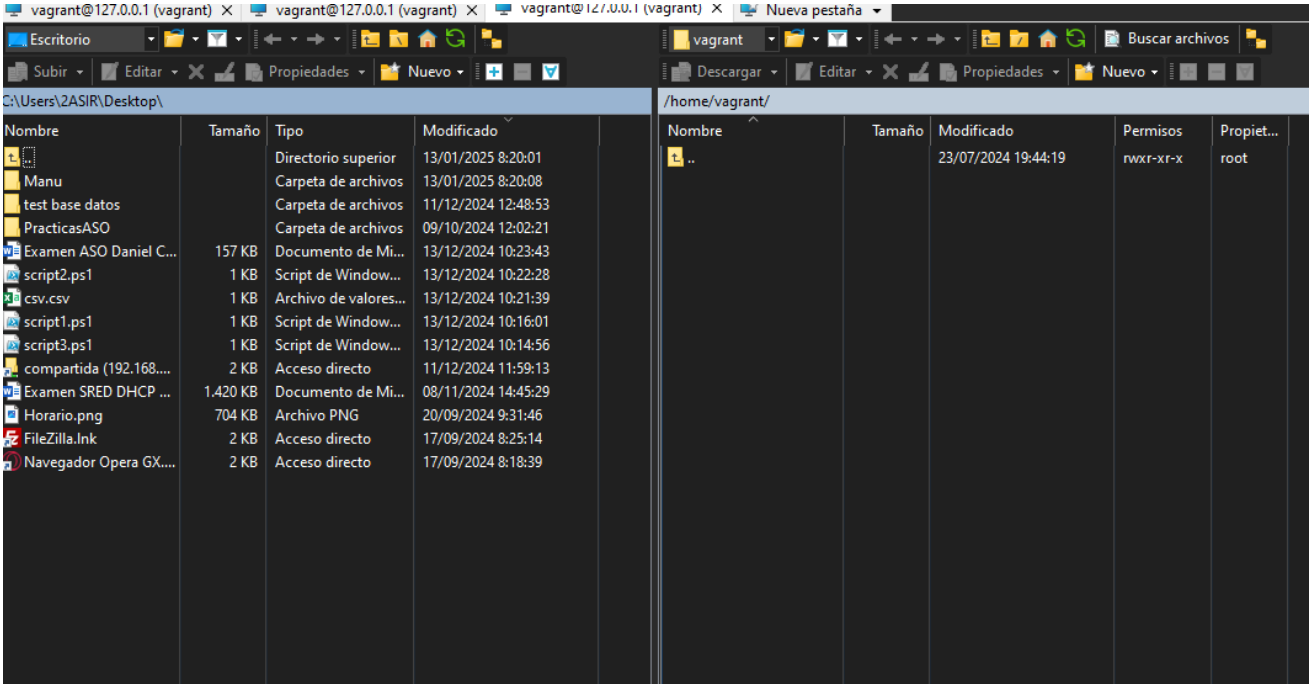

vagrant@127.0.0.1
Nueva pestaña
Escritorio
Subir
Editar
Propiedades
Nuevo
C:\Users\2ASIR\Desktop\
Nombre
Tamaño
Tipo
Modificado
.. Directorio superior 13/01/2025 8:20:01
Manu Carpeta de archivos 13/01/2025 8:20:08
test base datos Carpeta de archivos 11/12/2024 12:48:53
PracticasASO Carpeta de archivos 09/10/2024 12:02:21
Examen ASO Daniel C... 157 KB Documento de Mi... 13/12/2024 10:23:43
script2.ps1 1 KB Script de Window... 13/12/2024 10:22:28
csv.csv 1 KB Archivo de valores... 13/12/2024 10:21:39
script1.ps1 1 KB Script de Window... 13/12/2024 10:16:01
script3.ps1 1 KB Script de Window... 13/12/2024 10:14:56
compartida (192.168.... 2 KB Acceso directo 11/12/2024 11:59:13
Examen SRED DHCP ... 1.420 KB Documento de Mi... 08/11/2024 14:45:29
Horario.png 704 KB Archivo PNG 20/09/2024 9:31:46
FileZilla.lnk 2 KB Acceso directo 17/09/2024 8:25:14
Navegador Opera GX.... 2 KB Acceso directo 17/09/2024 8:18:39
vagrant
Descargar
Buscar archivos
/home/vagrant/
Nombre
Tamaño
Modificado
Permisos
Propiet...
.. 09/09/2023 10:00:25 rwxr-xr-x root


