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# 1. Installation d'Ansible.

- Je modifie le fichier hosts et hostname :

```
sio@DEB13: ~  
GNU nano 8.4 /etc/hosts *  
127.0.0.1 localhost  
127.0.1.1 Ansible  
  
# The following lines are desirable for IPv6 capable hosts  
::1 localhost ip6-localhost ip6-loopback  
ff02::1 ip6-allnodes  
ff02::2 ip6-allrouters
```

```
sio@DEB13: ~  
GNU nano 8.4 /etc/hostname  
Ansible
```

- Je mets à jour les paquets disponibles :

```
sio@Ansible: ~  
root@Ansible:~# apt-get update  
Atteint : 1 http://deb.debian.org/debian trixie InRelease  
Atteint : 2 http://security.debian.org/debian-security trixie-security InRelease  
Atteint : 3 http://deb.debian.org/debian trixie-updates InRelease  
Lecture des listes de paquets... Fait  
root@Ansible:~#
```

- J'installe l'outil pip :

```
sio@Ansible: ~  
root@Ansible:~# apt search python3-pip  
python3-pip/stable 25.1.1+dfsg-1 all  
installateur de paquets Python  
  
python3-pip-whl/stable 25.1.1+dfsg-1 all  
Python package installer (pip wheel)  
  
python3-pipdeptree/stable 2.2.0-3 amd64  
display dependency tree of the installed Python 3 packages  
  
root@Ansible:~# █
```

- J'installe le paquet python3 :

```
sio@Ansible: ~  
root@Ansible:~# apt-get install python3-pip  
Lecture des listes de paquets... Fait  
Construction de l'arbre des dépendances... Fait  
Lecture des informations d'état... Fait  
Les paquets supplémentaires suivants seront installés :  
  libexpat1-dev libjs-jquery libjs-sphinxdoc libjs-underscore libpython3-dev libpython3.13-dev  
  python3-dev python3-packaging python3-wheel python3.13-dev zlib1g-dev  
Paquets suggérés :  
  python3-setuptools  
Les NOUVEAUX paquets suivants seront installés :  
  libexpat1-dev libjs-jquery libjs-sphinxdoc libjs-underscore libpython3-dev libpython3.13-dev  
  python3-dev python3-packaging python3-pip python3-wheel python3.13-dev zlib1g-dev  
0 mis à jour, 12 nouvellement installés, 0 à enlever et 109 non mis à jour.  
Il est nécessaire de prendre 8 919 kB dans les archives.  
Après cette opération, 42,4 Mo d'espace disque supplémentaires seront utilisés.  
Souhaitez-vous continuer ? [0/n] o
```

- Grâce à pip j'essaie d'installer ansible, je me rends compte que ce n'est pas possible et que je vais devoir installer un autre paquet :

```
sio@Ansible: ~  
root@Ansible:~# pip install ansible  
error: externally-managed-environment  
  
x This environment is externally managed  
↳ To install Python packages system-wide, try apt install  
  python3-xyz, where xyz is the package you are trying to  
  install.  
  
If you wish to install a non-Debian-packaged Python package,  
create a virtual environment using python3 -m venv path/to/venv.  
Then use path/to/venv/bin/python and path/to/venv/bin/pip. Make  
sure you have python3-full installed.  
  
If you wish to install a non-Debian packaged Python application,  
it may be easiest to use pipx install xyz, which will manage a  
virtual environment for you. Make sure you have pipx installed.  
  
See /usr/share/doc/python3.13/README.venv for more information.  
  
note: If you believe this is a mistake, please contact your Python installation or OS distribution provi  
der. You can override this, at the risk of breaking your Python installation or OS, by passing --break-s  
ystem-packages.  
hint: See PEP 668 for the detailed specification.  
root@Ansible:~# █
```

- J'installe pipx (pour installer des applications Python dans des environnements isolés) :

```
sio@Ansible: ~  
root@Ansible:~# apt-get install pipx  
Lecture des listes de paquets... Fait  
Construction de l'arbre des dépendances... Fait  
Lecture des informations d'état... Fait  
Les paquets supplémentaires suivants seront installés :  
  python3-argcomplete python3-click python3-pip-whl python3-platformdirs python3-setuptools-whl  
  python3-userpath python3-venv python3.13-venv  
Les NOUVEAUX paquets suivants seront installés :  
  pipx python3-argcomplete python3-click python3-pip-whl python3-platformdirs python3-setuptools-whl  
  python3-userpath python3-venv python3.13-venv  
0 mis à jour, 9 nouvellement installés, 0 à enlever et 109 non mis à jour.  
Il est nécessaire de prendre 3 774 kB dans les archives.  
Après cette opération, 7 481 ko d'espace disque supplémentaires seront utilisés.  
Souhaitez-vous continuer ? [0/n] o
```

- J'ajoute le chemin d'exécution de pipx à la variable PATH :

```
sio@Ansible: ~  
root@Ansible:~# pipx ensurepath  
Success! Added /root/.local/bin to the PATH environment variable.  
  
Consider adding shell completions for pipx. Run 'pipx completions' for instructions.  
  
You will need to open a new terminal or re-login for the PATH changes to take effect. Alternatively,  
you can source your shell's config file with e.g. 'source ~/.bashrc'.  
  
Otherwise pipx is ready to go! ✨ ✨ ✨  
root@Ansible:~#
```

- Je vérifie les chemins d'exécution globaux pour pipx :

```
sio@Ansible: ~  
root@Ansible:~# pipx ensurepath --global  
/usr/local/bin is already in PATH.  
  
⚠ All pipx binary directories have been appended to PATH. If you are sure you want to proceed, try  
again with the '--force' flag.  
  
Otherwise pipx is ready to go! ✨ ✨ ✨  
root@Ansible:~#
```

- Je finalise l'installation d'ansible via pipx :

```
sio@Ansible: ~
root@Ansible:~# pipx install --include-deps ansible
installed package ansible 12.2.0, installed using Python 3.13.5
These apps are now globally available
- ansible
- ansible-community
- ansible-config
- ansible-console
- ansible-doc
- ansible-galaxy
- ansible-inventory
- ansible-playbook
- ansible-pull
- ansible-test
- ansible-vault
⚠ Note: '/root/.local/bin' is not on your PATH environment variable. These apps will not be globally accessible until your PATH is updated. Run `pipx ensurepath` to automatically add it, or manually modify your PATH in your shell's config file (e.g. ~/.bashrc).
done! ✨ ✨ ✨ ✨
root@Ansible:~#
```

➤ Je vérifie la version d'ansible installé :

```
sio@Ansible: ~
root@Ansible:~# ansible --version
ansible [core 2.19.4]
  config file = None
  configured module search path = ['/root/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /root/.local/share/pipx/venvs/ansible/lib/python3.13/site-packages/ansible
  ansible collection location = /root/.ansible/collections:/usr/share/ansible/collections
  executable location = /root/.local/bin/ansible
  python version = 3.13.5 (main, Jun 25 2025, 18:55:22) [GCC 14.2.0] (/root/.local/share/pipx/venvs/ansible/bin/python)
  jinja version = 3.1.6
  pyyaml version = 6.0.3 (with libyaml v0.2.5)
root@Ansible:~#
```

## 2. Premier module avec Ansible (setup).

➤ J'exécute le module setup pour collecter les informations et les sauvegarder dans un fichier :

```
sio@Ansible: ~
root@Ansible:~# ansible -m setup localhost > setup.txt
[WARNING]: No inventory was parsed, only implicit localhost is available
root@Ansible:~#
```

- J'affiche les informations détaillées sur l'hôte :

```
sio@Ansible: ~  
root@Ansible:~# cat setup.txt  
localhost | SUCCESS => {  
  "ansible_facts": {  
    "ansible_all_ipv4_addresses": [  
      "10.0.2.15"  
    ],  
    "ansible_all_ipv6_addresses": [  
      "fd17:625c:f037:2:a00:27ff:fee2:8661",  
      "fe80::a00:27ff:fee2:8661",  
      "fd17:625c:f037:2:db71:8829:d5f4:32"  
    ],  
    "ansible_apparmor": {  
      "status": "enabled"  
    },  
    "ansible_architecture": "x86_64",  
    "ansible_bios_date": "12/01/2006",  
    "ansible_bios_vendor": "innotek GmbH",  
    "ansible_bios_version": "VirtualBox",  
    "ansible_board_asset_tag": "NA",  
    "ansible_board_name": "VirtualBox",  
    "ansible_board_serial": "0",  
    "ansible_board_vendor": "Oracle Corporation",  
    "ansible_board_version": "1.2",  
    "ansible_chassis_asset_tag": "NA",  
    "ansible_chassis_serial": "NA",  
    "ansible_chassis_vendor": "Oracle Corporation",  
    "ansible_chassis_version": "NA",  
    "ansible_cmdline": {  
      "BOOT_IMAGE": "/boot/vmlinuz-6.12.48+deb13-amd64",  
      "quiet": true,  
      "ro": true,  
      "root": "UUID=9ccb479-6936-430a-8f70-1ed16e8b90e6"  
    },  
    "ansible_date_time": {  
      "date": "2025-11-19",  
      "day": "19",  
      "epoch": "1763563231",  
      "epoch_int": "1763563231",  
      "hour": "15",  
      "iso8601": "2025-11-19T14:40:31Z",  
      "iso8601_basic": "20251119T154031333196",  
      "iso8601_basic_short": "20251119T154031",  
      "iso8601_micro": "2025-11-19T14:40:31.333196Z",  
      "minute": "40",  
      "month": "11",  
      "second": "31",  
      "time": "15:40:31",  
      "tz": "CET".  
    }  
  }  
}
```

