

Chapitre 3 – Configuration de serveurs et d’applications avec Ansible

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1. Installation d'Ansible.

- Modification du fichier /etc/hosts ainsi que /etc/hostname puis nous redémarrons la VM :

```
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
```

- Mise à jour de la liste des paquets

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

```
sio@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:~#
```

- Installation de pipx

```
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 suivants ont été installés automatiquement et ne sont plus nécessaires :  
  libexpat1-dev libjs-jquery libjs-sphinxdoc libjs-underscore libpython3-dev libpython3.13-dev  
  python3-dev python3-wheel python3.13-dev zlib1g-dev  
Veuillez utiliser « apt autoremove » pour les supprimer.  
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
```

- Nous effectuons la commande `pipx ensurepath` afin que les exécutables soient bien présent dans la variable d'environnement `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:~#
```

```
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:~#
```

```
sio@Ansible: ~  
root@Ansible:~# pipx install --include-deps ansible  
:: upgrading shared libraries
```

- Installation d'Ansible via `pipx` à l'aide de la commande `pipx install --include-deps ansible`

```
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:~#
```

- Nous effectuons la commande `ansible --version` afin de savoir quelle version d'ansible est utilisée

```
sio@Ansible:~$ su -  
Mot de passe :  
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

- Collecte de toutes les informations système de la machine locale avec Ansible pour ensuite les enregistrer dans un fichier .txt à l'aide de la commande : `ansible -m setup localhost > setup.txt`

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

- Affichage du contenu du fichier .txt

```
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:fea2:3644",  
      "fe80::a00:27ff:fea2:3644",  
      "fd17:625c:f037:2:2c32:b4b4:94e:a5c2"  
    ],  
    "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=9ccbd479-6936-430a-8f70-1ed16e8b90e6"  
    },  
    "ansible_date_time": {  
      "date": "2025-11-19",  
      "day": "19",  
      "epoch": "1763563776",  
      "epoch_int": "1763563776",  
      "hour": "15",  
      "iso8601": "2025-11-19T14:49:36Z",  
      "iso8601_basic": "20251119T154936428448",  
      "iso8601_basic_short": "20251119T154936",  
      "iso8601_micro": "2025-11-19T14:49:36.428448Z",  
      "minute": "49",
```

```
    "type": "ether"
  },
  "ansible_default_ipv6": {
    "address": "fd17:625c:f037:2:2c32:b4b4:94e:a5c2",
    "gateway": "fe80::2",
    "interface": "enp0s3",
    "macaddress": "08:00:27:a2:36:44",
    "mtu": 1500,
    "prefix": "64",
    "scope": "global",
    "type": "ether"
  },
  "ansible_device_links": {
    "ids": {
      "sda": [
        "ata-VBOX_HARDDISK_VB0bad951a-667206e4"
      ],
      "sda1": [
        "ata-VBOX_HARDDISK_VB0bad951a-667206e4-part1"
      ],
      "sda2": [
        "ata-VBOX_HARDDISK_VB0bad951a-667206e4-part2"
      ]
    }
  }
}
```

3. Aide et documentation officielle

3.1. Ansible-doc setup

•Affichage de la documentation officielle

```
sio@Ansible: ~  
root@Ansible:~# ansible-doc setup
```

```
sio@Ansible: ~  
> MODULE ansible.builtin.setup (/root/.local/share/pipx/venvs/ansible/lib/python3.13/site-packages/ansible/modules/setup.py)  
  
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
```

```
sio@Ansible: ~  
  
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  
...skipping...  
> MODULE ansible.builtin.setup (/root/.local/share/pipx/venvs/ansible/lib/python3.13/site-packages/ansible/modules/setup.py)  
  
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.
```

- Collecte du minimum d'informations système sur la machine :

```
sio@Ansible: ~  
root@Ansible:~# ansible -m setup -a gather_subset=min localhost  
[WARNING]: No inventory was parsed, only implicit localhost is available  
localhost | SUCCESS => {  
  "ansible_facts": {  
    "ansible_apparmor": {  
      "status": "enabled"  
    },  
    "ansible_architecture": "x86_64",  
    "ansible_cmdline": {  
      "BOOT_IMAGE": "/boot/vmlinuz-6.12.48+deb13-amd64",  
      "quiet": true,  
      "ro": true,  
      "root": "UUID=9ccbd479-6936-430a-8f70-1ed16e8b90e6"  
    },  
    "ansible_date_time": {  
      "date": "2025-11-23",  
      "day": "23",  
      "epoch": "1763930919",  
      "epoch_int": "1763930919",  
      "hour": "21",  
      "iso8601": "2025-11-23T20:48:39Z",  
      "iso8601_basic": "20251123T214839353109",  
      "iso8601_basic_short": "20251123T214839",  
      "iso8601_micro": "2025-11-23T20:48:39.353109Z",  
      "minute": "48",  
      "month": "11",  
      "second": "39",  
      "time": "21:48:39",  
      "tz": "CET",  
      "tz_dst": "CEST",  
      "tz_offset": "+0100",  
      "weekday": "dimanche",  
      "weekday_number": "0",  
      "weeknumber": "46",  
      "year": "2025"  
    },  
    "ansible_distribution": "Debian",  
    "ansible_distribution_file_parsed": true,  
    "ansible_distribution_file_path": "/etc/os-release",  
    "ansible_distribution_file_variety": "Debian",  
    "ansible_distribution_major_version": "13",  
    "ansible_distribution_minor_version": "1",  
    "ansible_distribution_release": "trixie",  
    "ansible_distribution_version": "13.1",
```

3.2. Documentation officielle

<https://docs.ansible.com/>

4. Idempotence : exemple avec gestion des répertoires

- Création du répertoire /tmp/test :

```
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:~#
```

- Ajout des permissions de lecture, écriture et exécution :

```
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 24 nov. 16:37 /tmp/test/  
root@Ansible:~#
```

5. Création d'un fichier d'inventaire

▪ Installation du module Kate

```

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 suivants ont été installés automatiquement et ne sont plus nécessaires :
 libxpat1-dev libjs-sphinxdoc libpython3-dev libpython3.13-dev python3-dev python3-wheel python3.13-dev zlib1g-dev
Veuillez utiliser « apt autoremove » pour les supprimer.
Les paquets supplémentaires suivants seront installés :
  gnome-themes-extra-data kactivitymanagerd kate-data kded6 keditbookmarks kio6 kpackageool6 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 libkf6kcmutils-data libkf6kcmutils6 libkf6kcmutilscore6 libkf6kcmutilsquick6 libkf6kiocore6 libkf6kiofilewidgets6
  libkf6kioqui6 libkf6kiowidgets6 libkf6newstuff-data libkf6newstuffcore6 libkf6newstuffwidgets6 libkf6notifications-data
Traitement des actions différées (« triggers ») pour desktop-file-utils (0.28-1) ...
Traitement des actions différées (« triggers ») pour hicolor-icon-theme (0.18-2) ...
Traitement des actions différées (« triggers ») pour gnome-menus (3.36.0-3) ...
Traitement des actions différées (« triggers ») pour libc-bin (2.41-12) ...
Traitement des actions différées (« triggers ») pour man-db (2.13.1-1) ...
Traitement des actions différées (« triggers ») pour dbus (1.16.2-2) ...
Traitement des actions différées (« triggers ») pour shared-mime-info (2.4-5+b2) ...
Traitement des actions différées (« triggers ») pour udev (257.8-1-deb13u2) ...
Traitement des actions différées (« triggers ») pour mailcap (3.74) ...
root@Ansible:~#

```

▪ VM Ansible : Réseau interne LAN

Annuler
Filaire
Appliquer

Détails
Identité
IPv4
IPv6
Sécurité

Méthode IPv4

Automatique (DHCP)

Réseau local seulement

Manuel

Partagée avec d'autres ordinateurs

Désactiver

Adresses

Adresse	Masque de réseau	Passerelle	
192.168.3.4	255.255.255.0	192.168.3.254	✕
			✕

DNS

Automatique

Séparer les adresses IP avec des virgules

Routes

Automatique

Adresse	Masque de réseau	Passerelle	Métrique	
				✕

N'utiliser cette connexion que pour les ressources sur ce réseau

```

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
    
```

▪ VM web1 (clone Debian13) : Réseau interne DMZ

Annuler
Filaire
Appliquer

Détails
Identité
IPv4
IPv6
Sécurité

Méthode IPv4

Automatique (DHCP)

 Manuel

 Partagée avec d'autres ordinateurs

Réseau local seulement

 Désactiver

Adresses

Adresse	Masque de réseau	Passerelle	
192.168.2.2	255.255.255.0	192.168.2.254	✕
			✕

DNS Automatique

192.168.3.1

Séparer les adresses IP avec des virgules

Routes Automatique

Adresse	Masque de réseau	Passerelle	Métrique	
				✕

N'utiliser cette connexion que pour les ressources sur ce réseau

```

sio@DEB13: ~
GNU nano 8.4 /etc/hosts *
127.0.0.1 localhost
192.168.2.2 web1

# 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
    
```

- Affichage des connexions réseau avec les processus associés

```
sio@web1: ~  
root@web1:~# 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=992,fd=7))  
LISTEN     0            128         0.0.0.0:22              0.0.0.0:*  
  users: (("sshd",pid=1011,fd=6))  
root@web1:~#
```

- Permission de l'accès ssh en décommentant la ligne "#PermitRootLogin"

```
sio@web1: ~  
GNU nano 8.4 /etc/ssh/sshd_config  
# Authentication:  
#LoginGraceTime 2m  
PermitRootLogin yes  
#StrictModes yes  
#MaxAuthTries 6  
#MaxSessions 10  
#PubkeyAuthentication yes
```

- Redémarrage du service sshd

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

▪ VM bdd1 (clone Debian13) : Réseau interne DMZ

Annuler Filaire Appliquer

Détails Identité IPv4 IPv6 Sécurité

Méthode IPv4

Automatique (DHCP) Réseau local seulement

Manuel Désactiver

Partagée avec d'autres ordinateurs

Adresses

Adresse	Masque de réseau	Passerelle
192.168.2.3	255.255.255.0	192.168.2.254

DNS Automatique

192.168.3.1

Séparer les adresses IP avec des virgules

Routes Automatique

Adresse	Masque de réseau	Passerelle	Métrique

N'utiliser cette connexion que pour les ressources sur ce réseau

```
sio@DEB13: ~  
GNU nano 8.4 /etc/hosts  
127.0.0.1 localhost  
192.168.2.3 bdd1  
  
# 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  
bdd1
```

```
sio@bdd1: ~  
root@bdd1:~# ss -antp4  
State      Recv-Q    Send-Q      Local Address:Port      Peer Address:Port  
Process  
LISTEN     0          128         0.0.0.0:22               0.0.0.0:*  
  users: (("sshd",pid=1009,fd=6))  
LISTEN     0          4096       127.0.0.1:631            0.0.0.0:*  
  users: (("cupsd",pid=995,fd=7))  
root@bdd1:~#
```