127.0.0.1 - PuTTY
Unable to use key file "C:\Users\2ASIR\Desktop\Manu\SRED\Ansible\.vagrant\machines\NodolMFGH\virtualbox\private_key" (OpenSSH SSH-2 private key (old PEM format))
Unable to use certificate file "C:\Users\2ASIR\Downloads\labsuser (5).ppk" (PuTTY SSH-2 private key)
login as:
IdentityFile C:/Users/2ASIR/Desktop/Manu/SRED/Ansible/.vagrant/machines/AnsibleMFGH/virtualbox/private_key
IdentitiesOnly yes
LogLevel FATAL
PubkeyAcceptedKeyTypes +ssh-rsa
HostKeyAlgorithms +ssh-rsa
Host Nodo1MFGH
HostName 127.0.0.1
User vagrant
Port 2200
UserKnownHostsFile /dev/null
StrictHostKeyChecking no
PasswordAuthentication no
IdentityFile C:/Users/2ASIR/Desktop/Manu/SRED/Ansible/.vagrant/machines/Nodo1MFGH/virtualbox/private_key
IdentitiesOnly yes
LogLevel FATAL
PubkeyAcceptedKeyTypes +ssh-rsa
HostKeyAlgorithms +ssh-rsa
Manu › SRED › Ansible › .vagrant › machines › Nodo1MFGH › virtualbox
Buscar en virtu
Nueva carpeta
Nombre
Fecha de modificación
Tipo
Tamaño
private_key.ppk 20/01/2025 13:58 Archivo PPK 2 KB


vagrant – vagrant@127.0.0.1 – WinSCP
Local Marcar Archivos Comandos Pestañas Opciones Remoto Ayuda
Sincronizar Cola Preajustes Predeterminado
vagrant@127.0.0.1 (vagrant) vagrant@127.0.0.1 (vagrant) Nueva pestaña
Escritorio Subir Editar Propiedades Nuevo
C:\Users\2ASIR\Desktop\
Nombre Tamaño Tipo Modificado
.. Directorio superior 13/01/2025 8:20:01
Manu Carpeta de archivos 13/01/2025 8:20:08
test base datos Carpeta de archivos 11/12/2024 12:48:53
PracticasASO Carpeta de archivos 09/10/2024 12:02:21
Examen ASO Daniel C... 157 KB Documento de Mi... 13/12/2024 10:23:43
script2.ps1 1 KB Script de Window... 13/12/2024 10:22:28
csv.csv 1 KB Archivo de valores... 13/12/2024 10:21:39
script1.ps1 1 KB Script de Window... 13/12/2024 10:16:01
script3.ps1 1 KB Script de Window... 13/12/2024 10:14:56
compartida (192.168.... 2 KB Acceso directo 11/12/2024 11:59:13
Examen SRED DHCP ... 1.420 KB Documento de Mi... 08/11/2024 14:45:29
Horario.png 704 KB Archivo PNG 20/09/2024 9:31:46
FileZilla.lnk 2 KB Acceso directo 17/09/2024 8:25:14
Navegador Opera GX.... 2 KB Acceso directo 17/09/2024 8:18:39
0 B de 2,23 MB en 0 de 13 2 ocultos
vagrant Descargar Editar Propiedades Nuevo Buscar archivos
/home/vagrant/
Nombre Tamaño Modificado Permisos Propiet...
.. 23/07/2024 19:44:19 rwxr-xr-x root
0 B de 0 B en 0 de 0 7 ocultos


127.0.0.1 - PuTTY
Unable to use certificate file "C:\Users\2ASIR\Downloads\labsuser (5).ppk" (P
uTTY SSH-2 private key)
login as:
StrictHostKeyChecking no
PasswordAuthentication no
IdentityFile C:/Users/2ASIR/Desktop/Manu/SRED/Ansible/.vagrant/machines/Nodo1MFGH/virtualbox/private_key
IdentitiesOnly yes
LogLevel FATAL
PubkeyAcceptedKeyTypes +ssh-rsa
HostKeyAlgorithms +ssh-rsa
ost Nodo2MFGH
HostName 127.0.0.1
User vagrant
Port 2201
UserKnownHostsFile /dev/null
StrictHostKeyChecking no
PasswordAuthentication no
IdentityFile C:/Users/2ASIR/Desktop/Manu/SRED/Ansible/.vagrant/machines/Nodo2MFGH/virtualbox/private_key
IdentitiesOnly yes
LogLevel FATAL
PubkeyAcceptedKeyTypes +ssh-rsa
HostKeyAlgorithms +ssh-rsa
S C:\Users\2ASIR\Desktop\Manu\SRED\Ansible>


ivo de clave privada
« Manu › SRED › Ansible › .vagrant › machines › Nodo2MFGH › virtualbox
Buscar en vi
Nueva carpeta
Nombre Fecha de modificación Tipo Tamaño
private_key.ppk 20/01/2025 14:01 Archivo PPK 2 KB