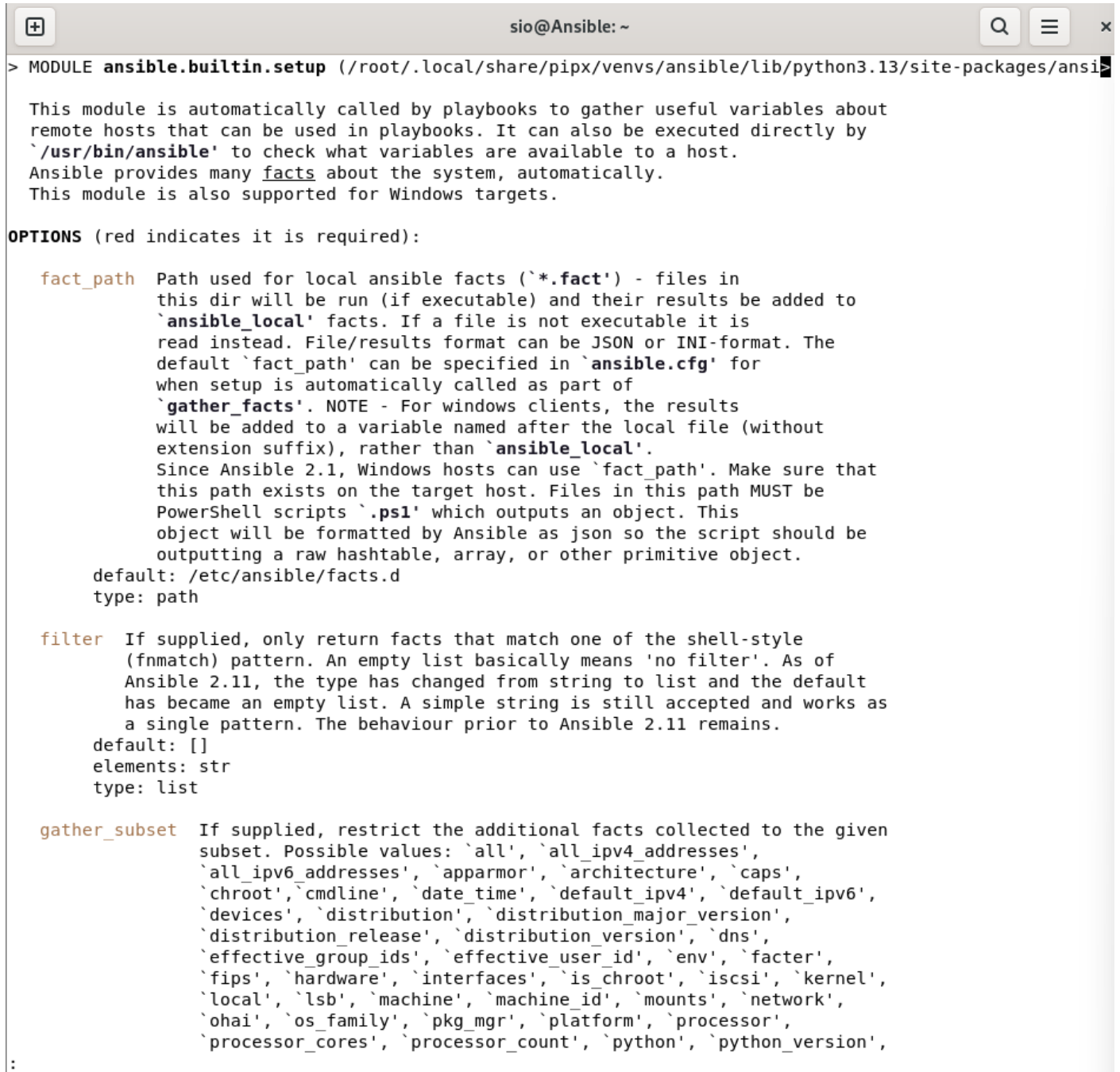
```

    "iso8601_micro": "2025-11-19T14:40:31.333196Z",
    "minute": "40",
    "month": "11",
    "second": "31",
    "time": "15:40:31",
    "tz": "CET",
    "tz_dst": "CEST",
    "tz_offset": "+0100",
    "weekday": "mercredi",
    "weekday_number": "3",
    "weeknumber": "46",
    "year": "2025"
  },
  "ansible_default_ipv4": {
    "address": "10.0.2.15",
    "alias": "enp0s3",
    "broadcast": "10.0.2.255",
    "gateway": "10.0.2.2",
    "interface": "enp0s3",
    "macaddress": "08:00:27:e2:86:61",
    "mtu": 1500,
    "netmask": "255.255.255.0",
    "network": "10.0.2.0",
    "prefix": "24",
    "type": "ether"
  },
  "ansible_default_ipv6": {
    "address": "fd17:625c:f037:2:db71:8829:d5f4:32",
    "gateway": "fe80::2",
    "interface": "enp0s3",
    "macaddress": "08:00:27:e2:86:61",
    "mtu": 1500,
    "prefix": "64",
    "scope": "global",
    "type": "ether"
  },
  "ansible_device_links": {
    "ids": {
      "sda": [
        "ata-VBOX_HARDDISK_VBdf726026-66acad41"
      ],
      "sda1": [
        "ata-VBOX_HARDDISK_VBdf726026-66acad41-part1"
      ],
      "sda2": [
        "ata-VBOX_HARDDISK_VBdf726026-66acad41-part2"
      ],
      "sda5": [

```

### 3. Aide et documentation officielle

- Je tape la commande `ansible-doc setup`, pour afficher la documentation du module `setup` :



```
> MODULE ansible.builtin.setup (/root/.local/share/pipx/venvs/ansible/lib/python3.13/site-packages/ansi

This module is automatically called by playbooks to gather useful variables about
remote hosts that can be used in playbooks. It can also be executed directly by
`usr/bin/ansible` to check what variables are available to a host.
Ansible provides many facts about the system, automatically.
This module is also supported for Windows targets.

OPTIONS (red indicates it is required):

fact_path Path used for local ansible facts (*.fact') - files in
this dir will be run (if executable) and their results be added to
`ansible_local` facts. If a file is not executable it is
read instead. File/results format can be JSON or INI-format. The
default `fact_path` can be specified in `ansible.cfg` for
when setup is automatically called as part of
`gather_facts`. NOTE - For windows clients, the results
will be added to a variable named after the local file (without
extension suffix), rather than `ansible_local`.
Since Ansible 2.1, Windows hosts can use `fact_path`. Make sure that
this path exists on the target host. Files in this path MUST be
PowerShell scripts *.ps1 which outputs an object. This
object will be formatted by Ansible as json so the script should be
outputting a raw hashtable, array, or other primitive object.
default: /etc/ansible/facts.d
type: path

filter If supplied, only return facts that match one of the shell-style
(fnmatch) pattern. An empty list basically means 'no filter'. As of
Ansible 2.11, the type has changed from string to list and the default
has become an empty list. A simple string is still accepted and works as
a single pattern. The behaviour prior to Ansible 2.11 remains.
default: []
elements: str
type: list

gather_subset If supplied, restrict the additional facts collected to the given
subset. Possible values: `all`, `all_ipv4_addresses`,
`all_ipv6_addresses`, `apparmor`, `architecture`, `caps`,
`chroot`, `cmdline`, `date_time`, `default_ipv4`, `default_ipv6`,
`devices`, `distribution`, `distribution_major_version`,
`distribution_release`, `distribution_version`, `dns`,
`effective_group_ids`, `effective_user_id`, `env`, `facter`,
`fips`, `hardware`, `interfaces`, `is_chroot`, `iscsi`, `kernel`,
`local`, `lsb`, `machine`, `machine_id`, `mounts`, `network`,
`ohai`, `os_family`, `pkg_mgr`, `platform`, `processor`,
`processor_cores`, `processor_count`, `python`, `python_version`,
:
```

**gather\_subset** If supplied, restrict the additional facts collected to the given subset. Possible values: ``all'`, ``all_ipv4_addresses'`, ``all_ipv6_addresses'`, ``apparmor'`, ``architecture'`, ``caps'`, ``chroot'`, ``cmdline'`, ``date_time'`, ``default_ipv4'`, ``default_ipv6'`, ``devices'`, ``distribution'`, ``distribution_major_version'`, ``distribution_release'`, ``distribution_version'`, ``dns'`, ``effective_group_ids'`, ``effective_user_id'`, ``env'`, ``facter'`, ``fips'`, ``hardware'`, ``interfaces'`, ``is_chroot'`, ``iscsi'`, ``kernel'`, ``local'`, ``lsb'`, ``machine'`, ``machine_id'`, ``mounts'`, ``network'`, ``ohai'`, ``os_family'`, ``pkg_mgr'`, ``platform'`, ``processor'`, ``processor_cores'`, ``processor_count'`, ``python'`, ``python_version'`, ``real_user_id'`, ``selinux'`, ``service_mgr'`, ``ssh_host_key_dsa_public'`, ``ssh_host_key_ecdsa_public'`, ``ssh_host_key_ed25519_public'`, ``ssh_host_key_rsa_public'`, ``ssh_host_pub_keys'`, ``ssh_pub_keys'`, ``system'`, ``system_capabilities'`, ``system_capabilities_enforced'`, ``systemd'`, ``user'`, ``user_dir'`, ``user_gecos'`, ``user_gid'`, ``user_id'`, ``user_shell'`, ``user_uid'`, ``virtual'`, ``virtualization_role'`, ``virtualization_type'`. Can specify a list of values to specify a larger subset. Values can also be used with an initial `!'` to specify that that specific subset should not be collected. For instance: `!hardware,!network,!virtual,!ohai,!facter'`. If ``all'` is specified then only the min subset is collected. To avoid collecting even the min subset, specify `!all,!min'`. To collect only specific facts, use `!all,!min'`, and specify the particular fact subsets. Use the filter parameter if you do not want to display some collected facts.

default: all  
elements: str  
type: list

**gather\_timeout** Set the default timeout in seconds for individual fact gathering.

default: 10  
type: int

- Je collecte le minimum des faits système :

```
sio@Ansible: ~  
13,  
5,  
"final",  
0  
]  
},  
"ansible_python_version": "3.13.5",  
"ansible_real_group_id": 0,  
"ansible_real_user_id": 0,  
"ansible_selinux": {  
  "status": "disabled"  
},  
"ansible_selinux_python_present": true,  
"ansible_service_mgr": "systemd",  
"ansible_ssh_host_key_ecdsa_public": "AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBKv9zx  
1bdWmbolu4Mb0XCas6BsTf+nQm/D2KIZESqBYKNSJ2giFSdQPKleKq+v5BlbRg45MyzABWBQAImbDXtlg=",  
"ansible_ssh_host_key_ecdsa_public_keytype": "ecdsa-sha2-nistp256",  
"ansible_ssh_host_key_ed25519_public": "AAAAC3NzaC1lZDI1NTE5AAAAIJj0hKjBH6f0fa6Az8CAi27tFRSB1Pyq  
CEmV2+jw/tbj",  
"ansible_ssh_host_key_ed25519_public_keytype": "ssh-ed25519",  
"ansible_ssh_host_key_rsa_public": "AAAAB3NzaC1yc2EAAAADAQABAAQgQCkQmckK2+oaZML6EGTp2j17QcEMuWk0  
gMdwsZEXtY7Vs+XSK8rr7XR8f370YfnAYov0tNB5pXa0CXhBxo2mNrrVdjoPpmPUzslR+MACrQWZtqabtMYnGTompXKA3Ns6+ffjjRrk  
0+x44mg5HTeyofsDNENfHrd2VA00R3ZkBAXETlk6IuR590DIooddHye0Et3QFmkDrM7uFm564K7gevn/3WvZU0kSJP3cqrGLVg5qR7K  
zYbM0jZgWRryn60PkVYes9cnvPxdG9aLmta0Nn0BuqPHUmFFtnRsPaqG5AWJigK6KQx25NN1l/BJUfBGhS0yMzK/AT9vRUDmBzZAVP×j  
0iNm5eVSXQ3gmsC8UsPoK+QDjuUZcyjWlegUz8ZLXuNe0wVQvQMg08yNpHmRsV/tnoyf4867d8MgLIKGYS37Wxw5BDJVEXqpaLQi+A  
K9zyi5LafP/LLhpkeJIeoq5sMoujJeo1Lx6WF6dQz9bCUBtBd+vluDGBhEr3pTllIg0=",  
"ansible_ssh_host_key_rsa_public_keytype": "ssh-rsa",  
"ansible_system": "Linux",  
"ansible_system_capabilities": [  
  "ep Cap_wake_alarm+i"  
],  
"ansible_system_capabilities_enforced": "True",  
"ansible_user_dir": "/root",  
"ansible_user_gecos": "root",  
"ansible_user_gid": 0,  
"ansible_user_id": "root",  
"ansible_user_shell": "/bin/bash",  
"ansible_user_uid": 0,  
"ansible_userspace_architecture": "x86_64",  
"ansible_userspace_bits": "64",  
"gather_subset": [  
  "min"  
],  
"module_setup": true  
},  
"changed": false  
}
```