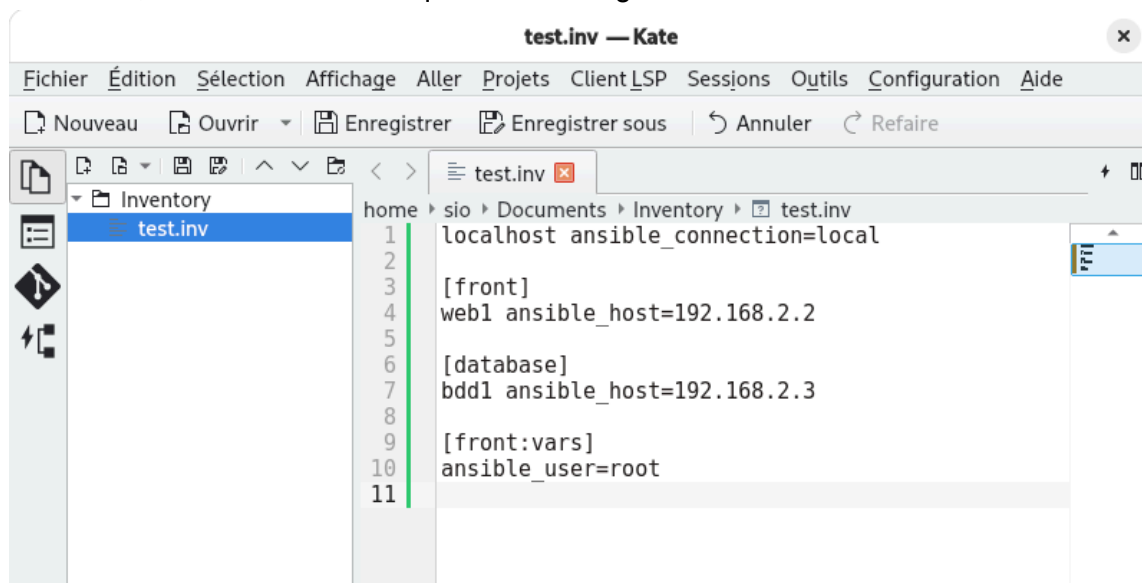
```
sio@bdd1: ~  
GNU nano 8.4 /etc/ssh/sshd config  
  
# Authentication:  
  
#LoginGraceTime 2m  
PermitRootLogin yes  
#StrictModes yes  
#MaxAuthTries 6  
#MaxSessions 10  
  
#PubkeyAuthentication yes
```

```
sio@bdd1: ~  
root@bdd1:~# systemctl restart sshd  
root@bdd1:~# █
```

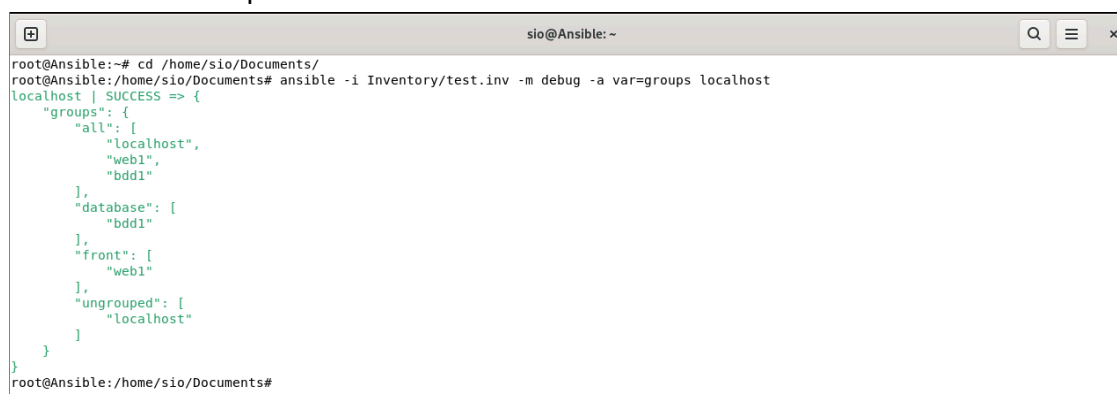
- Fichier d'inventaire au format INI :

```
sio@Ansible: ~  
root@Ansible:~# cd /home/sio/Documents  
root@Ansible:/home/sio/Documents# mkdir Inventory  
root@Ansible:/home/sio/Documents# ls  
Inventory  
root@Ansible:/home/sio/Documents#
```

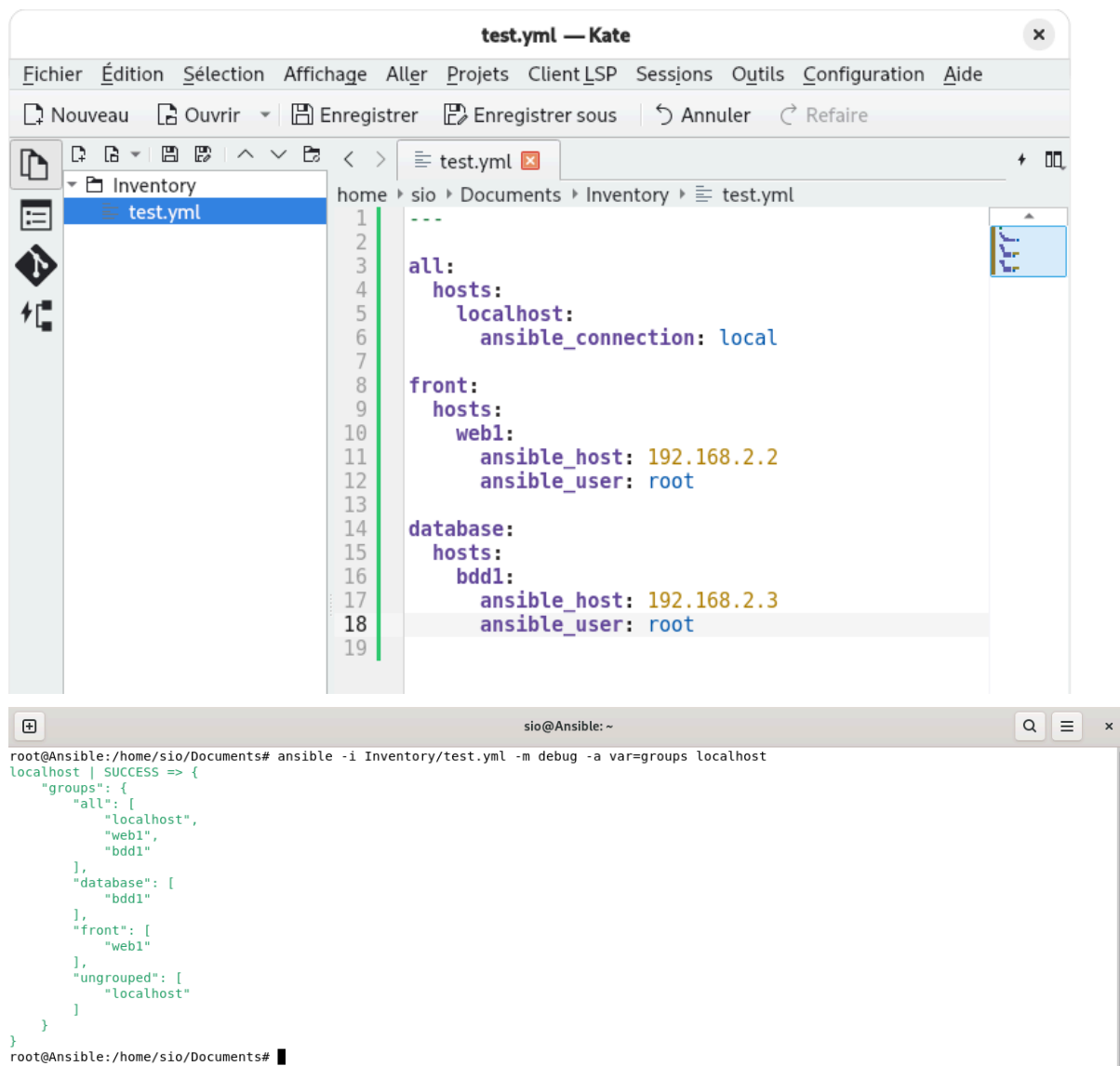
- Sur Kate, définition des hôtes que Ansible va gérer



- Exécution du script



▪ Fichier d'inventaire au format YAML :



The image shows a text editor window titled "test.yml — Kate" with a menu bar (Fichier, Édition, Sélection, Affichage, Aller, Projets, Client LSP, Sessions, Outils, Configuration, Aide) and a toolbar. The editor displays a YAML file named "test.yml" with the following content:

```
1 ---
2
3
4 all:
5   hosts:
6     localhost:
7       ansible_connection: local
8
9 front:
10  hosts:
11    web1:
12      ansible_host: 192.168.2.2
13      ansible_user: root
14
15 database:
16  hosts:
17    bdd1:
18      ansible_host: 192.168.2.3
19      ansible_user: root
```

Below the editor is a terminal window titled "sio@Ansible: ~" showing the command execution and its output:

```
root@Ansible:/home/sio/Documents# ansible -i Inventory/test.yml -m debug -a var=groups localhost
localhost | SUCCESS => {
  "groups": {
    "all": [
      "localhost",
      "web1",
      "bdd1"
    ],
    "database": [
      "bdd1"
    ],
    "front": [
      "web1"
    ],
    "ungrouped": [
      "localhost"
    ]
  }
}
root@Ansible:/home/sio/Documents#
```

6. Connexion aux serveurs avec le protocole SSH

- Nous générons une paire de clé ssh de type ecdsa :
 - MaPassPhrase comme passphrase

```

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:yITI/eoniXL4JpoX87zm6cEk5Uf7pe21kPnuxIFIfHU root@Ansible
The key's randomart image is:
+---[ECDSA 256]---+
|           . E           |
|  .  .  .  .  .          |
| o + o o .              |
|  o = + o .             |
| . o * S o .            |
| O+ o . . + + .         |
| . *+ . o = +           |
|+ . *o . . = .          |
|+B.+*+ . o=            |
+---[SHA256]-----+
root@Ansible:~#

```

- Nous vérifions que les paires de clés privée ainsi que la paire de clé publique ont bien été générées

```

sio@Ansible: ~
root@Ansible:~# ls -al .ssh
total 16
drwx----- 2 root root 4096 24 nov. 17:58 .
drwx----- 6 root root 4096 23 nov. 21:47 ..
-rw----- 1 root root 557 24 nov. 17:58 id_ecdsa
-rw-r--r-- 1 root root 174 24 nov. 17:58 id_ecdsa.pub
root@Ansible:~#