Segunda parte, instalación y configuración del entorno de Ansible y primeras pruebas:

- Nos conectamos con *putty* a **AnsibleXXX** e instalamos Ansible con sus requisitos. Del *Tutorial 1 de ayuda Paso 1 – Instalar Ansible*. (*1 pto.)*

```
vagrant@AnsibleMFGH:~$ ansible --version
ansible 2.10.8
  config file = None
  configured module search path = ['/home/vagrant/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 3.10.12 (main, Jan 17 2025, 14:35:34) [GCC 11.4.0]
vagrant@AnsibleMFGH:~$
```

- En los nodos 1 y 2 tendremos que instalar python y la clave pública para que Ansible pueda acceder a ellos. *Del Tutorial 1 de ayuda Paso 3 – Configurar las claves SSH*. (tendremos que sustituir *root* por *vagrant* en los comandos ssh-copy-id) (*1 pto.)*

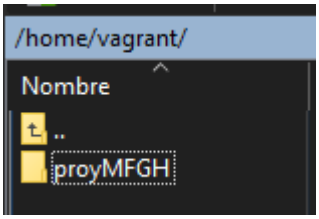
```
vagrant@AnsibleMFGH:~$ ssh-keygen -t rsa -b 2048
Generating public/private rsa key pair.
Enter file in which to save the key (/home/vagrant/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/vagrant/.ssh/id_rsa
Your public key has been saved in /home/vagrant/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:gSjF+dF1yd5UyC9U5tM4mZUhIdoBm9GRWHHf2S7RpLc vagrant@AnsibleMFGH
The key's randomart image is:
+---[RSA 2048]----+
|    ... . +*B=*.=O|
|    .o.....*+* B%=|
|  . .....+ o +B=B|
|    .  .  .  . o=+|
|        S     .E.|
|               . |
|                 |
|                 |
|                 |
+----[SHA256]-----+
vagrant@AnsibleMFGH:~$ ls ~/.ssh/
authorized_keys  id_rsa  id_rsa.pub
vagrant@AnsibleMFGH:~$ ssh-copy-id vagrant@192.168.206.100
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/vagrant/.ssh/id_rsa.pub"
The authenticity of host '192.168.206.100 (192.168.206.100)' can't be established.
ED25519 key fingerprint is SHA256:AsisF7nXdcrk7xzO/aEi8wrf4wb/HKNVxd5PNyvtKzw.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
vagrant@192.168.206.100's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'vagrant@192.168.206.100'"
and check to make sure that only the key(s) you wanted were added.
```

```
vagrant@AnsibleMFGH:~$ ssh-copy-id vagrant@192.168.206.110
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/vagrant/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
vagrant@192.168.206.110's password:
Permission denied, please try again.
vagrant@192.168.206.110's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'vagrant@192.168.206.110'"
and check to make sure that only the key(s) you wanted were added.

vagrant@AnsibleMFGH:~$
```

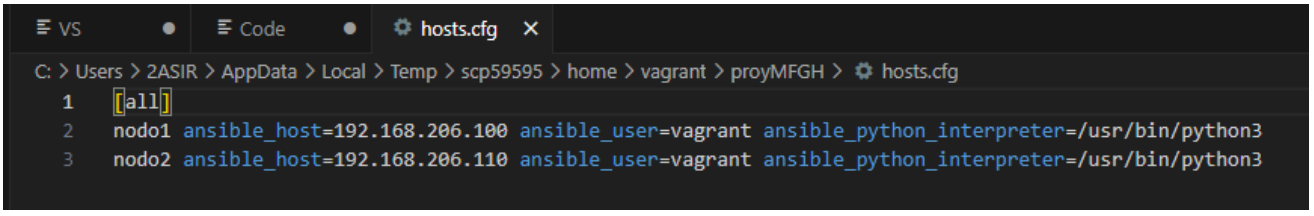
```
vagrant@Nodo1MFGH:~$ sudo apt install -y python3
Reading package lists... Done
Building dependency tree
Reading state information... Done
python3 is already the newest version (3.8.2-0ubuntu2).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
vagrant@Nodo1MFGH:~$ python3 --version
Python 3.8.10
```