## 4. Idempotence : exemple avec gestion des répertoires

- J'utilise le module file d'Ansible pour créer un répertoire /tmp/test sur la machine locale (localhost) :

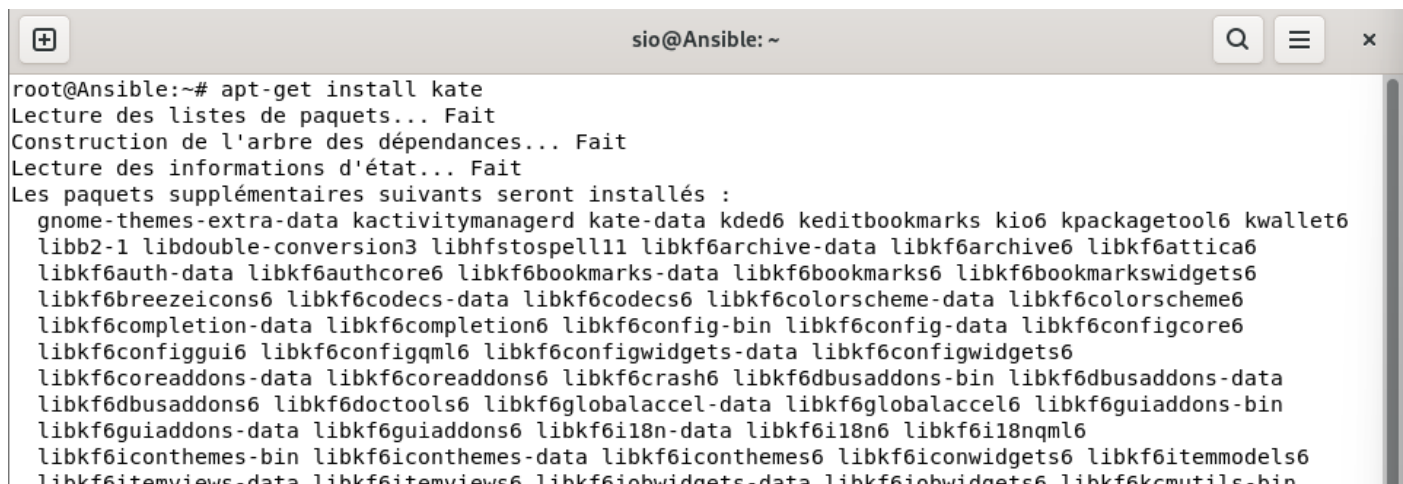
```
sio@Ansible: ~  
root@Ansible:~# ansible -m file -a "path=/tmp/test state=directory" localhost  
[WARNING]: No inventory was parsed, only implicit localhost is available  
localhost | CHANGED => {  
  "changed": true,  
  "gid": 0,  
  "group": "root",  
  "mode": "0775",  
  "owner": "root",  
  "path": "/tmp/test",  
  "size": 40,  
  "state": "directory",  
  "uid": 0  
}  
root@Ansible:~# ansible -m file -a "path=/tmp/test state=directory" localhost  
[WARNING]: No inventory was parsed, only implicit localhost is available  
localhost | SUCCESS => {  
  "changed": false,  
  "gid": 0,  
  "group": "root",  
  "mode": "0775",  
  "owner": "root",  
  "path": "/tmp/test",  
  "size": 40,  
  "state": "directory",  
  "uid": 0  
}  
root@Ansible:~# █
```

- J'utilise le module file d'Ansible pour modifier les permissions d'un répertoire déjà existant :

```
sio@Ansible: ~  
root@Ansible:~# ansible -m file -a "path=/tmp/test state=directory mode=0700" localhost  
[WARNING]: No inventory was parsed, only implicit localhost is available  
localhost | CHANGED => {  
  "changed": true,  
  "gid": 0,  
  "group": "root",  
  "mode": "0700",  
  "owner": "root",  
  "path": "/tmp/test",  
  "size": 40,  
  "state": "directory",  
  "uid": 0  
}  
root@Ansible:~# ls -ld /tmp/test/  
drwx----- 2 root root 40 19 nov. 15:47 /tmp/test/  
root@Ansible:~# █
```

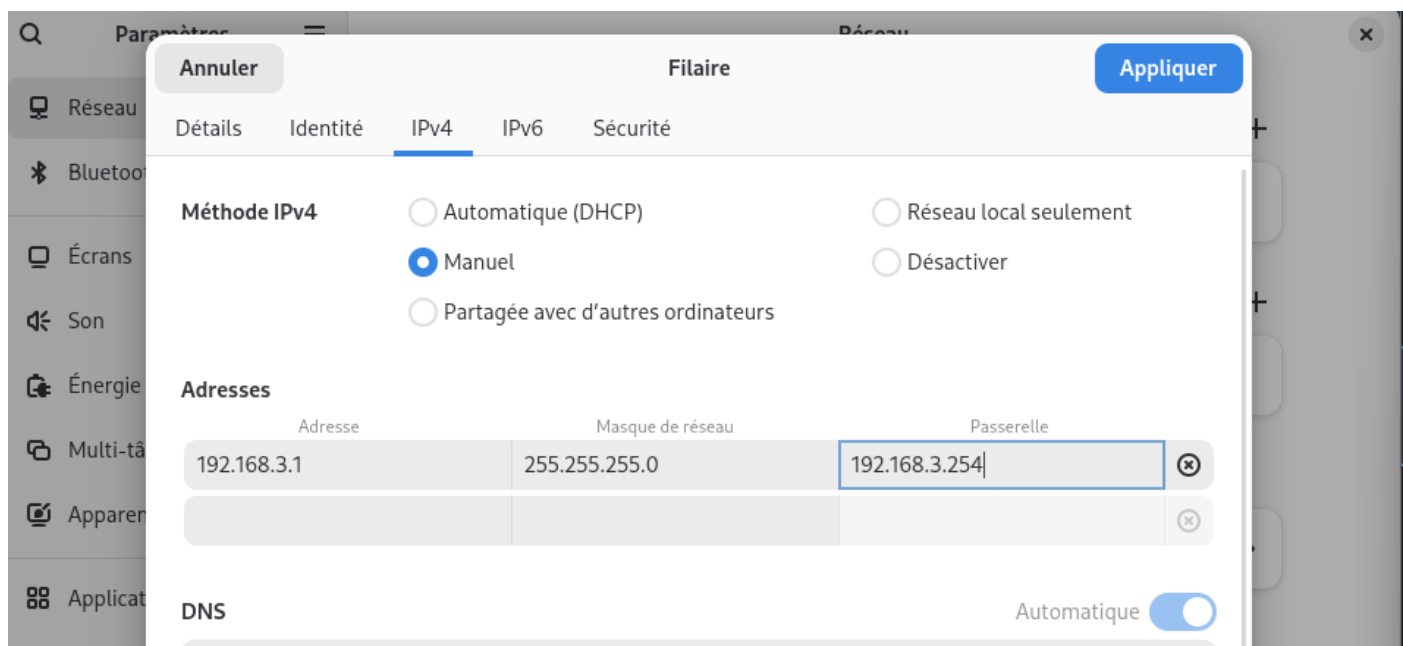
## 5. Création d'un fichier d'inventaire

- J'installe le paquet Kate :



```
sio@Ansible: ~  
root@Ansible:~# apt-get install kate  
Lecture des listes de paquets... Fait  
Construction de l'arbre des dépendances... Fait  
Lecture des informations d'état... Fait  
Les paquets supplémentaires suivants seront installés :  
gnome-themes-extra-data kactivitymanagerd kate-data kded6 keditbookmarks kio6 kpackagekit6 kwallet6  
libb2-1 libdouble-conversion3 libhfstospell11 libkf6archive-data libkf6archive6 libkf6attica6  
libkf6auth-data libkf6authcore6 libkf6bookmarks-data libkf6bookmarks6 libkf6bookmarkswidgets6  
libkf6breezeicons6 libkf6codecs-data libkf6codecs6 libkf6colorscheme-data libkf6colorscheme6  
libkf6completion-data libkf6completion6 libkf6config-bin libkf6config-data libkf6configcore6  
libkf6configgui6 libkf6configqml6 libkf6configwidgets-data libkf6configwidgets6  
libkf6coreaddons-data libkf6coreaddons6 libkf6crash6 libkf6dbusaddons-bin libkf6dbusaddons-data  
libkf6dbusaddons6 libkf6doctools6 libkf6globalaccel-data libkf6globalaccel6 libkf6guiaddons-bin  
libkf6guiaddons-data libkf6guiaddons6 libkf6i18n-data libkf6i18n6 libkf6i18nqml6  
libkf6iconthemes-bin libkf6iconthemes-data libkf6iconthemes6 libkf6iconwidgets6 libkf6itemmodels6  
libkf6itemviews-data libkf6itemviews6 libkf6jobwidgets-data libkf6jobwidgets6 libkf6kcmutils-bin
```

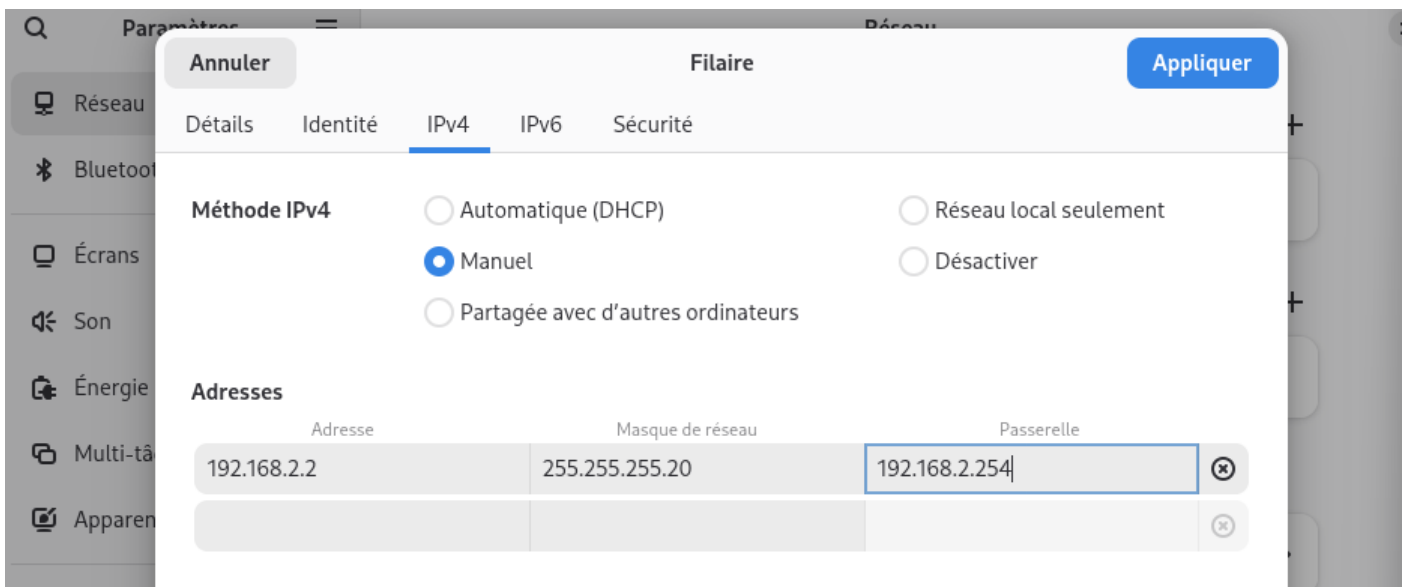
- Je change les paramètres de la carte réseau :