```

- Sur les deux serveurs SSH web1 et bdd1, nous décommentons les lignes PubkeyAuthentication yes et AuthorizedKeysFile dans le fichier de configuration du démon SSH : /etc/ssh/sshd_config :

```

sio@web1: ~
GNU nano 8.4 /etc/ssh/sshd_config
# 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

```

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

```
GNU nano 8.4 /etc/ssh/sshd_config
# Authentication:

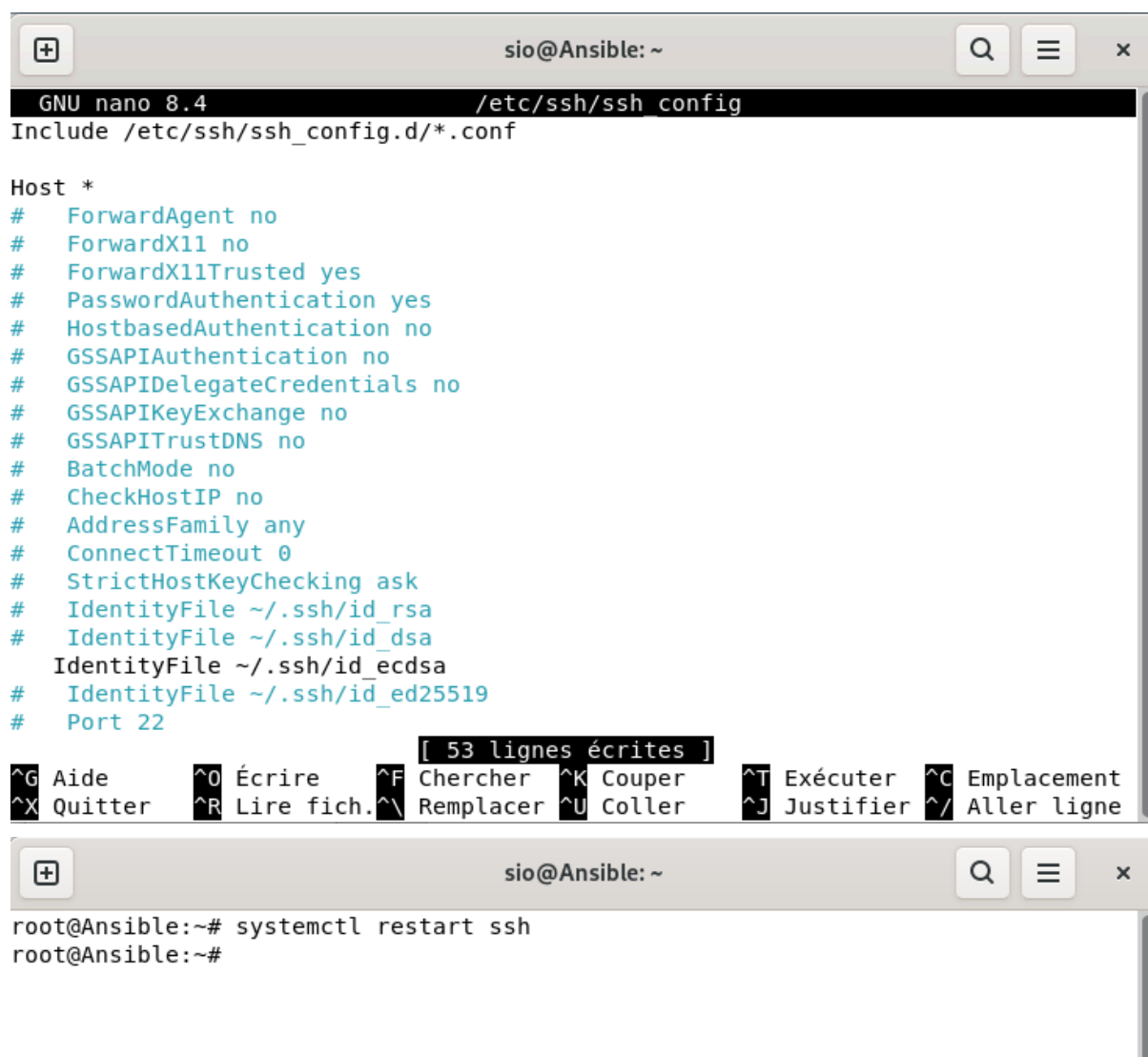
#LoginGraceTime 2m
PermitRootLogin yes
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

PubkeyAuthentication yes

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

```
root@bdd1:~# systemctl restart sshd
root@bdd1:~#
```

- Sur le client SSH Ansible, nous enlevons le # de commentaire dans le fichier de configuration du client ssh IdentityFile ... :



```
sio@Ansible: ~
GNU nano 8.4 /etc/ssh/ssh config
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

[ 53 lignes écrites ]
^G Aide      ^O Écrire    ^F Chercher  ^K Couper    ^T Exécuter  ^C Emplacement
^X Quitter   ^R Lire fich.^\ Remplacer  ^U Coller    ^J Justifier ^/ Aller ligne

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

Il s'agit maintenant d'envoyer, depuis le client SSH Ansible, la clé publique `id_ecdsa.pub` aux deux serveurs SSH `web-1` et `bdd-1`.

Plutôt que de se servir de la commande `scp` et d'ajouter ensuite sur le serveur SSH `web-1` la clé

publique du client SSH au fichier `authorized_keys` (ou bien de réaliser un simple copier/coller permis

par les additions invité), vous allez utiliser la commande spéciale `ssh-copy-id`. Le mot de passe du

compte `root` du serveur vous est demandé (c'est la dernière fois) :

- Nous envoyons la clé publique aux deux serveurs web1 et bdd1 à l'aide de la commande ssh :

```
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:VGQShOWT3H8BYmK+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:~# █
```

```
sio@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:~# █
```

- Vérification que les deux serveurs aient bien reçu la paire de clé publique :

```
sio@web1: ~  
root@web1:~# cd .ssh/  
root@web1:~/.ssh# ls -l  
total 4  
-rw----- 1 root root 174 26 nov. 12:44 authorized_keys  
root@web1:~/.ssh# cat authorized_keys  
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBJHh3v1EPH0qMlrgTsv7qbUNJD3h8F9x  
985LSDQ9zKB+MV7qdnr6AMrPQJk39cEZDRMSwHGV1ZXqdlikorYlFCI= root@Ansible  
root@web1:~/.ssh#
```

```
sio@bdd1: ~  
root@bdd1:~# cd .ssh/  
root@bdd1:~/.ssh# ls -l  
total 4  
-rw----- 1 root root 174 26 nov. 13:01 authorized_keys  
root@bdd1:~/.ssh# cat authorized_keys  
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBJHh3v1EPH0qMlrgTsv7qbUNJD3h8F9x  
985LSDQ9zKB+MV7qdnr6AMrPQJk39cEZDRMSwHGV1ZXqdlikorYlFCI= root@Ansible  
root@bdd1:~/.ssh#
```

- Pour vérifier le bon fonctionnement de l'authentification par clés, nous nous connectons ensuite à partir du client SSH Ansible au serveur SSH web-1.

```
sio@Ansible: ~  
root@Ansible:~# ssh root@192.168.2.2  
Enter passphrase for key '/root/.ssh/id_ecdsa':  
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:~# █
```

- Nous terminons la session SSH sur le client Ansible en saisissant exit.

```
root@web1:~# exit  
déconnexion  
Connection to 192.168.2.2 closed.  
root@Ansible:~# █
```

- Nous testons également la connexion au serveur ssh bdd-1 et nous terminons la session en saisissant exit.

```
sio@Ansible: ~  
root@Ansible:~# ssh root@192.168.2.3  
Enter passphrase for key '/root/.ssh/id_ecdsa':  
Linux bdd1 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@bdd1:~# exit  
déconnexion  
Connection to 192.168.2.3 closed.  
root@Ansible:~# █
```

- Sur les deux serveurs SSH web-1 et bdd-1, nous désactivons l'authentification par mot de passe pour juste :
 - Nous décommentons pour ce faire la directive PasswordAuthentication et nous lui affectons le paramètre no.

```
sio@web1: ~
GNU nano 8.4 /etc/ssh/sshd_config

#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
```

```
sio@bdd1: ~
GNU nano 8.4 /etc/ssh/sshd_config

#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

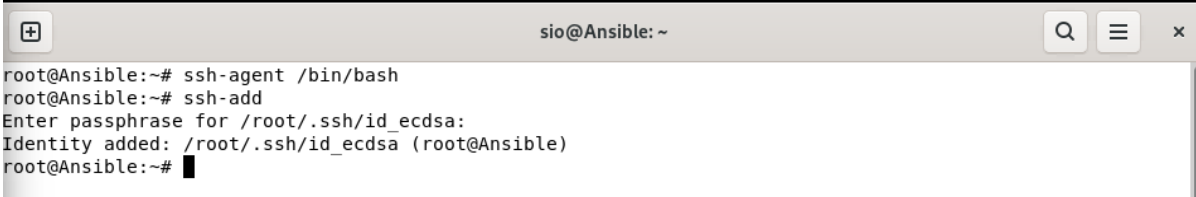
# To disable tunneled clear text passwords, change to "no" here!
PasswordAuthentication no
#PermitEmptyPasswords no
```

- Nous redémarrons ensuite sur chaque machine le service SSH pour que la modification du fichier soit prise en compte.

```
sio@bdd1: ~
root@bdd1:~# systemctl restart sshd
root@bdd1:~# █
```

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

- Activation de l'agent SSH sur le client SSH Ansible en saisissant les commandes `ssh-agent /bin/bash` et `ssh-add`.