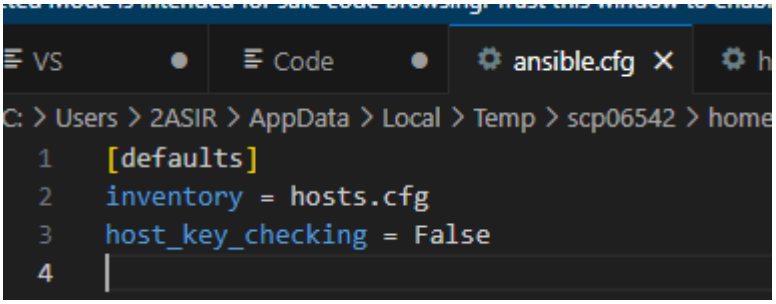
```
vagrant@Nodo2MFGH:~$ sudo apt install -y python3
Reading package lists... Done
Building dependency tree
Reading state information... Done
python3 is already the newest version (3.8.2-0ubuntu2).
python3 set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 67 not upgraded.
vagrant@Nodo2MFGH:~$ python3 --version
Python 3.8.10
vagrant@Nodo2MFGH:~$
```

- Nos conectamos con *winscp* a **AnsibleXXX**. Como resulta más cómodo trabajar con proyectos, para hacer las primera pruebas con Ansible, vamos a crear una carpeta llamada **proyxxx** y ahí añadiremos todos los ficheros de nuestro proyecto Ansible.



Algo similar *al paso 5 del tutorial 2*: Creamos los archivos *hosts.cfg* y *ansible.cfg* y ejecutamos las primeras pruebas con Ansible:






```
ansible all -m ping
```

```
vagrant@AnsibleMFGH:~/proyMFGH$ ansible all -m ping
nodo2 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
nodo1 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
```

ansible Nodo1 -a "df -h"

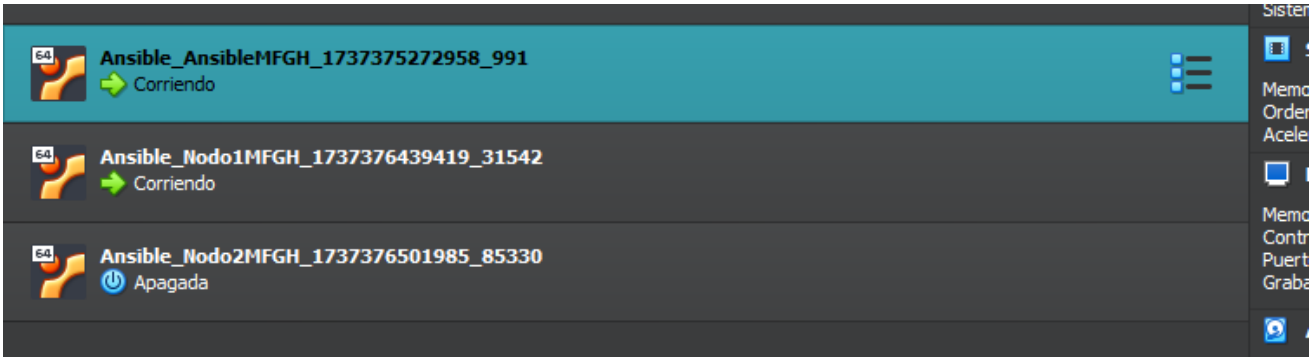
```
vagrant@AnsibleMFGH:~/proyMFGH$ ansible Nodo1MFGH -a "df -h"
Nodo1MFGH | CHANGED | rc=0 >>
Filesystem                         Size  Used Avail Use% Mounted on
udev                               437M     0  437M   0% /dev
tmpfs                               97M  1.1M   96M   2% /run
/dev/mapper/ubuntu--vg-ubuntu--lv   31G  4.2G   25G  15% /
tmpfs                              483M     0  483M   0% /dev/shm
tmpfs                              5.0M     0  5.0M   0% /run/lock
tmpfs                              483M     0  483M   0% /sys/fs/cgroup
/dev/loop0                          64M   64M     0 100% /snap/core20/1828
/dev/loop1                          92M   92M     0 100% /snap/lxd/24061
/dev/loop2                          50M   50M     0 100% /snap/snapd/18357
/dev/sda2                          2.0G  136M  1.7G   8% /boot
vagrant                            466G  367G   99G  79% /vagrant
/dev/loop3                          45M   45M     0 100% /snap/snapd/23545
/dev/loop4                          64M   64M     0 100% /snap/core20/2434
/dev/loop5                          92M   92M     0 100% /snap/lxd/29619
tmpfs                               97M     0   97M   0% /run/user/1000
vagrant@AnsibleMFGH:~/proyMFGH$
```