- Et le fichier /etc/hosts :

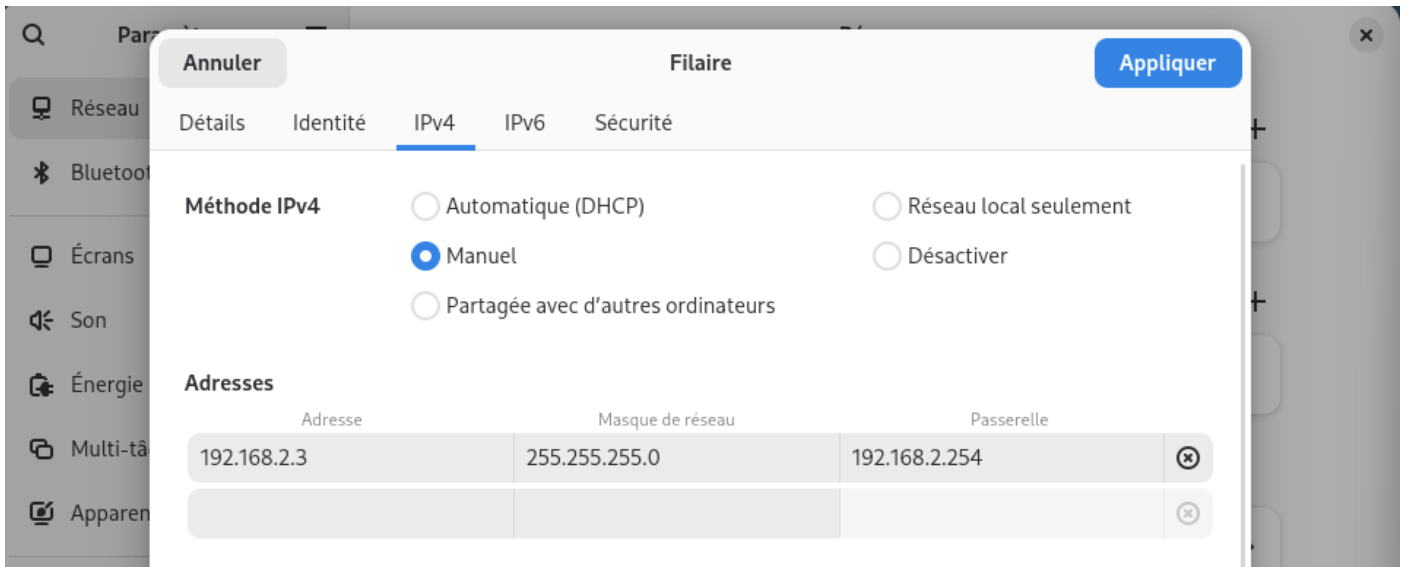
```
sio@Ansible: ~  
GNU nano 8.4 /etc/hosts  
127.0.0.1 localhost  
192.168.3.4 Ansible  
  
# The following lines are desirable for IPv6 capable hosts  
::1 localhost ip6-localhost ip6-loopback  
ff02::1 ip6-allnodes  
ff02::2 ip6-allrouters
```

➤ Idem pour la machine web-1 et bdd-1 :



```
sio@DEB13: ~  
GNU nano 8.4 /etc/hosts  
127.0.0.1 localhost  
192.168.2.2 web-1  
  
# The following lines are desirable for IPv6 capable hosts  
::1 localhost ip6-localhost ip6-loopback  
ff02::1 ip6-allnodes  
ff02::2 ip6-allrouters
```

```
sio@DEB13: ~  
GNU nano 8.4 /etc/hostname  
web1
```



➤ J'active SSH sur les machines :



```
sio@Ansible: ~  
root@Ansible:~# systemctl restart sshd  
root@Ansible:~#
```

- Avec Kate je créer un fichier en .ini :

```
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire  
test.inv  
home sio Documents Inventory test.inv  
1 localhost ansible_connection=local  
2  
3 [front]  
4 web-1 ansible_host=192.168.2.2  
5  
6 [database]  
7 bdd-1 ansible_host=192.168.2.3  
8  
9 [front:vars]  
10 ansible_user=root  
11
```

- J'utilise le module debug d'Ansible pour afficher les groupes et je le définis dans un fichier d'inventaire :

```
sio@Ansible: ~  
root@Ansible:/home/sio/Documents# ansible -i Inventory/test.inv -m debug -a var=groups localhost  
localhost | SUCCESS => {  
  "groups": {  
    "all": [  
      "localhost",  
      "web-1",  
      "bdd-1"  
    ],  
    "database": [  
      "bdd-1"  
    ],  
    "front": [  
      "web-1"  
    ],  
    "ungrouped": [  
      "localhost"  
    ]  
  }  
}  
root@Ansible:/home/sio/Documents#
```

## 6. Connexion aux serveurs avec le protocole SSH

- Je génère une paire de clés publique/privée :

```
sio@Ansible: ~
root@Ansible:~# ssh-keygen -b 256 -t ecdsa
Generating public/private ecdsa key pair.
Enter file in which to save the key (/root/.ssh/id_ecdsa):
Enter passphrase for "/root/.ssh/id_ecdsa" (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_ecdsa
Your public key has been saved in /root/.ssh/id_ecdsa.pub
The key fingerprint is:
SHA256:DikV089E/1MEuQJrWSZ3M6Fha2f8yEH7VCH+UbNy0sI root@Ansible
The key's randomart image is:
+----[ECDSA 256]----+
|      . . 0 +=.0+ |
|      +oo+*Boo.+ |
|      + .0=.*Eo= |
|      . *+..=.B* . |
|      . o.S  .= 0. |
|      . 0      . |
|      . |
+-----[SHA256]-----+
root@Ansible:~#
```

```
sio@Ansible: ~
root@Ansible:~# ls -al .ssh
total 16
drwx----- 2 root root 4096 26 nov. 15:21 .
drwx----- 6 root root 4096 19 nov. 15:45 ..
-rw----- 1 root root 505 26 nov. 15:21 id_ecdsa
-rw-r--r-- 1 root root 174 26 nov. 15:21 id_ecdsa.pub
root@Ansible:~#
```

- Sur les deux serveurs SSH je décommente les lignes PubkeyAuthentication yes et AuthorizedKeysFile dans le fichier de configuration du démon SSH :

```
sio@web1: ~
GNU nano 8.4 /etc/ssh/sshd config
PermitRootLogin yes
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

PubkeyAuthentication yes

# Expect .ssh/authorized_keys2 to be disregarded by default in future.
AuthorizedKeysFile .ssh/authorized_keys .ssh/authorized_keys2

#AuthorizedPrincipalsFile none
```

The image displays three terminal windows. The top window shows a root user on 'web1' executing 'systemctl restart sshd'. The middle window shows the nano editor editing '/etc/ssh/sshd\_config' on 'bdd-1', with several lines of configuration visible. The bottom window shows a root user on 'bdd-1' executing 'systemctl restart sshd'.

```
sio@web1: ~
root@web1:~# systemctl restart sshd
root@web1:~# █

GNU nano 8.4 /etc/ssh/sshd_config
#LogLevel INFO

# Authentication:

#LoginGraceTime 2m
PermitRootLogin yes
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

PubkeyAuthentication yes

# Expect .ssh/authorized_keys2 to be disregarded by default in future.
AuthorizedKeysFile .ssh/authorized_keys .ssh/authorized_keys2

#AuthorizedPrincipalsFile none
26 nov. 15:26

sio@bdd-1: ~
root@bdd-1:~# systemctl restart sshd
root@bdd-1:~# █
```

- Sur le client SSH Ansible, J'enlève le # de commentaire dans le fichier de configuration du client ssh :

```
GNU nano 8.4 /etc/ssh/ssh_config
# 1. command line options
# 2. user-specific file
# 3. system-wide file
# Any configuration value is only changed the first time it is set.
# Thus, host-specific definitions should be at the beginning of the
# configuration file, and defaults at the end.

# Site-wide defaults for some commonly used options. For a comprehensive
# list of available options, their meanings and defaults, please see the
# ssh_config(5) man page.

Include /etc/ssh/ssh_config.d/*.conf

Host *
# ForwardAgent no
# ForwardX11 no
# ForwardX11Trusted yes
# PasswordAuthentication yes
# HostbasedAuthentication no
# GSSAPIAuthentication no
# GSSAPIDelegateCredentials no
# GSSAPIKeyExchange no
# GSSAPITrustDNS no
# BatchMode no
# CheckHostIP no
# AddressFamily any
# ConnectTimeout 0
# StrictHostKeyChecking ask
# IdentityFile ~/.ssh/id_rsa
# IdentityFile ~/.ssh/id_dsa
█ IdentityFile ~/.ssh/id_ecdsa
# IdentityFile ~/.ssh/id_ed25519
# Port 22
```

```
sio@Ansible: ~
root@Ansible:~# systemctl restart ssh
root@Ansible:~# █
```

➤ J'envois depuis le client SSH Anisble, la clé publique aux deux serveurs SSH web-1 et bdd-1 :

```
sio@Ansible: ~
root@Ansible:~# ssh-copy-id -i .ssh/id_ecdsa.pub root@192.168.2.2
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: ".ssh/id_ecdsa.pub"
The authenticity of host '192.168.2.2 (192.168.2.2)' can't be established.
ED25519 key fingerprint is SHA256:VGQSh0WT3H8BYmK+RUPxe516LgXCR/mBXvVOETmonwM.
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
root@192.168.2.2's password:

Number of key(s) added: 1

Now try logging into the machine, with: "ssh -i .ssh/id_ecdsa 'root@192.168.2.2'"
and check to make sure that only the key(s) you wanted were added.

root@Ansible:~# █
```

```

root@Ansible:~# ssh-copy-id -i .ssh/id_ecdsa.pub root@192.168.2.3
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: ".ssh/id_ecdsa.pub"
The authenticity of host '192.168.2.3 (192.168.2.3)' can't be established.
ED25519 key fingerprint is SHA256:VGQShoWT3H8BYmK+RUPxe516LgXCR/mBXvVOETmonwM.
This host key is known by the following other names/addresses:
  ~/.ssh/known_hosts:1: [hashed name]
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
root@192.168.2.3's password:

Number of key(s) added: 1

Now try logging into the machine, with: "ssh -i .ssh/id_ecdsa 'root@192.168.2.3'"
and check to make sure that only the key(s) you wanted were added.

root@Ansible:~# █