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

7. Test de communication avec le module ping

Nous réalisons le test de communication avec les machines de l'inventaire :

```
sio@Ansible: ~  
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 https://docs.ansible.com/ansible-core/2.19/reference\_appendices/interpreter\_discovery.html for more information.  
localhost | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "changed": false,  
  "ping": "pong"  
}  
[WARNING]: Host 'web1' 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.  
web1 | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "changed": false,  
  "ping": "pong"  
}  
[WARNING]: Host 'bdd1' 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.  
bdd1 | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "changed": false,  
  "ping": "pong"  
}  
-
```

```
sio@Ansible: ~  
root@Ansible:~# ansible -i /home/sio/Documents/Inventory/test.yml -m ping front  
[WARNING]: Host 'web1' 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.  
web1 | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "changed": false,  
  "ping": "pong"  
}  
root@Ansible:~# █
```

8. Installation d'un serveur Apache

Nous nous assurons de la présence d'un paquet :

```
sio@Ansible: ~  
root@Ansible:~# ansible -m apt -a "name=bash state=present" -i /home/sio/Documents/projetB1/test.yml front  
[WARNING]: Host 'web1' 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.  
web1 | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "cache_update_time": 1761146154,  
  "cache_updated": false,  
  "changed": false  
}  
root@Ansible:~#
```

▪ Si distribution différente :

```
sio@Ansible: ~  
root@Ansible:~# ansible -m apt -a "name=bash state=present" -i /home/sio/Documents/projetB1/test.yml front, database  
[WARNING]: Host 'web1' 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.  
web1 | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "cache_update_time": 1761146154,  
  "cache_updated": false,  
  "changed": false  
}  
[WARNING]: Host 'bdd1' 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.  
bdd1 | SUCCESS => {  
  "ansible_facts": {  
    "discovered_interpreter_python": "/usr/bin/python3.13"  
  },  
  "cache_update_time": 1761146154,  
  "cache_updated": false,  
  "changed": false  
}  
root@Ansible:~#
```

▪ Installation du serveur Apache sur les machines du groupe front :

```

root@Ansible:~# ansible -i /home/sio/Documents/projetB1/test.yml -m apt -a "name=apache2 state=present" front
[WARNING]: Host 'web1' 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.
web1 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "cache_update_time": 1761146154,
  "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 apache2-doc apache2-suexec-pristine | apache2-suexec-custom ufw\nThe following NEW packages will be installed:\n apache2 apache2-data apache2-utils\n0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.\nNeed to get 599 kB of archives.\nAfter this operation, 1914 kB of additional disk space will be used.\nGet:1 http://deb.debian.org/debian trixie/main amd64 apache2-data all 2.4.65-2 [160 kB]\nGet:2 http://deb.debian.org/debian trixie/main amd64 apache2-utils amd64 2.4.65-2 [215 kB]\nGet:3 http://deb.debian.org/debian trixie/main amd64 apache2 amd64 2.4.65-2 [224 kB]\nFetched 599 kB in 11s (53.2 kB/s)\nSelecting previously unselected package apache2-data.\n(Reading database ... 5%\n(Reading database ... 10%\n(Reading database ... 15%\n(Reading database ... 20%\n(Reading database ... 25%\n(Reading database ... 30%\n(Reading database ... 35%\n(Reading database ... 40%\n(Reading database ... 45%\n(Reading database ... 50%\n(Reading database ... 55%\n(Reading database ... 60%\n(Reading database ... 65%\n(Reading database ... 70%\n(Reading database ... 75%\n(Reading database ... 80%\n(Reading database ... 85%\n(Reading database ... 90%\n(Reading database ... 95%\n(Reading database ... 100%\n164926 files and directories currently installed.)\nPreparing to unpack .../apache2-data_2.4.65-2_all.deb ...\nUnpacking apache2-data (2.4.65-2) ...\nSelecting previously unselected package apache2-utils.\nPreparing to unpack .../apache2-utils_2.4.65-2_amd64.deb ...\nUnpacking apache2-utils (2.4.65-2) ...\nSelecting previously unselected package apache2.\nPreparing to unpack .../apache2_2.4.65-2_amd64.deb ...\nUnpacking apache2 (2.4.65-2) ...\nSetting up apache2-data (2.4.65-2) ...\nSetting up apache2-utils (2.4.65-2) ...\nSetting up apache2 (2.4.65-2) ...\nEnabling module mpm_event.\nEnabling module authz_core.\nEnabling module authz_host.\nEnabling module authn_core.\nEnabling module auth_basic.\nEnabling module access_compat.\nEnabling module authn_file.\nEnabling module authz_user.\nEnabling module alias.\nEnabling module dir.\nEnabling module autoindex.\nEnabling module env.\nEnabling module mime.\nEnabling module negotiation.\nEnabling module setenvif.\nEnabling module filter.\nEnabling module deflate.\nEnabling module status.\nEnabling module reqtimeout.\nEnabling module charset.\nEnabling module localized-error-pages.\nEnabling conf other-vhosts-access-log.\nEnabling conf security.\nEnabling conf serve-cgi-bin.\nEnabling site 000-default.\nCreated symlink '/etc/systemd/system/multi-user.target.wants/apache2.service' -> '/usr/lib/systemd/system/apache2.service'.\nCreated symlink '/etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service' -> '/usr/lib/systemd/system/apache-htcacheclean.service'.\nProcessing triggers for man-db (2.13.1-1) ...\n",
  "stdout_lines": [
    "Reading package lists...",
    "Building dependency tree...",
    "Reading state information...",
    "The following additional packages will be installed:",
    "  apache2-data apache2-utils",
    "Suggested packages:",
    "  apache2-doc apache2-suexec-pristine | apache2-suexec-custom ufw",
    "The following NEW packages will be installed:",
    "  apache2 apache2-data apache2-utils",
    "0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.",
    "Need to get 599 kB of archives.",
    "After this operation, 1914 kB of additional disk space will be used.",
    "Get:1 http://deb.debian.org/debian trixie/main amd64 apache2-data all 2.4.65-2 [160 kB]",
    "Get:2 http://deb.debian.org/debian trixie/main amd64 apache2-utils amd64 2.4.65-2 [215 kB]",
    "Get:3 http://deb.debian.org/debian trixie/main amd64 apache2 amd64 2.4.65-2 [224 kB]",
    "Fetched 599 kB in 11s (53.2 kB/s)",
    "Selecting previously unselected package apache2-data.",
    "(Reading database ... 5%",
    "(Reading database ... 10%",
    "(Reading database ... 15%",
    "(Reading database ... 20%",
    "(Reading database ... 25%",
    "(Reading database ... 30%",
    "(Reading database ... 35%",
    "(Reading database ... 40%",
    "(Reading database ... 45%",
    "(Reading database ... 50%",
    "(Reading database ... 55%",
    "(Reading database ... 60%",
    "(Reading database ... 65%",
    "(Reading database ... 70%",
    "(Reading database ... 75%",
    "(Reading database ... 80%",
    "(Reading database ... 85%",
    "(Reading database ... 90%",
    "(Reading database ... 95%",
    "(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) ..."
]
root@Ansible:~# █

```

▪ Création du fichier de configuration .ansible.cfg :

```

sio@Ansible: ~
GNU nano 8.4 .ansible.cfg
[defaults]
interpreter_python=auto_silent

```

```

sio@Ansible: ~
root@Ansible:~# ansible -i /home/sio/Documents/projetB1/test.yml -m apt -a "name=apache2 state=present" front
web1 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "cache_update_time": 1761146154,
  "cache_updated": false,
  "changed": false
}
root@Ansible:~# █

```

Systemctl status apache2 sur la VM web-1 :

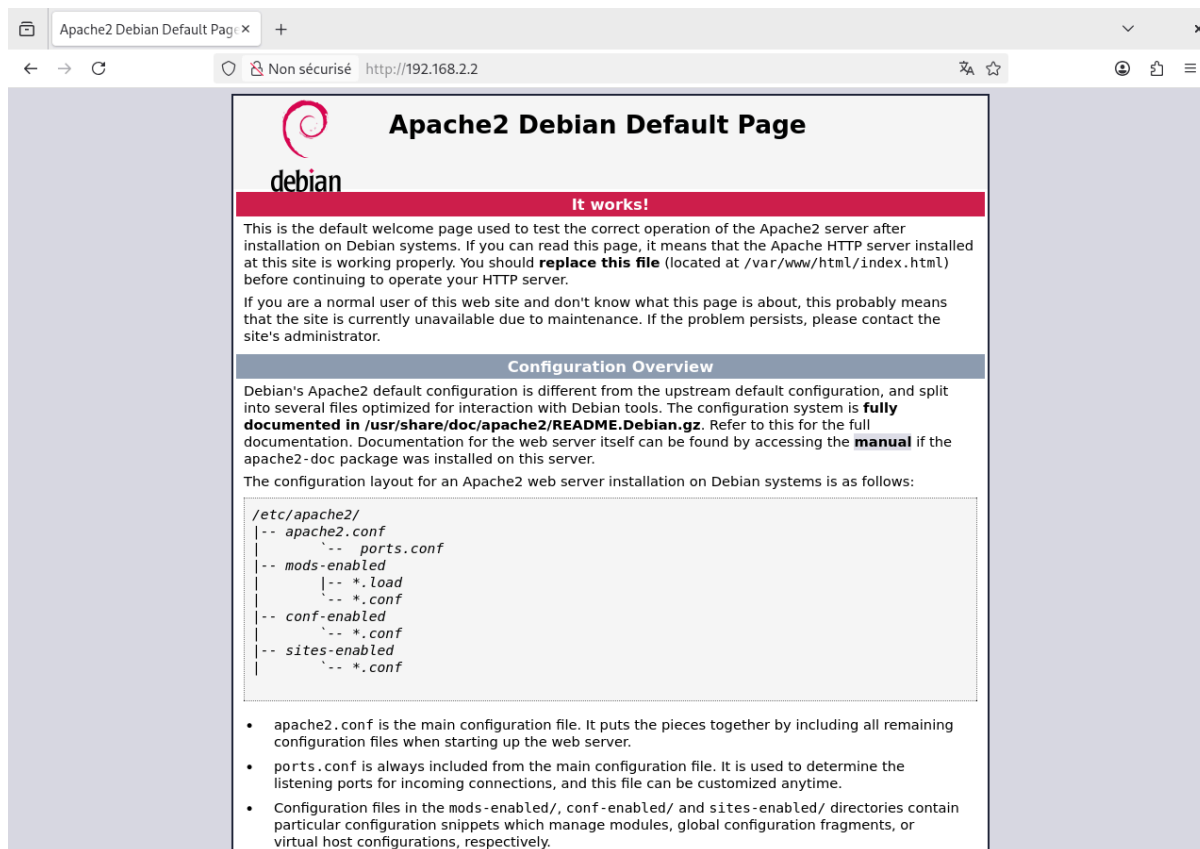
```

sio@web1: ~
root@web1:~# systemctl status apache2
● apache2.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
  Active: active (running) since Sun 2025-11-30 10:36:44 CET; 13min ago
  Invocation: 443776c3130444f3902ee4bb2cea18c9
  Docs: https://httpd.apache.org/docs/2.4/
  Main PID: 2213 (apache2)
  Tasks: 55 (limit: 4619)
  Memory: 6.9M (peak: 7M)
  CPU: 176ms
  CGroup: /system.slice/apache2.service
          └─2213 /usr/sbin/apache2 -k start
            └─2215 /usr/sbin/apache2 -k start
              └─2216 /usr/sbin/apache2 -k start

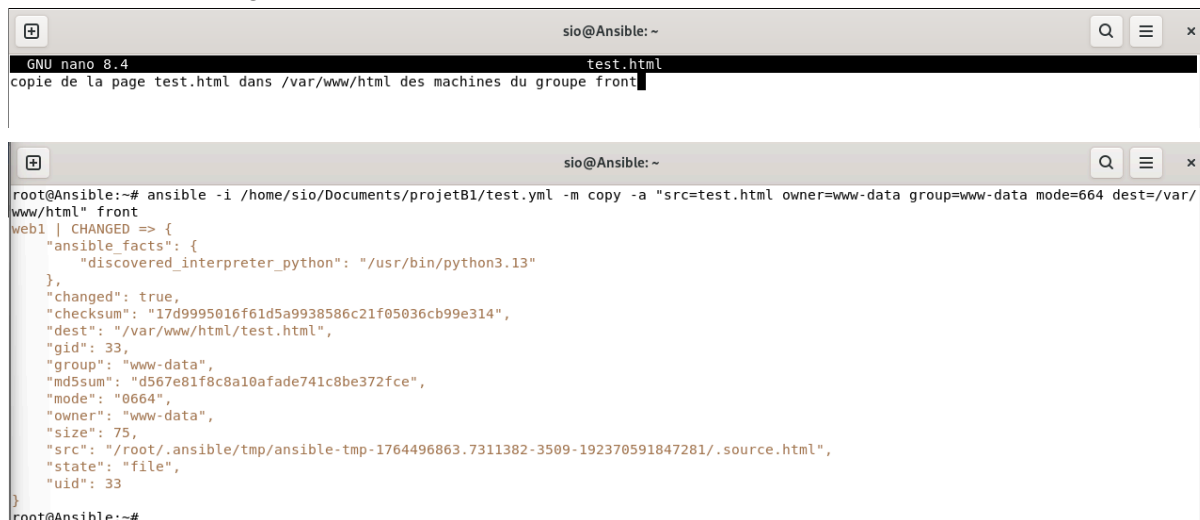
nov. 30 10:36:44 web1 systemd[1]: Starting apache2.service - The Apache HTTP Server...
nov. 30 10:36:44 web1 apachectl[2212]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 192.168.1.15:80 as fallback.
nov. 30 10:36:44 web1 systemd[1]: Started apache2.service - The Apache HTTP Server.
lines 1-17/17 (END)