ansible Nodo2 -a "apt install apache2 -y" --become

```
vagrant@AnsibleMFGH:~/proyMFGH$ ansible Nodo2MFGH -a "apt install apache2 -y" --become
Nodo2MFGH | CHANGED | rc=0 >>
Reading package lists...
Building dependency tree...
Reading state information...
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap libjansson4 liblua5.2-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
  openssl-blacklist
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap libjansson4 liblua5.2-0 ssl-cert
0 upgraded, 11 newly installed, 0 to remove and 67 not upgraded.
Need to get 1,875 kB of archives.
After this operation, 8,121 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libapr1 amd64 1.6.5-1ubuntu1.1 [91.5 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1 amd64 1.6.1-4ubuntu2.2 [85.1 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubuntu2.2 [1
```

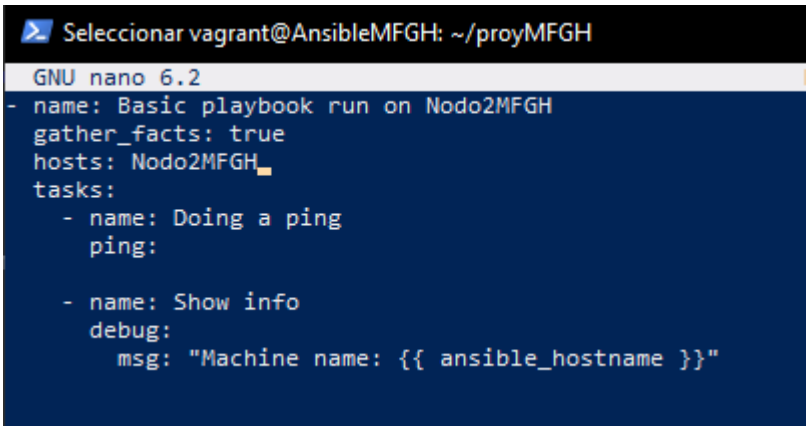
ansible Nodo2 -a "shutdown -h now" –become

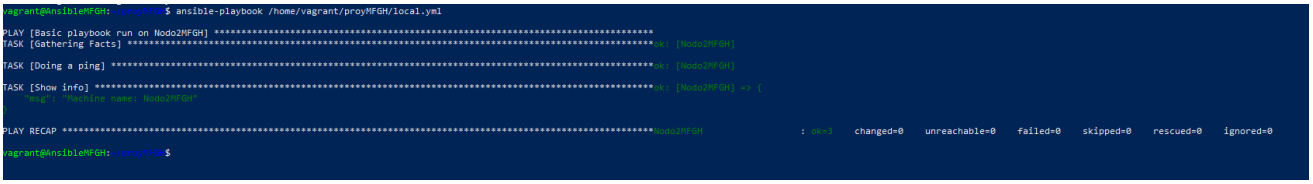
```
vagrant@AnsibleMFGH:~/proyMFGH$ ansible Nodo2MFGH -a "shutdown -h now" --become
Nodo2MFGH | FAILED | rc=-1 >>
Failed to connect to the host via ssh: System is going down. Unprivileged users are not permitted to log in anymore. For
 technical details, see pam_nologin(8).

Connection closed by 192.168.206.110 port 22
vagrant@AnsibleMFGH:~/proyMFGH$
```



Muestra capturas del resultado de estos comandos. Comprueba que el servidor Apache funciona correctamente. *(1 pto.)*

- Ejecuta sobre la máquina Nodo2 el playbook *local.yml* del *Tutorial 2* *(1 pto.)*





- Continua con la lectura del *Tutorial 2* e intenta resolver el paso 9 en el *Nodo1*. Demuestra que lo has hecho de forma correcta accediendo a la página web de *CursosTic* en el *Nodo1*. *(2 ptos.)*