```

➤ Je vérifie la présence de la clé publique sur les serveurs SSH :

```

sio@web1: ~
root@web1:~# cd .ssh/
root@web1:~/.ssh# ls -l
total 4
-rw----- 1 root root 174 26 nov. 15:38 authorized_keys
root@web1:~/.ssh# cat authorized_keys
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBIoio0KRGa5vGXJW5jcV8yTNBMgFRTew1
X98KUKm6s0+eHbl/HjEJKfntlyDFp6B609lLhMrkn9Mqr1IzIW8FYQ8= root@Ansible
root@web1:~/.ssh# █

```

```

sio@bdd-1: ~
root@bdd-1:~# cd .ssh/
root@bdd-1:~/.ssh# ls -l
total 4
-rw----- 1 root root 174 26 nov. 15:39 authorized_keys
root@bdd-1:~/.ssh# cat authorized_keys
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBIoio0KRGa5vGXJW5jcV8yTNBMgFRTew1
X98KUKm6s0+eHbl/HjEJKfntlyDFp6B609lLhMrkn9Mqr1IzIW8FYQ8= root@Ansible
root@bdd-1:~/.ssh# █

```

➤ Je vérifie le bon fonctionnement de l'authentification par clés :

```

sio@Ansible: ~
root@Ansible:~# ssh root@192.168.2.2
Linux web1 6.12.48+deb13-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.12.48-1 (2025-09-20) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
root@web1:~# █

```

- Sur les deux serveurs SSH web-1 et bdd-1, je désactive l'authentification par mot de passe pour juste conserver celle par clés dans le fichier de configuration /etc/ssh/sshd\_config. Je décommente pour ce faire la directive PasswordAuthentication et je lui affecte le paramètre no :

```
GNU nano 8.4 /etc/ssh/sshd_config *
#AuthorizedPrincipalsFile none
#AuthorizedKeysCommand none
#AuthorizedKeysCommandUser nobody

# For this to work you will also need host keys in /etc/ssh/ssh_known_hosts
#HostbasedAuthentication no
# Change to yes if you don't trust ~/.ssh/known_hosts for
# HostbasedAuthentication
#IgnoreUserKnownHosts no
# Don't read the user's ~/.rhosts and ~/.shosts files
#IgnoreRhosts yes

# To disable tunneled clear text passwords, change to "no" here!
PasswordAuthentication no
#PermitEmptyPasswords no
```

```
GNU nano 8.4 /etc/ssh/sshd_config
# For this to work you will also need host keys in /etc/ssh/ssh_known_hosts
#HostbasedAuthentication no
# Change to yes if you don't trust ~/.ssh/known_hosts for
# HostbasedAuthentication
#IgnoreUserKnownHosts no
# Don't read the user's ~/.rhosts and ~/.shosts files
#IgnoreRhosts yes

# To disable tunneled clear text passwords, change to "no" here!
PasswordAuthentication no
#PermitEmptyPasswords no

# Change to "yes" to enable keyboard-interactive authentication. Depending on
# the system's configuration, this may involve passwords, challenge-response,
# one-time passwords or some combination of these and other methods.
# Beware issues with some PAM modules and threads.
KbdInteractiveAuthentication no
```

- J'active l'agent SSH sur le client SSH Ansible :

```
sio@Ansible: ~
root@Ansible:~# ssh-agent /bin/bash
root@Ansible:~# ssh-add
Identity added: /root/.ssh/id_ecdsa (root@Ansible)
root@Ansible:~#
```

## 7. Test de communication avec le module ping

- Je réalise un test de communication avec les machines de l'inventaire :

```
root@Ansible:~# ansible -i /home/sio/Documents/Inventory/test.inv -m ping all
[WARNING]: Host 'localhost' is using the discovered Python interpreter at '/usr/bin/python3.13', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See ht
tps://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more informa
tion.
localhost | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "changed": false,
  "ping": "pong"
}
[WARNING]: Host 'web-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See ht
tps://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more informa
tion.
web-1 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "changed": false,
  "ping": "pong"
}
[WARNING]: Host 'bdd-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See ht
tps://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more informa
tion.
bdd-1 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "changed": false,
  "ping": "pong"
}
root@Ansible:~# █
```



The image shows a terminal window titled 'sio@Ansible: ~'. The user has executed the command 'ansible -i /home/sio/Documents/Inventory/test.yml -m ping front'. The output shows a success for the 'web-1' host, with the same JSON structure as the previous terminal output. The terminal window includes standard window controls (minimize, maximize, close) and a search icon.

```
sio@Ansible: ~
root@Ansible:~# ansible -i /home/sio/Documents/Inventory/test.yml -m ping front
[WARNING]: Host 'web-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See ht
tps://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more informa
tion.
web-1 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "changed": false,
  "ping": "pong"
}
root@Ansible:~#
```

## 8. Installation d'un serveur Apache (en mode ad-hoc)

- Je m'assure de la présence d'un paquet grâce au module apt :

```
sio@Ansible: ~  
root@Ansible:~# ansible -m apt -a "name=bash state=present" -i /home/sio/Documents/Inventory/projetB1/test.yml front  
[WARNING]: Host 'web-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future installation of another Python interpreter could cause a different interpreter to be discovered. See https://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more information.  
web-1 | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "cache_update_time": 1764164728,  
  "cache_updated": false,  
  "changed": false  
}  
root@Ansible:~#
```

- Ou module package si la distribution est différente :

```
sio@Ansible: ~  
root@Ansible:~# ansible -m package -a "name=bash state=present" -i /home/sio/Documents/Inventory/projetB1/test.yml front,database  
[WARNING]: Host 'bdd-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future installation of another Python interpreter could cause a different interpreter to be discovered. See https://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more information.  
bdd-1 | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "cache_update_time": 1764165252,  
  "cache_updated": false,  
  "changed": false  
}  
[WARNING]: Host 'web-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future installation of another Python interpreter could cause a different interpreter to be discovered. See https://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more information.  
web-1 | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "cache_update_time": 1764164728,  
  "cache_updated": false,  
  "changed": false  
}  
root@Ansible:~#
```

➤ J'installe le serveur Apache sur les machines du groupe front :

```
root@Ansible:~# ansible -i /home/sio/Documents/Inventory/projetB1/test.yml -m apt -a "name=apache2 state=
present" front
[WARNING]: Host 'web-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See htt
ps://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more informa
tion.
web-1 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "cache_update_time": 1764164728,
  "cache_updated": false,
  "changed": true,
  "stderr": "",
  "stderr_lines": [],
  "stdout": "Reading package lists...\nBuilding dependency tree...\nReading state information...\nThe
following additional packages will be installed:\n apache2-data apache2-utils\nSuggested packages:\n a
pache2-doc apache2-suexec-pristine | apache2-suexec-custom ufw\nThe following NEW packages will be insta
lled:\n apache2 apache2-data apache2-utils\n0 upgraded, 3 newly installed, 0 to remove and 109 not upgr
aded.\nNeed to get 599 kB of archives.\nAfter this operation, 1914 kB of additional disk space will be u
sed.\nGet:1 http://deb.debian.org/debian trixie/main amd64 apache2-data all 2.4.65-2 [160 kB]\nGet:2 htt
p://deb.debian.org/debian trixie/main amd64 apache2-utils amd64 2.4.65-2 [215 kB]\nGet:3 http://deb.debi
an.org/debian trixie/main amd64 apache2 amd64 2.4.65-2 [224 kB]\nFetch: 599 kB in 0s (1699 kB/s)\nSelec
ting previously unselected package apache2-data.\r\n(Reading database ... \r(Reading database ... 5%\r(R
eading database ... 10%\r(Reading database ... 15%\r(Reading database ... 20%\r(Reading database ... 25%
\r(Reading database ... 30%\r(Reading database ... 35%\r(Reading database ... 40%\r(Reading database ...
45%\r(Reading database ... 50%\r(Reading database ... 55%\r(Reading database ... 60%\r(Reading database
... 65%\r(Reading database ... 70%\r(Reading database ... 75%\r(Reading database ... 80%\r(Reading data
base ... 85%\r(Reading database ... 90%\r(Reading database ... 95%\r(Reading database ... 100%\r(Reading
database ... 164926 files and directories currently installed.)\r\nPreparing to unpack .../apache2-data
_2.4.65-2_all.deb ... \r\nUnpacking apache2-data (2.4.65-2) ... \r\nSelecting previously unselected packag
e apache2-utils.\r\nPreparing to unpack .../apache2-utils_2.4.65-2_amd64.deb ... \r\nUnpacking apache2-ut
ils (2.4.65-2) ... \r\nSelecting previously unselected package apache2.\r\nPreparing to unpack .../apache
2_2.4.65-2_amd64.deb ... \r\nUnpacking apache2 (2.4.65-2) ... \r\nSetting up apache2-data (2.4.65-2) ... \r
\nSetting up apache2-utils (2.4.65-2) ... \r\nSetting up apache2 (2.4.65-2) ... \r\nEnabling module mpm_ev
ent.\r\nEnabling module authz_core.\r\nEnabling module authz_host.\r\nEnabling module authn_core.\r\nEna
bling module auth_basic.\r\nEnabling module access_compat.\r\nEnabling module authn_file.\r\nEnabling mo
dule authz_user.\r\nEnabling module alias.\r\nEnabling module dir.\r\nEnabling module autoindex.\r\nEnab
ling module env.\r\nEnabling module mime.\r\nEnabling module negotiation.\r\nEnabling module setenvif.\r
\nEnabling module filter.\r\nEnabling module deflate.\r\nEnabling module status.\r\nEnabling module reqt
imeout.\r\nEnabling conf charset.\r\nEnabling conf localized-error-pages.\r\nEnabling conf other-vhosts-
access-log.\r\nEnabling conf security.\r\nEnabling conf serve-cgi-bin.\r\nEnabling site 000-default.\r\n
Created symlink '/etc/systemd/system/multi-user.target.wants/apache2.service' -> '/usr/lib/systemd/system
/apache2.service'.\r\n\r\nCreated symlink '/etc/systemd/system/multi-user.target.wants/apache-htcacheclean
```

```

"(Reading database ... 100%",
"(Reading database ... 164926 files and directories currently installed.)",
"Preparing to unpack .../apache2-data_2.4.65-2_all.deb ...",
"Unpacking apache2-data (2.4.65-2) ...",
"Selecting previously unselected package apache2-utils.",
"Preparing to unpack .../apache2-utils_2.4.65-2_amd64.deb ...",
"Unpacking apache2-utils (2.4.65-2) ...",
"Selecting previously unselected package apache2.",
"Preparing to unpack .../apache2_2.4.65-2_amd64.deb ...",
"Unpacking apache2 (2.4.65-2) ...",
"Setting up apache2-data (2.4.65-2) ...",
"Setting up apache2-utils (2.4.65-2) ...",
"Setting up apache2 (2.4.65-2) ...",
"Enabling module mpm_event.",
"Enabling module authz_core.",
"Enabling module authz_host.",
"Enabling module authn_core.",
"Enabling module auth_basic.",
"Enabling module access_compat.",
"Enabling module authn_file.",
"Enabling module authz_user.",
"Enabling module alias.",
"Enabling module dir.",
"Enabling module autoindex.",
"Enabling module env.",
"Enabling module mime.",
"Enabling module negotiation.",
"Enabling module setenvif.",
"Enabling module filter.",
"Enabling module deflate.",
"Enabling module status.",
"Enabling module reqtimeout.",
"Enabling conf charset.",
"Enabling conf localized-error-pages.",
"Enabling conf other-vhosts-access-log.",
"Enabling conf security.",
"Enabling conf serve-cgi-bin.",
"Enabling site 000-default.",
"Created symlink '/etc/systemd/system/multi-user.target.wants/apache2.service' → '/usr/lib/systemd/system/apache2.service'.",
",",
"Created symlink '/etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service' → '/usr/lib/systemd/system/apache-htcacheclean.service'.",
",",
"Processing triggers for man-db (2.13.1-1) ..."
]
}

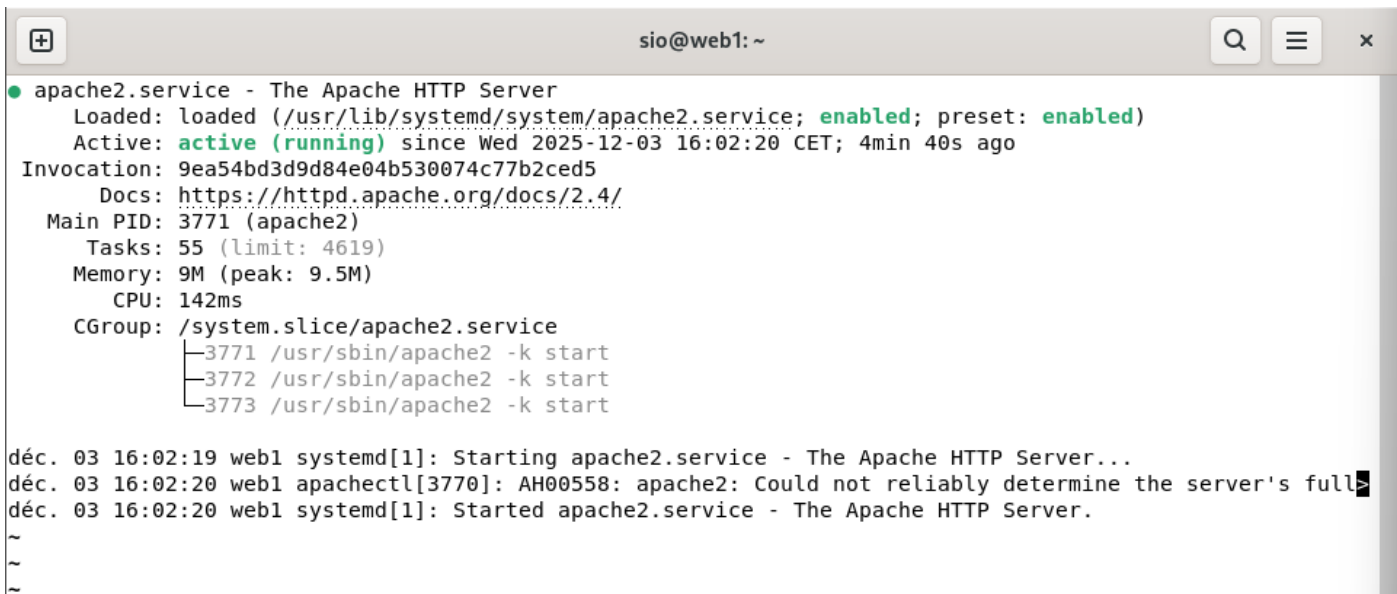
```