```

▪ Test depuis la VM Ansible :

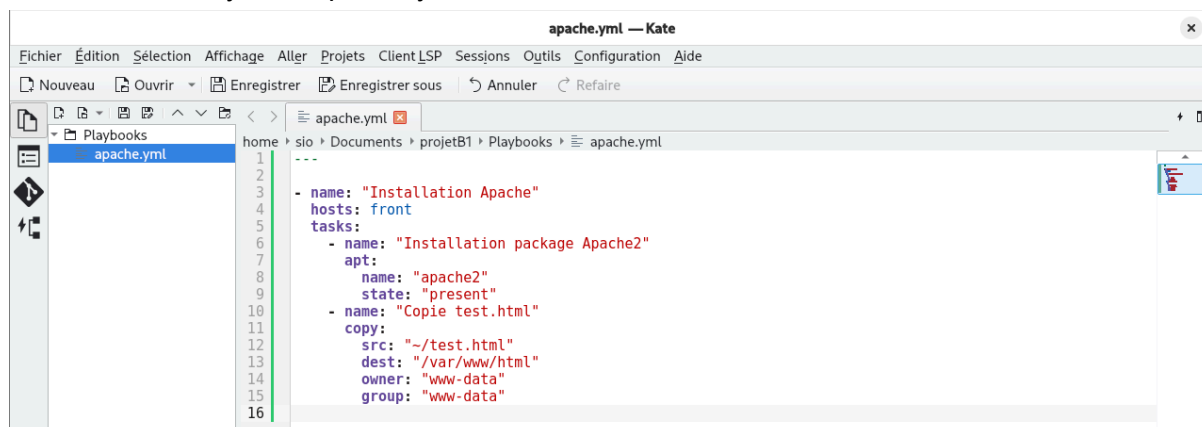


▪ Création de la page test.html pour la copier dans le répertoire de publication avec Ansible :

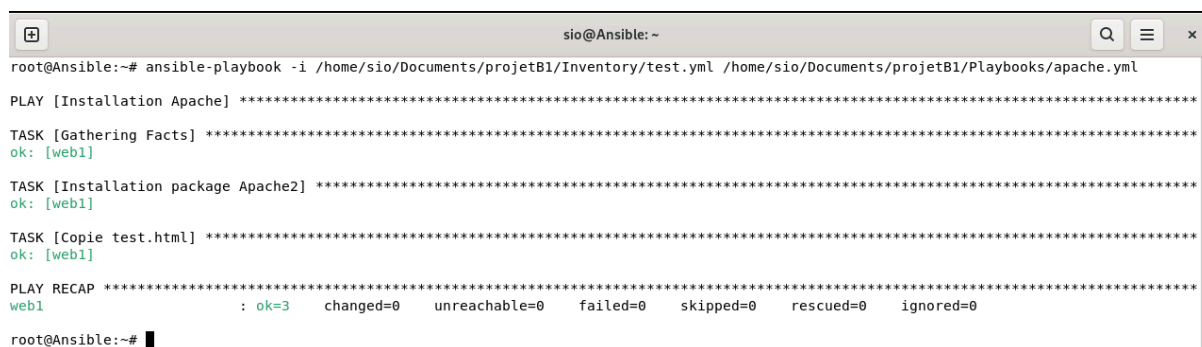


9. Premier playbook

- Création du Playbook apache.yml :



```
1
2
3
4 - name: "Installation Apache"
5   hosts: front
6   tasks:
7     - name: "Installation package Apache2"
8       apt:
9         name: "apache2"
10        state: "present"
11    - name: "Copie test.html"
12      copy:
13        src: "~/test.html"
14        dest: "/var/www/html"
15        owner: "www-data"
16        group: "www-data"
```



```
sio@Ansible: ~
root@Ansible:~# ansible-playbook -i /home/sio/Documents/projetB1/Inventory/test.yml /home/sio/Documents/projetB1/Playbooks/apache.yml

PLAY [Installation Apache] *****
TASK [Gathering Facts] *****
ok: [web1]

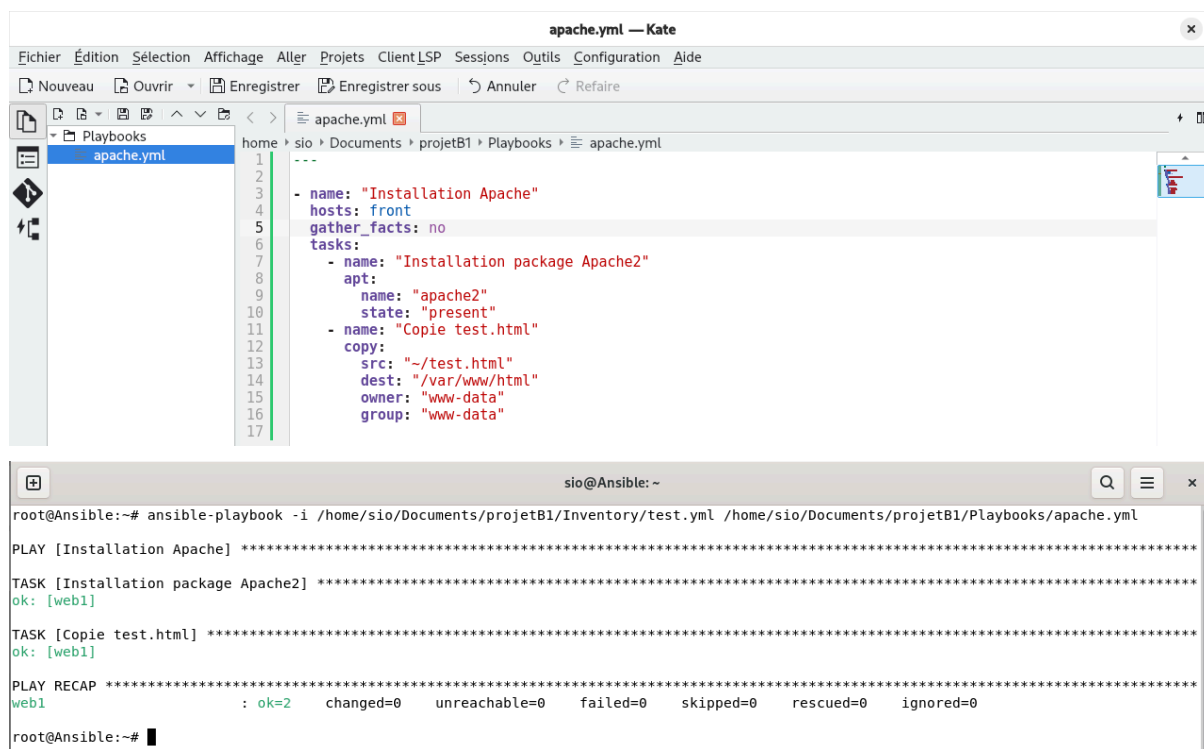
TASK [Installation package Apache2] *****
ok: [web1]

TASK [Copie test.html] *****
ok: [web1]

PLAY RECAP *****
web1                : ok=3   changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

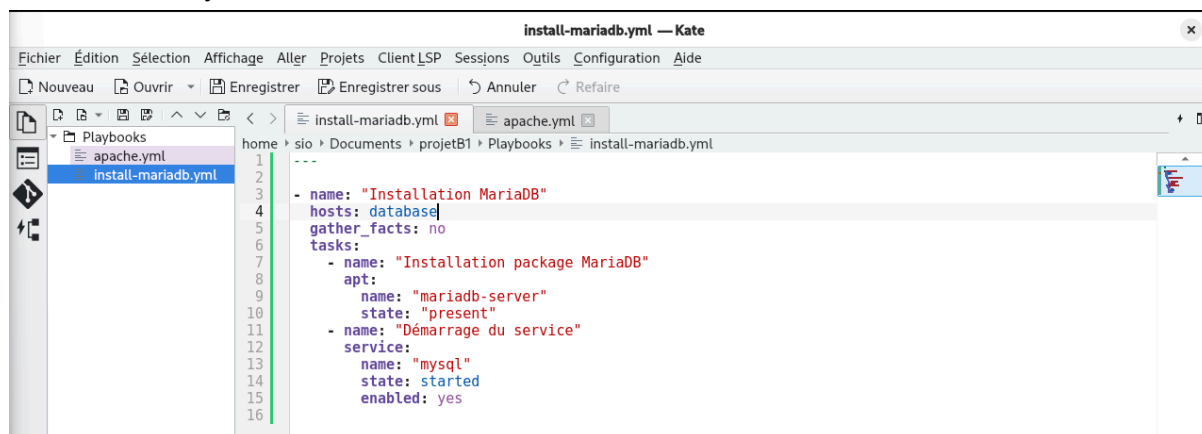
root@Ansible:~#
```

- Nous ajoutons le paramètre (gather_facts : no) afin de permettre la non récupération des informations concernant les machines :



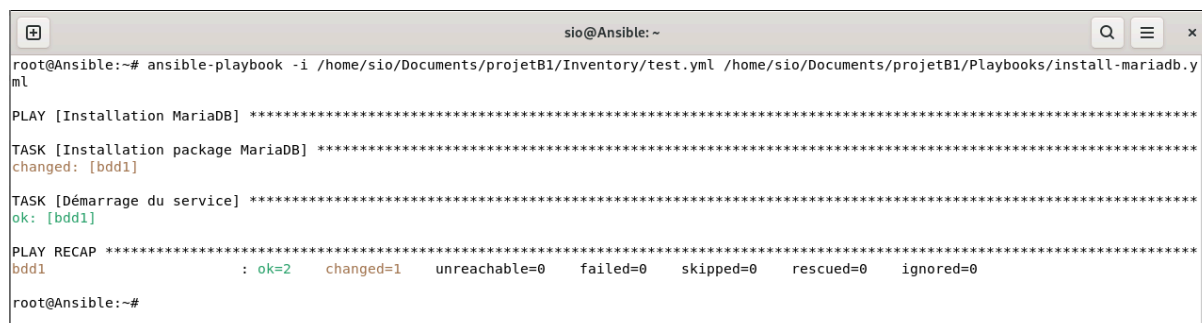
10. Installation d'un serveur MariaDB

- Installation du serveur MariaDB sur les machines du groupe database à partir du Playbook install-mariadb.yml :



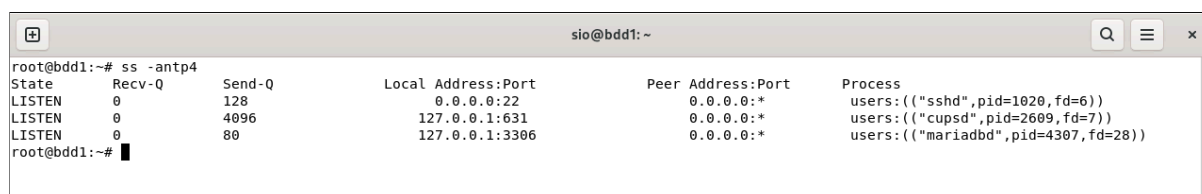
```
install-mariadb.yml — Kate
Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire
Playbooks
  apache.yml
  install-mariadb.yml
home sio Documents projetB1 Playbooks install-mariadb.yml
1
2
3
4 - name: "Installation MariaDB"
5   hosts: database
6   gather_facts: no
7   tasks:
8     - name: "Installation package MariaDB"
9       apt:
10        name: "mariadb-server"
11        state: "present"
12     - name: "Démarrage du service"
13       service:
14        name: "mysql"
15        state: started
16        enabled: yes
```

- Vérification sur la VM bdd-1 :



```
sio@Ansible: ~
root@Ansible:~# ansible-playbook -i /home/sio/Documents/projetB1/Inventory/test.yml /home/sio/Documents/projetB1/Playbooks/install-mariadb.yml
PLAY [Installation MariaDB] *****
TASK [Installation package MariaDB] *****
changed: [bdd1]
TASK [Démarrage du service] *****
ok: [bdd1]
PLAY RECAP *****
bdd1 : ok=2 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
root@Ansible:~#
```

- Vérification sur la VM bdd-1 :



```
sio@bdd1: ~
root@bdd1:~# ss -antp4
State Recv-Q Send-Q Local Address:Port Peer Address:Port Process
LISTEN 0 128 0.0.0.0:22 0.0.0.0:* users:(( "sshd",pid=1020,fd=6))
LISTEN 0 4096 127.0.0.1:631 0.0.0.0:* users:(( "cupsd",pid=2609,fd=7))
LISTEN 0 80 127.0.0.1:3306 0.0.0.0:* users:(( "mariadb",pid=4307,fd=28))
root@bdd1:~#
```

```

sio@bdd1:~
root@bdd1:~# 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 Sun 2025-11-30 11:36:04 CET; 2min 9s ago
     Invocation: 7ac4d4801f564b978665ff933291539a
       Docs: man:mariadb(8)
            https://mariadb.com/kb/en/library/systemd/
   Main PID: 4307 (mariadb)
     Status: "Taking your SQL requests now..."
    Tasks: 11 (limit: 30491)
   Memory: 123.6M (peak: 128.4M)
     CPU: 1.481s
   CGroup: /system.slice/mariadb.service
           └─4307 /usr/sbin/mariadbd

nov. 30 11:36:03 bdd1 mariadbd[4307]: 2025-11-30 11:36:03 0 [Note] Plugin 'wsrep-provider' is disabled.
nov. 30 11:36:03 bdd1 mariadbd[4307]: 2025-11-30 11:36:03 0 [Note] InnoDB: Buffer pool(s) load completed at 251130 11:36:03
nov. 30 11:36:04 bdd1 mariadbd[4307]: 2025-11-30 11:36:04 0 [Note] Server socket created on IP: '127.0.0.1', port: '3306'.
nov. 30 11:36:04 bdd1 mariadbd[4307]: 2025-11-30 11:36:04 0 [Note] mariadbd: Event Scheduler: Loaded 0 events
nov. 30 11:36:04 bdd1 mariadbd[4307]: 2025-11-30 11:36:04 0 [Note] /usr/sbin/mariadbd: ready for connections.
nov. 30 11:36:04 bdd1 mariadbd[4307]: Version: '11.8.3-MariaDB-0+deb13u1 from Debian' socket: '/run/mysqld/mysqld.sock' port: 3306 -- Pi
nov. 30 11:36:04 bdd1 /etc/mysql/debian-start[4336]: Upgrading MariaDB tables if necessary.
nov. 30 11:36:04 bdd1 system[1]: Started mariadb.service - MariaDB 11.8.3 database server.
nov. 30 11:36:04 bdd1 /etc/mysql/debian-start[4349]: Checking for insecure root accounts.
nov. 30 11:36:04 bdd1 /etc/mysql/debian-start[4354]: Triggering myisam-recover for all MyISAM tables and aria-recover for all Aria tables
lines 1-24/24 (END)
    
```

11. Configuration de la base de données

- Création de la base de données wordpress à partir du Playbook config-mariadb.yml : module mysql_db

```

1 ---
2
3 - name: "Configuration 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:~
root@Ansible:~# ansible-playbook -i /home/sio/Documents/projetB1/Inventory/test.yml /home/sio/Documents/projetB1/Playbooks/config-mariadb.yml
PLAY [Configuration MariaDB] *****
TASK [Création base de données Wordpress] *****
[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/projetB1/Playbooks/config-mariadb.yml:7:7
5  gather_facts: no
6  tasks:
7    - name: "Création base de données Wordpress"
      ^ column 7

fatal: [bdd1]: 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 *****
bdd1      : ok=0    changed=0    unreachable=0    failed=1    skipped=0    rescued=0    ignored=0

root@Ansible:~#
    
```

- Installation du module avant la création de la base de données :

```

1
2
3 - name: "Configuration db 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/projetB1/Inventory/test.yml /home/sio/Documents/projetB1/Playbooks/config-mariadb.yml
PLAY [Configuration db MariaDB] *****
TASK [Installation module MySQL-python] *****
changed: [bdd1]
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 r
elated code in 5.0.0. Use PyMySQL connector instead.
changed: [bdd1]
PLAY RECAP *****
bdd1 : ok=2  changed=2  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

root@Ansible:~# █

```

- Création de l'utilisateur SQL « wordpress » et nous octroyons des droits sur les tables de la base de données wordpress à l'utilisateur wordpress : module mysql_user

```

1
2
3 - name: "Configuration db 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

```

Documentation sur le module `mysql_user` :

```

sio@Ansible: ~
root@Ansible:~# ansible-doc mysql_user
> MODULE community.mysql.mysql_user (/root/.local/share/pipx/venvs/ansible/lib/python3.13/site-packages/ansible_collections/community/mysql
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]
  default: null
  type: path

client_key The path to the client private key.
  aliases: [ssl_key]
  default: null
  type: path

column_case_sensitive The default is 'false'.
When 'true', the module will not uppercase the field names in the
privileges.
When 'false', the field names will be upper-cased. This is the default
This feature was introduced because MySQL 8 and above uses case sensitive fields names
in privileges.
  default: null
  type: bool

config_file Specify a config file from which user and password are to be read.
The default config file, '~/.my.cnf', if it exists, will be read, even if
config_file is not specified.
The default config file, '~/.my.cnf', if it exists, must contain a
'[client]' section as a MySQL connector requirement.
To prevent the default config file from being read, set config_file to be an empty
string.
  default: ~/.my.cnf
  type: path

connect_timeout The connection timeout when connecting to the MySQL server.
  default: 30
  type: int

```

```

sio@Ansible: ~
root@Ansible:~# ansible-playbook -i /home/sio/Documents/projetB1/Inventory/test.yml /home/sio/Documents/projetB1/Playbooks/config-mariadb.yml

PLAY [Configuration db MariaDB] *****
TASK [Installation module MySQL-python] *****
ok: [bdd1]

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 r
elated code in 5.0.0. Use PyMySQL connector instead.
ok: [bdd1]

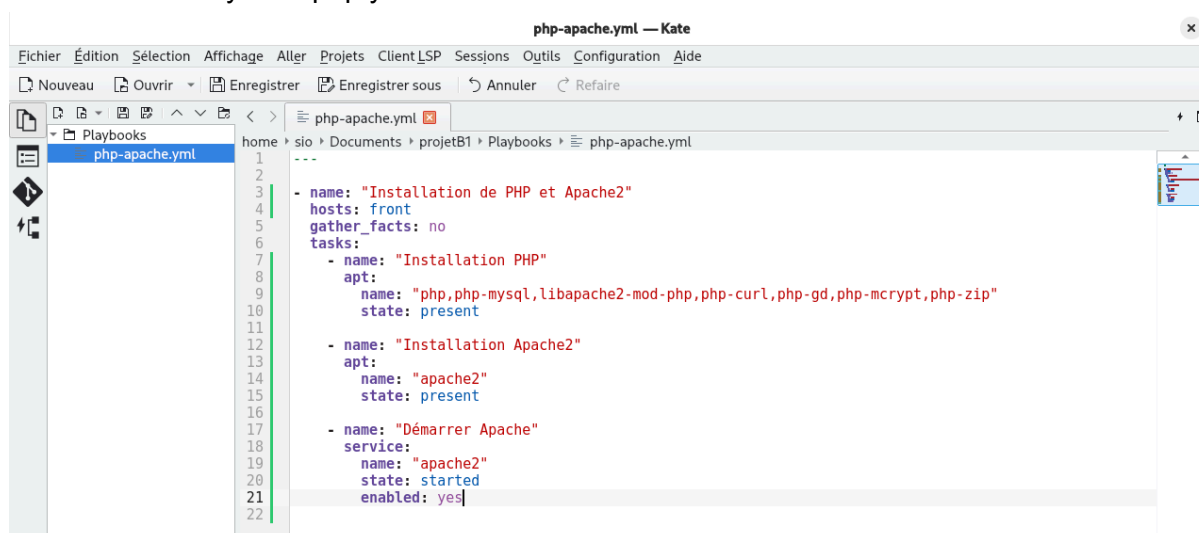
TASK [Création utilisateur] *****
[WARNING]: Option column_case_sensitive is not provided. The default is now false, so the column's name will be uppercased. The default will
be changed to true in community.mysql 4.0.0.
changed: [bdd1]

PLAY RECAP *****
bdd1 : ok=3  changed=1  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

root@Ansible:~# █
    
```