- Je créer le fichier de configuration .ansible.cfg dans le répertoire personnel pour supprimer le Warning :



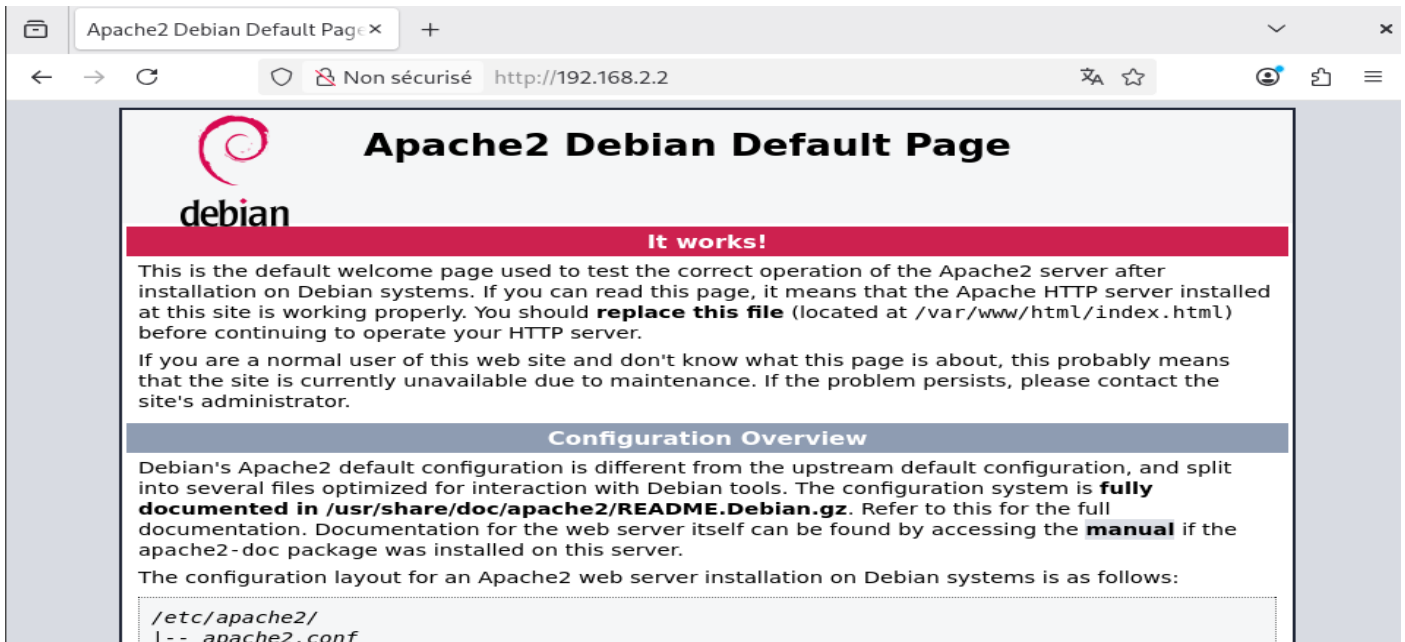
```
root@Ansible:~# ansible -i /home/sio/Documents/Inventory/projetB1/test.yml -m apt -a "name=apache2 state
=present" front
[WARNING]: Host 'web-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See htt
ps://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more informa
tion.
web-1 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "cache_update_time": 1764164728,
  "cache_updated": false,
  "changed": false
}
root@Ansible:~# █
```

➤ Je vérifie le statut d'apache :

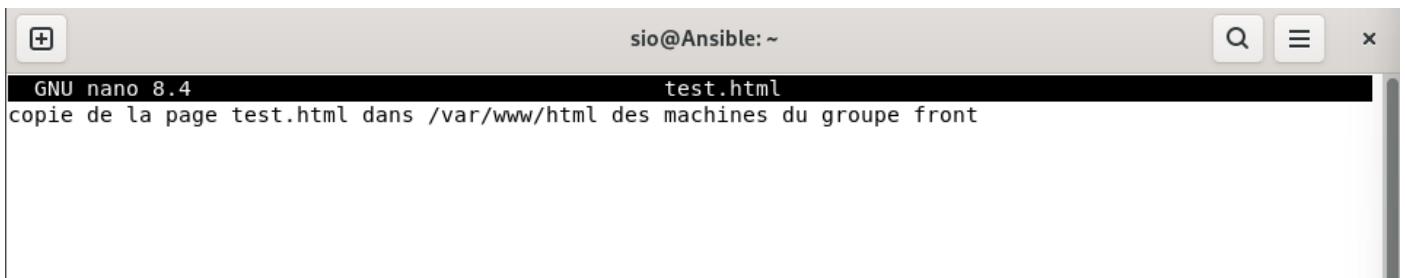


```
sio@web1: ~
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Wed 2025-12-03 16:02:20 CET; 4min 40s ago
 Invocation: 9ea54bd3d9d84e04b530074c77b2ced5
    Docs: https://httpd.apache.org/docs/2.4/
  Main PID: 3771 (apache2)
    Tasks: 55 (limit: 4619)
   Memory: 9M (peak: 9.5M)
      CPU: 142ms
   CGroup: /system.slice/apache2.service
           └─3771 /usr/sbin/apache2 -k start
             └─3772 /usr/sbin/apache2 -k start
               └─3773 /usr/sbin/apache2 -k start

déc. 03 16:02:19 web1 systemd[1]: Starting apache2.service - The Apache HTTP Server...
déc. 03 16:02:20 web1 apachectl[3770]: AH00558: apache2: Could not reliably determine the server's full
déc. 03 16:02:20 web1 systemd[1]: Started apache2.service - The Apache HTTP Server.
~
~
~
```



- Je créer une page de test :



- Je copie le fichier local test.html vers un emplacement distant sur les machines du groupe front :

```

root@Ansible:~# ansible -i /home/sio/Documents/Inventory/projetB1/test.yml -m copy -a "src=test.html owner=www-data group=www-data mode=644 dest=/var/www/html" front
[WARNING]: Host 'web-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future installation of another Python interpreter could cause a different interpreter to be discovered. See https://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more information.
web-1 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "changed": true,
  "checksum": "17d9995016f61d5a9938586c21f05036cb99e314",
  "dest": "/var/www/html/test.html",
  "gid": 33,
  "group": "www-data",
  "md5sum": "d567e81f8c8a10afade741c8be372fce",
  "mode": "0644",
  "owner": "www-data",
  "size": 75,
  "src": "/root/.ansible/tmp/ansible-tmp-1764774650.1689014-3667-189740020429475/.source.html",
  "state": "file",
  "uid": 33
}
root@Ansible:~# █

```

## 9. Premier playbook

- Je créer dans le dossier Playbook, un fichier apache.yml :

```

Fichier  Édition  Sélection  Affichage  Aller  Projets  Client_LSP  Sessions  Outils  Configuration  Aide
Nouveau  Ouvrir  Enregistrer  Enregistrer sous  Annuler  Refaire
Bienvenue  apache.yml
home > sio > Documents > Playbooks > apache.yml
1  ---
2
3  - name: "Installation Apache"
4    hosts: front
5    tasks:
6      - name: "Installation package Apache2"
7        apt:
8          name: "apache2"
9          state: "present"
10     - name: "Copie test.html"
11       copy:
12         src: "~/test.html"
13         dest: "/var/www/html"
14         owner: "www-data"
15         group: "www-data"
16