12. Installation d'un serveur PHP

- Création du Playbook php.yml :



```

php-apache.yml — Kate
Fichier  Édition  Sélection  Affichage  Aller  Projets  Client_LSP  Sessions  Outils  Configuration  Aide
Nouveau  Ouvrir  Enregistrer  Enregistrer sous  Annuler  Refaire
Playbooks
  php-apache.yml
home  sio  Documents  projetB1  Playbooks  php-apache.yml
1
2
3
4 - name: "Installation de PHP et Apache2"
5   hosts: front
6   gather_facts: no
7   tasks:
8     - name: "Installation PHP"
9       apt:
10        name: "php,php-mysql,libapache2-mod-php,php-curl,php-gd,php-mcrypt,php-zip"
11        state: present
12
13    - name: "Installation Apache2"
14      apt:
15        name: "apache2"
16        state: present
17
18    - name: "Démarrer Apache"
19      service:
20        name: "apache2"
21        state: started
22        enabled: yes
    
```

```

sio@Ansible: ~
root@Ansible:~# ansible-playbook -i /home/sio/Documents/projetB1/Inventory/test.yml /home/sio/Documents/projetB1/Playbooks/php-apache.yml

PLAY [Installation de PHP et Apache2] *****
TASK [Installation PHP] *****
changed: [web1]

TASK [Installation Apache2] *****
ok: [web1]

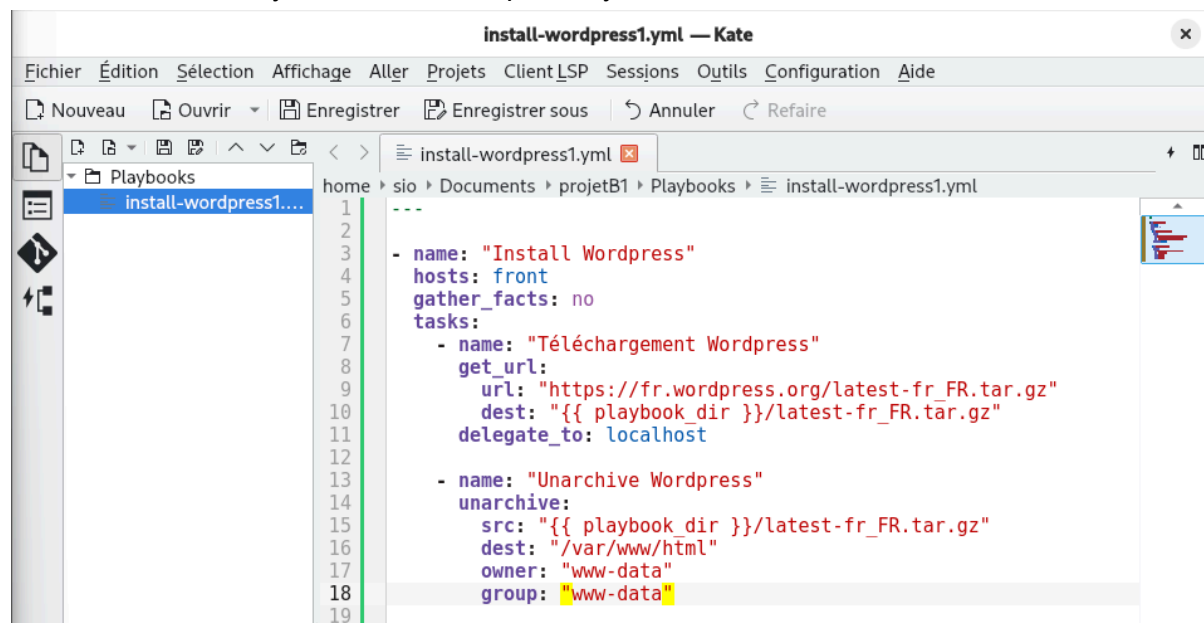
TASK [Démarrer Apache] *****
ok: [web1]

PLAY RECAP *****
web1 : ok=3  changed=1  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

root@Ansible:~# █
    
```

13. Installation de Wordpress

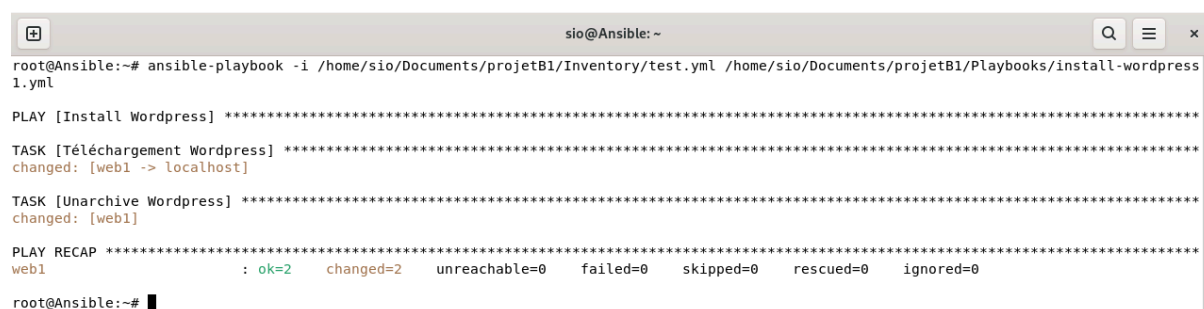
- Nous créons le Playbook install-wordpress1.yml



```

install-wordpress1.yml — Kate
Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire
Playbooks
install-wordpress1...
home sio Documents projetB1 Playbooks install-wordpress1.yml
1
2
3
4 - name: "Install Wordpress"
5   hosts: front
6   gather_facts: no
7   tasks:
8     - name: "Téléchargement Wordpress"
9       get_url:
10        url: "https://fr.wordpress.org/latest-fr_FR.tar.gz"
11        dest: "{{ playbook_dir }}/latest-fr_FR.tar.gz"
12        delegate_to: localhost
13
14     - name: "Unarchive Wordpress"
15       unarchive:
16        src: "{{ playbook_dir }}/latest-fr_FR.tar.gz"
17        dest: "/var/www/html"
18        owner: "www-data"
19        group: "www-data"

```



```

sio@Ansible: ~
root@Ansible:~# ansible-playbook -i /home/sio/Documents/projetB1/Inventory/test.yml /home/sio/Documents/projetB1/Playbooks/install-wordpress1.yml

PLAY [Install Wordpress] *****

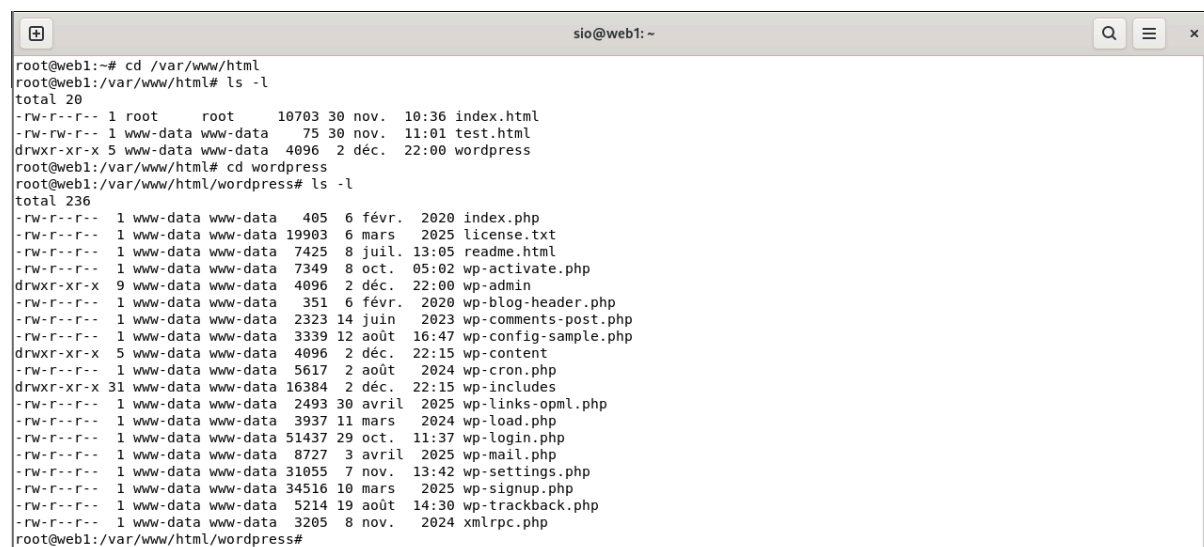
TASK [Téléchargement Wordpress] *****
changed: [web1 -> localhost]

TASK [Unarchive Wordpress] *****
changed: [web1]

PLAY RECAP *****
web1                : ok=2   changed=2   unreachable=0   failed=0   skipped=0   rescued=0   ignored=0

root@Ansible:~#

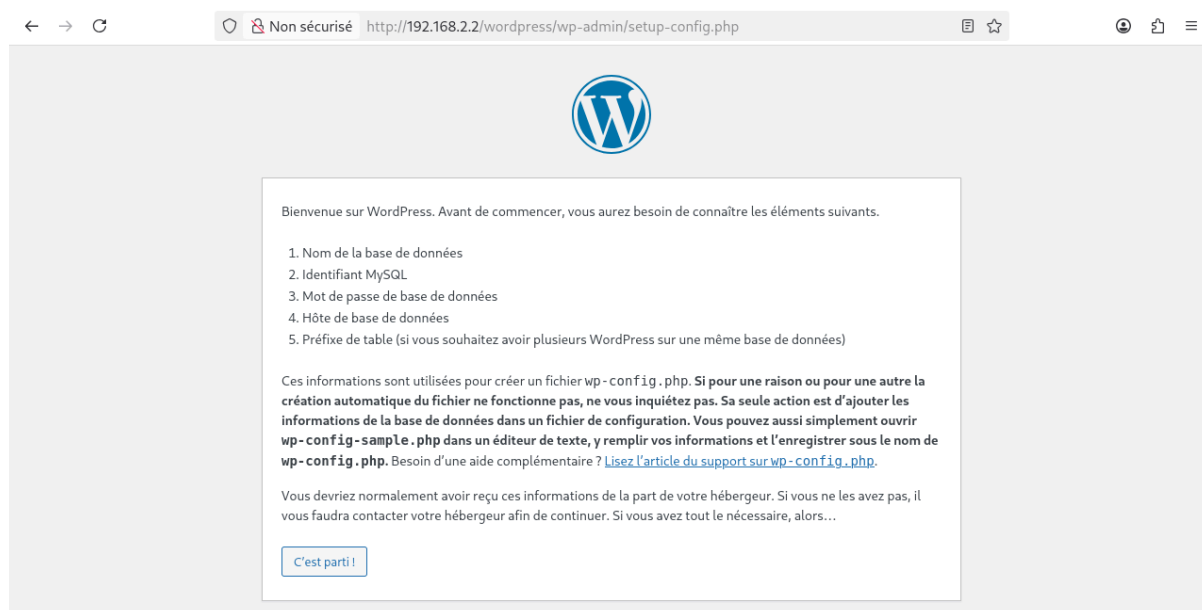
```



```

sio@web1: ~
root@web1:~# cd /var/www/html
root@web1:/var/www/html# ls -l
total 20
-rw-r--r-- 1 root root 10703 30 nov. 10:36 index.html
-rw-rw-r-- 1 www-data www-data 75 30 nov. 11:01 test.html
drwxr-xr-x 5 www-data www-data 4096 2 déc. 22:00 wordpress
root@web1:/var/www/html# cd wordpress
root@web1:/var/www/html/wordpress# ls -l
total 236
-rw-r--r-- 1 www-data www-data 405 6 févr. 2020 index.php
-rw-r--r-- 1 www-data www-data 19903 6 mars 2025 license.txt
-rw-r--r-- 1 www-data www-data 7425 8 juil. 13:05 readme.html
-rw-r--r-- 1 www-data www-data 7349 8 oct. 05:02 wp-activate.php
drwxr-xr-x 9 www-data www-data 4096 2 déc. 22:00 wp-admin
-rw-r--r-- 1 www-data www-data 351 6 févr. 2020 wp-blog-header.php
-rw-r--r-- 1 www-data www-data 2323 14 juin 2023 wp-comments-post.php
-rw-r--r-- 1 www-data www-data 3339 12 août 16:47 wp-config-sample.php
drwxr-xr-x 5 www-data www-data 4096 2 déc. 22:15 wp-content
-rw-r--r-- 1 www-data www-data 5617 2 août 2024 wp-cron.php
drwxr-xr-x 31 www-data www-data 16384 2 déc. 22:15 wp-includes
-rw-r--r-- 1 www-data www-data 2493 30 avril 2025 wp-links-opml.php
-rw-r--r-- 1 www-data www-data 3937 11 mars 2024 wp-load.php
-rw-r--r-- 1 www-data www-data 51437 29 oct. 11:37 wp-login.php
-rw-r--r-- 1 www-data www-data 8727 3 avril 2025 wp-mail.php
-rw-r--r-- 1 www-data www-data 31055 7 nov. 13:42 wp-settings.php
-rw-r--r-- 1 www-data www-data 34516 10 mars 2025 wp-signup.php
-rw-r--r-- 1 www-data www-data 5214 19 août 14:30 wp-trackback.php
-rw-r--r-- 1 www-data www-data 3205 8 nov. 2024 xmlrpc.php
root@web1:/var/www/html/wordpress#