```

- Puis grâce a ce fichier je lance l'installation d'apache :

```
root@Ansible:~# ansible-playbook -i /home/sio/Documents/Inventory/projetBI/test.yml /home/sio/Documents/Playbooks/apache.yml

PLAY [Installation Apache] *****

TASK [Gathering Facts] *****
[WARNING]: Host 'web-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future installation of another Python interpreter could cause a different interpreter to be discovered. See https://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more information.
ok: [web-1]

TASK [Installation package Apache2] *****
ok: [web-1]

TASK [Copie test.html] *****
ok: [web-1]

PLAY RECAP *****
web-1 : ok=3    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

root@Ansible:~#
```

## 10. Installation d'un serveur MariaDB

- Je créer un fichier install-mariadb.yml :

```
1 ---
2
3 - name: "Installation MariaDB"
4   hosts: database
5   gather_facts: no
6   tasks:
7     - name: "Installation package MariaDB"
8       apt:
9         name: "mariadb-server"
10        state: "present"
11     - name: "Demmarage du service"
12       service:
13         name: "mysql"
14         state: started
15         enabled: yes
16
```

➤ Puis je l'installe :

```
root@Ansible:~# ansible-playbook -i /home/sio/Documents/Inventory/test.yml /home/sio/Documents/Playbooks/install-mariadb.yml

PLAY [Installation MariaDB] *****

TASK [Installation package MariaDB] *****
[WARNING]: Host 'bdd-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future installation of another Python interpreter could cause a different interpreter to be discovered. See https://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more information.
changed: [bdd-1]

TASK [Demarrage du service] *****
ok: [bdd-1]

PLAY RECAP *****
bdd-1          : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0
ignored=0

root@Ansible:~#
```

➤ Puis je vérifie sur bdd-1le statutde mariadb :

```
root@bdd-1:~# ss -antp4
State Recv-Q Send-Q Local Address:Port Peer Address:Port Process
LISTEN 0 4096 127.0.0.1:631 0.0.0.0:* users:(("cupsd",pid=1619,fd=7))
LISTEN 0 128 0.0.0.0:22 0.0.0.0:* users:(("sshd",pid=1017,fd=6))
LISTEN 0 80 127.0.0.1:3306 0.0.0.0:* users:(("mariadb",pid=4920,fd=28))
root@bdd-1:~# systemctl status mariadb
● mariadb.service - MariaDB 11.8.3 database server
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: enabled)
   Active: active (running) since Wed 2025-12-10 15:45:22 CET; 2min 43s ago
 Invocation: 42f28598534c43fda13ec575705f9116
   Docs: man:mariadb(8)
         https://mariadb.com/kb/en/library/systemd/
 Main PID: 4920 (mariadb)
   Status: "Taking your SQL requests now..."
   Tasks: 10 (limit: 30491)
  Memory: 124.7M (peak: 129.5M)
     CPU: 1.479s
   CGroup: /system.slice/mariadb.service
           └─4920 /usr/sbin/mariadb

déc. 10 15:45:21 bdd-1 mariadb[4920]: 2025-12-10 15:45:21 0 [Note] Plugin 'wsrep-provider' is disabled.
déc. 10 15:45:21 bdd-1 mariadb[4920]: 2025-12-10 15:45:21 0 [Note] InnoDB: Loading buffer pool(s) from>
déc. 10 15:45:21 bdd-1 mariadb[4920]: 2025-12-10 15:45:21 0 [Note] InnoDB: Buffer pool(s) load complet>
déc. 10 15:45:22 bdd-1 mariadb[4920]: 2025-12-10 15:45:22 0 [Note] Server socket created on IP: '127.0>
déc. 10 15:45:22 bdd-1 mariadb[4920]: 2025-12-10 15:45:22 0 [Note] mariadb: Event Scheduler: Loaded 0>
déc. 10 15:45:22 bdd-1 mariadb[4920]: 2025-12-10 15:45:22 0 [Note] /usr/sbin/mariadb: ready for conne>
déc. 10 15:45:22 bdd-1 mariadb[4920]: Version: '11.8.3-MariaDB-0+deb13u1 from Debian' socket: '/run/m>
déc. 10 15:45:22 bdd-1 systemd[1]: Started mariadb.service - MariaDB 11.8.3 database server.
déc. 10 15:45:22 bdd-1 /etc/mysql/debian-start[4943]: Upgrading MariaDB tables if necessary.
déc. 10 15:45:22 bdd-1 /etc/mysql/debian-start[4954]: Checking for insecure root accounts.
lines 1-24/24 (END)
```

## 11. Configuration de la base de données

➤ Je créer la base de données wordpress :



```
install-mariadb.yml x test.yml x config-mariadb.yml x
home ▶ sio ▶ Documents ▶ Playbooks ▶ config-mariadb.yml
1 ---
2
3 - name: "Configuration de MariaDB"
4   hosts: database
5   gather_facts: no
6   tasks:
7     - name: "Création base de données Wordpress"
8       mysql_db:
9         name: "wordpress"
10        state: present
11
```

```
sio@Ansible: ~
x
sio@Ansible: ~
x
root@Ansible:~# ansible-playbook -i /home/sio/Documents/Inventory/test.yml /home/sio/Documents/Playbooks/config-mariadb.yml

PLAY [Configuration de MariaDB] *****

TASK [Création base de données Wordpress] *****
[WARNING]: Host 'bdd-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future installation of another Python interpreter could cause a different interpreter to be discovered. See https://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more information.
[ERROR]: Task failed: Module failed: A MySQL module is required: for Python 2.7 either PyMySQL, or MySQL-python, or for Python 3.X mysqlclient or PyMySQL. Consider setting ansible_python_interpreter to use the intended Python version.
Origin: /home/sio/Documents/Playbooks/config-mariadb.yml:7:7

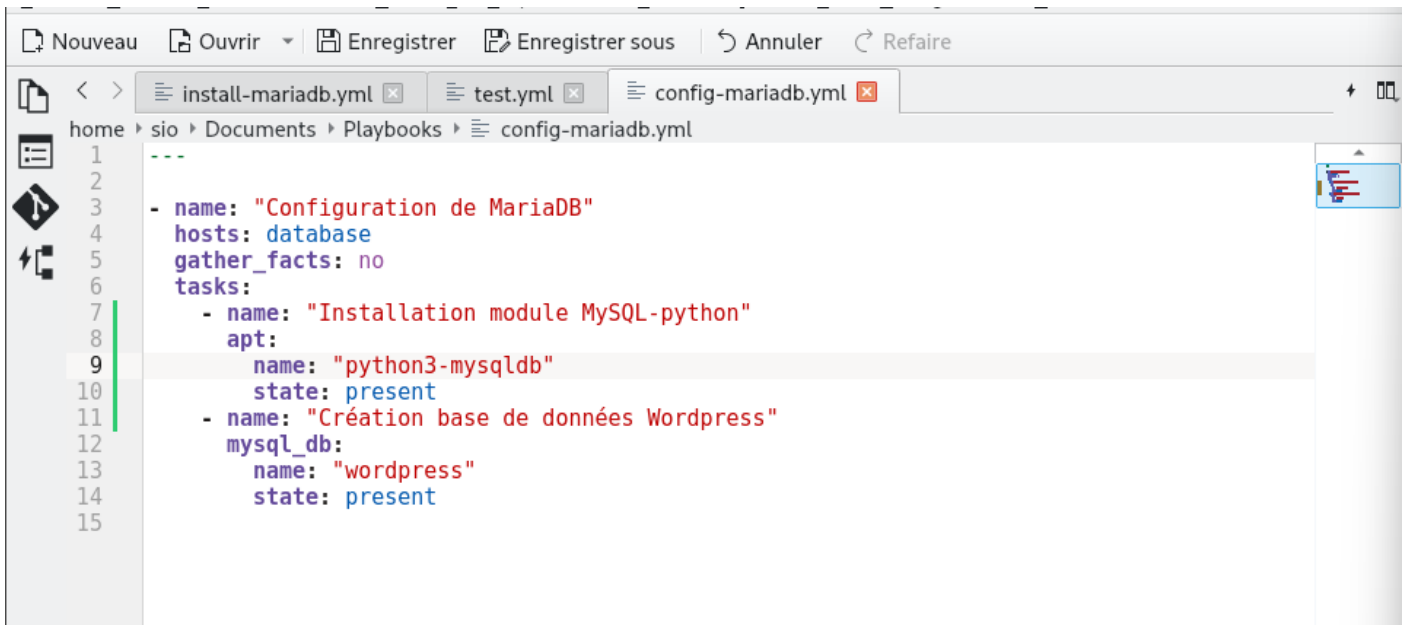
5  gather_facts: no
6  tasks:
7    - name: "Création base de données Wordpress"
      ^ column 7

fatal: [bdd-1]: FAILED! => {"ansible_facts": {"discovered_interpreter_python": "/usr/bin/python3.13"}, "changed": false, "msg": "A MySQL module is required: for Python 2.7 either PyMySQL, or MySQL-python, or for Python 3.X mysqlclient or PyMySQL. Consider setting ansible_python_interpreter to use the intended Python version."}

PLAY RECAP *****
bdd-1      : ok=0    changed=0    unreachable=0    failed=1    skipped=0    rescued=0
ignored=0

root@Ansible:~# █
```

➤ J'installe le module avant la création de la base de données :



```
Nouveau  Ouvrir  Enregistrer  Enregistrer sous  Annuler  Refaire
install-mariadb.yml  test.yml  config-mariadb.yml
home > sio > Documents > Playbooks > config-mariadb.yml
1  ---
2
3  - name: "Configuration de MariaDB"
4    hosts: database
5    gather_facts: no
6    tasks:
7      - name: "Installation module MySQL-python"
8        apt:
9          name: "python3-mysqldb"
10         state: present
11      - name: "Création base de données Wordpress"
12        mysql_db:
13          name: "wordpress"
14          state: present
15
```

```

root@Ansible:~# ansible-playbook -i /home/sio/Documents/Inventory/test.yml /home/sio/Documents/Playbooks
/config-mariadb.yml

PLAY [Configuration de MariaDB] *****

TASK [Installation module MySQL-python] *****
[WARNING]: Host 'bdd-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See htt
ps://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more informa
tion.
changed: [bdd-1]

TASK [Création base de données Wordpress] *****
[WARNING]: Support of mysqlcline/MySQLdb connector is deprecated. We'll stop testing against it in colle
ction version 4.0.0 and remove the related code in 5.0.0. Use PyMySQL connector instead.
changed: [bdd-1]

PLAY RECAP *****
bdd-1                : ok=2    changed=2    unreachable=0    failed=0    skipped=0    rescued=0
ignored=0

root@Ansible:~# █

```

- Je créer l'utilisateur SQL « wordpress » et octroi des droits sur l's tables de la base de données wordpress à l'utilisateur wordpress grâce au module mysql\_user :

```

install-mariadb.yml | test.yml | config-mariadb.yml
home ▸ sio ▸ Documents ▸ Playbooks ▸ config-mariadb.yml
1  ---
2
3  - name: "Configuration de MariaDB"
4    hosts: database
5    gather_facts: no
6    tasks:
7      - name: "Installation module MySQL-python"
8        apt:
9          name: "python3-mysqldb"
10         state: present
11      - name: "Création base de données Wordpress"
12        mysql_db:
13          name: "wordpress"
14          state: present
15      - name: "Création utilisateur"
16        mysql_user:
17          name: "wordpress"
18          password: "wordpress"
19          priv: "wordpress.*:ALL"
20          state: present|
21

```

- Je consulte la documentation sur le module mysql\_user :

```

root@Ansible:~# ansible-doc mysql_user
> MODULE community.mysql.mysql_user (/root/.local/share/pipx/venvs/ansible/lib/python3.13/site-packages)
    Adds or removes a user from a MySQL or MariaDB database.

OPTIONS (red indicates it is required):

    append_privs Append the privileges defined by priv to the existing ones for
                    this user instead of overwriting existing ones. Mutually exclusive
                    with subtract_privs.
                    default: false
                    type: bool

    attributes Create, update, or delete user attributes (arbitrary 'key: value'
                 comments) for the user.
                 MySQL server must support the INFORMATION_SCHEMA.USER_ATTRIBUTES
                 table. Provided since MySQL 8.0.
                 To delete an existing attribute, set its value to null.
                    default: null
                    type: dict

    ca_cert The path to a Certificate Authority (CA) certificate. This option, if
             used, must specify the same certificate as used by the server.
             aliases: [ssl_ca]
             default: null
             type: path

    check_hostname Whether to validate the server host name when an SSL connection
                    is required. Corresponds to MySQL CLIs '--ssl'
                    switch.
                    Setting this to `false` disables hostname
                    verification. Use with caution.
                    Requires pymysql >= 0.7.11.
                    default: null
                    type: bool

    check_implicit_admin Check if mysql allows login as root/nopassword before
                          trying supplied credentials.
                          If success, passed
                          login_user/login_password will be ignored.
                    default: false
                    type: bool

    client_cert The path to a client public key certificate.
                  aliases: [ssl_cert]

```

➤ J'exécute le playbook pour configurer la base de données MariaDB sur la machine bdd-1 :

```
root@Ansible:~# ansible-playbook -i /home/sio/Documents/Inventory/test.yml /home/sio/Documents/Playbooks/config-mariadb.yml

PLAY [Configuration de MariaDB] *****

TASK [Installation module MySQL-python] *****
[WARNING]: Host 'bdd-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future installation of another Python interpreter could cause a different interpreter to be discovered. See https://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more information.
ok: [bdd-1]

TASK [Création base de données Wordpress] *****
[WARNING]: Support of mysqlcline/MySQLdb connector is deprecated. We'll stop testing against it in collection version 4.0.0 and remove the related code in 5.0.0. Use PyMySQL connector instead.
ok: [bdd-1]

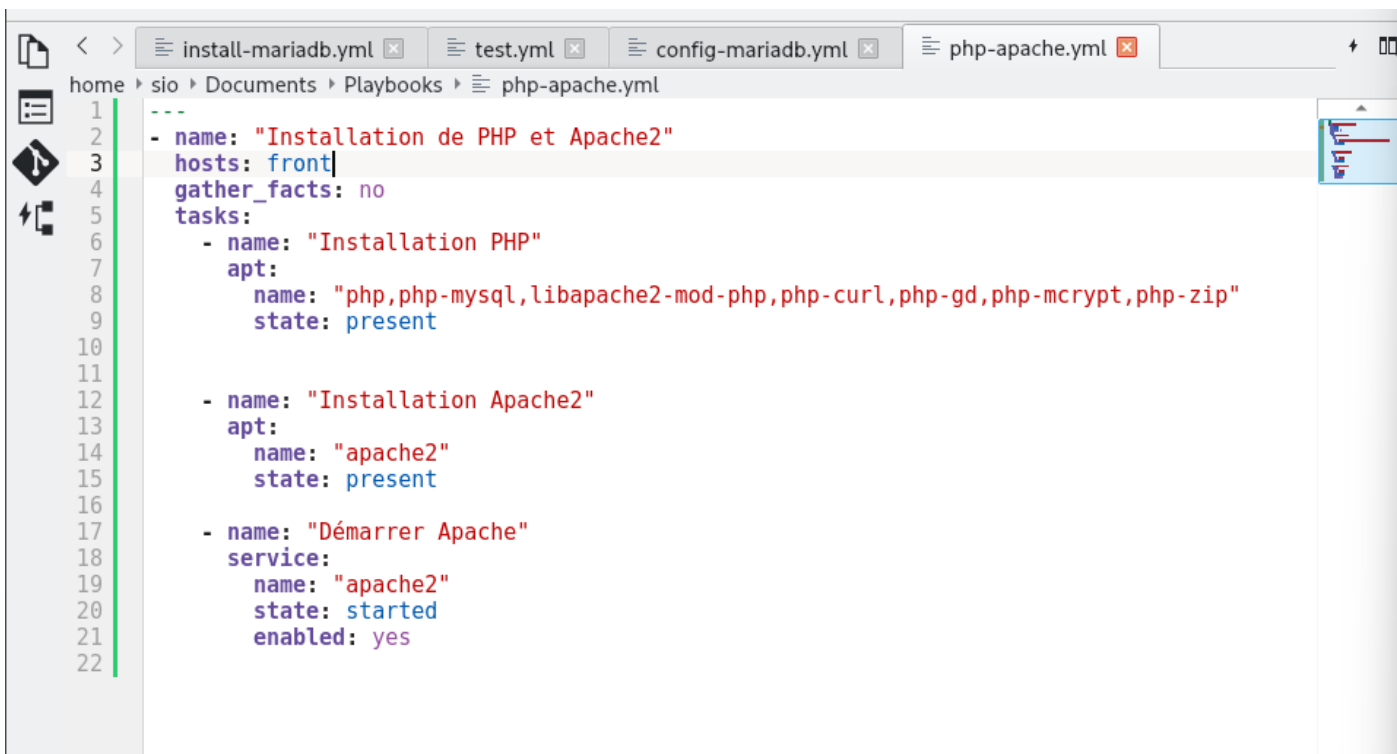
TASK [Création utilisateur] *****
[WARNING]: Option column_case_sensitive is not provided. The default is now false, so the column's name will be uppercased. The default will be changed to true in community.mysql 4.0.0.
changed: [bdd-1]

PLAY RECAP *****
bdd-1 : ok=3 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

root@Ansible:~#
```

## 12. Installation d'un serveur PHP

- Je créer un fichier php-apache.yml :



```
install-mariadb.yml x test.yml x config-mariadb.yml x php-apache.yml x
home > sio > Documents > Playbooks > php-apache.yml
1 ---
2 - name: "Installation de PHP et Apache2"
3   hosts: front
4   gather_facts: no
5   tasks:
6     - name: "Installation PHP"
7       apt:
8         name: "php,php-mysql,libapache2-mod-php,php-curl,php-gd,php-mcrypt,php-zip"
9         state: present
10
11
12     - name: "Installation Apache2"
13       apt:
14         name: "apache2"
15         state: present
16
17     - name: "Démarrer Apache"
18       service:
19         name: "apache2"
20         state: started
21         enabled: yes
22
```

➤ Ensuite je l'installe :

```
root@Ansible:~# ansible-playbook -i /home/sio/Documents/Inventory/test.yml /home/sio/Documents/Playbooks/php-apache.yml

PLAY [Installation de PHP et Apache2] *****

TASK [Installation PHP] *****
[WARNING]: Host 'web-1' is using the discovered Python interpreter at '/usr/bin/python3.13', but future installation of another Python interpreter could cause a different interpreter to be discovered. See https://docs.ansible.com/ansible-core/2.19/reference_appendices/interpreter_discovery.html for more information.
changed: [web-1]

TASK [Installation Apache2] *****
ok: [web-1]

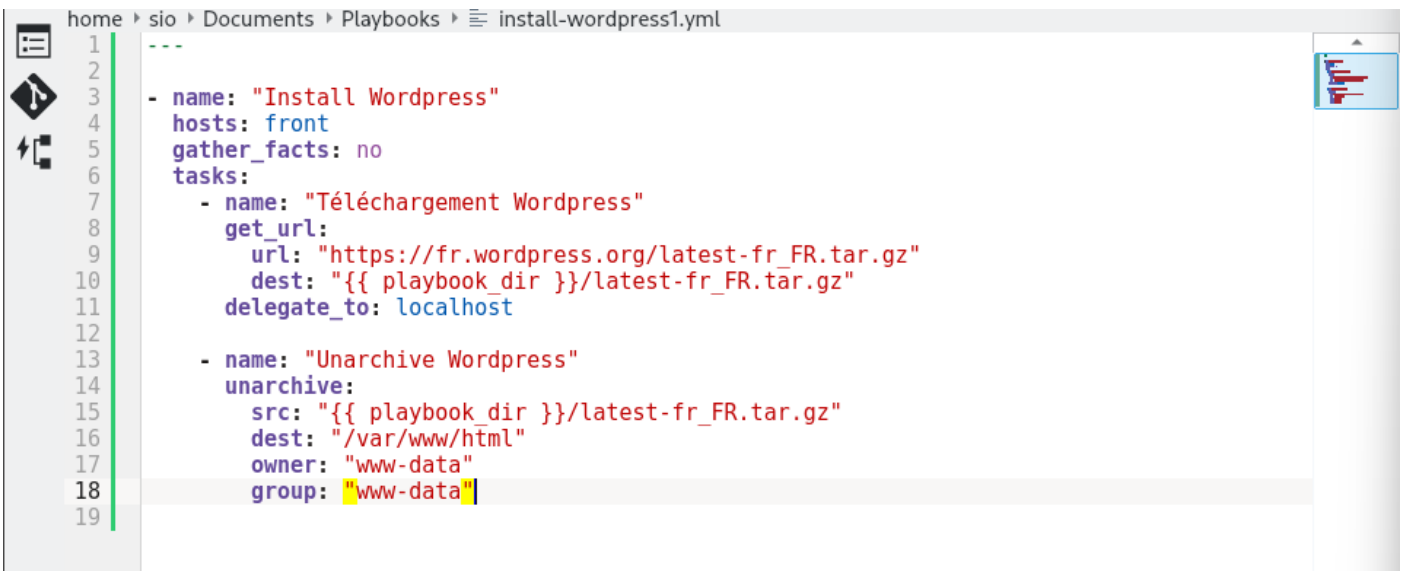
TASK [Démarrer Apache] *****
ok: [web-1]

PLAY RECAP *****
web-1          : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

root@Ansible:~#
```

## 13. Installation de Wordpress

➤ Je créer un fichier install-wordpress :



```
home ▸ sio ▸ Documents ▸ Playbooks ▸ install-wordpress1.yml
1  ---
2
3  - name: "Install Wordpress"
4    hosts: front
5    gather_facts: no
6    tasks:
7      - name: "Téléchargement Wordpress"
8        get_url:
9          url: "https://fr.wordpress.org/latest-fr_FR.tar.gz"
10         dest: "{{ playbook_dir }}/latest-fr_FR.tar.gz"
11         delegate_to: localhost
12
13      - name: "Unarchive Wordpress"
14        unarchive:
15          src: "{{ playbook_dir }}/latest-fr_FR.tar.gz"
16          dest: "/var/www/html"
17          owner: "www-data"
18          group: "www-data"
19
```