```



- Nous effectuons un `grep bind-address /etc/mysql/mariadb.conf.d/50-server.cnf` sur la machine `bdd-1` afin de montrer que mariadb écoute depuis `127.0.0.0` machine.

Nous affichons également le fichier `50-server.cnf` afin de montrer la ligne `bind-address`.

```

sio@bdd1: ~
root@bdd1:~# grep bind-address /etc/mysql/mariadb.conf.d/50-server.cnf
bind-address = 0.0.0.0
root@bdd1:~#

sio@bdd1: ~
root@bdd1:~# cd /etc/mysql/mariadb.conf.d/
root@bdd1:/etc/mysql/mariadb.conf.d# ls
50-client.cnf      50-mysqld_safe.cnf  60-galera.cnf      provider_lz4.cnf   provider_lzo.cnf
50-mariadb-clients.cnf  50-server.cnf      provider_bzip2.cnf  provider_lzma.cnf  provider_snappy.cnf
root@bdd1:/etc/mysql/mariadb.conf.d# cat 50-server.cnf

root@bdd1:/etc/mysql/mariadb.conf.d# cat 50-server.cnf
#
# These groups are read by MariaDB server.
# Use it for options that only the server (but not clients) should see

# this is read by the standalone daemon and embedded servers
[server]

# this is only for the mariadb daemon
[mariabdb]

#
# * Basic Settings
#
#user                = mysql
#pid-file             = /run/mysqld/mysqld.pid
#basedir              = /usr
#datadir              = /var/lib/mysql
#tmpdir               = /tmp

# Broken reverse DNS slows down connections considerably and name resolve is
# safe to skip if there are no "host by domain name" access grants
#skip-name-resolve

# Instead of skip-networking the default is now to listen only on
# localhost which is more compatible and is not less secure.
bind-address = 0.0.0.0

#
# * Fine Tuning
#
#key_buffer_size     = 128M
#max_allowed_packet  = 1G
#thread_stack        = 192K
#thread_cache_size   = 8
# This replaces the startup script and checks MyISAM tables if needed
# the first time they are touched
#mysam_recover_options = BACKUP
#max_connections     = 100
#table_cache         = 64

```

▪ Création du Playbook Install-Mariadb2

The image shows a text editor window titled 'install-mariadb2.yml — Kate' with a menu bar (Fichier, Édition, Sélection, Affichage, Aller, Projets, Client_LSP, Sessions, Outils, Configuration, Aide) and a toolbar. The editor displays the following Ansible playbook content:

```

1
2
3
4 - name: "Installation MariaDB"
5   hosts: ["database"]
6   gather_facts: no
7   handlers:
8     - name: "Restart MariaDB"
9       service:
10        name: mysql
11        state: restarted
12   tasks:
13     - name: "Installation package MariaDB"
14       package:
15        name: "mariadb-server,python3-mysqldb"
16        state: present
17     - name: "Démarrage du service"
18       service:
19        name: mysql
20        enabled: yes
21        state: started
22
23     - name: "Listen on 0.0.0.0"
24       lineinfile:
25        path: "/etc/mysql/mariadb.conf.d/50-server.cnf"
26        regexp: '^bind-address'
27        line: "bind-address = 0.0.0.0"
28        notify: Restart MariaDB
29

```

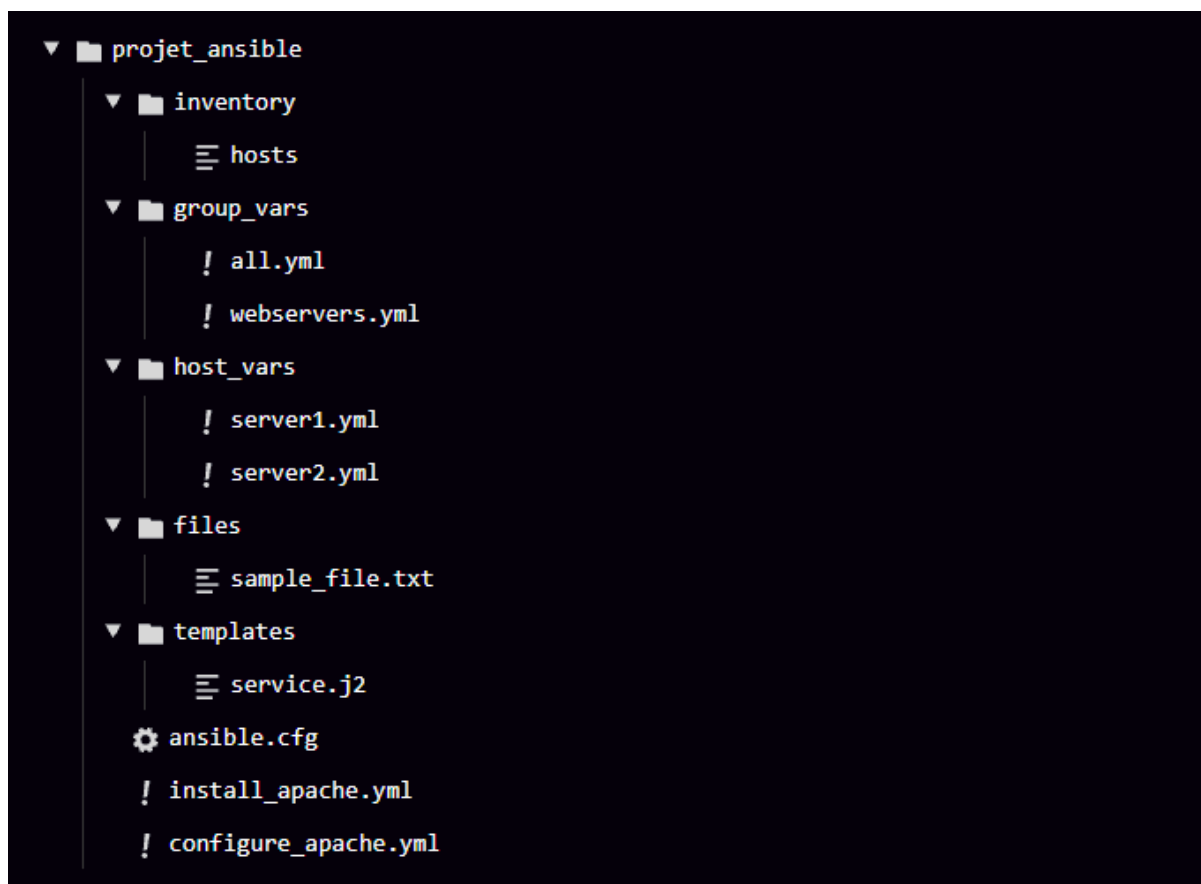
Below the editor is a terminal window titled 'sio@Ansible: ~' showing the execution of the playbook:

```

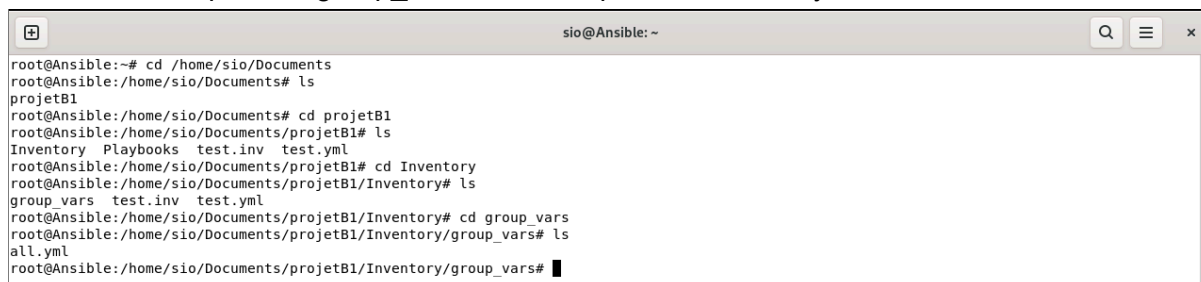
root@Ansible:~# ansible-playbook -i /home/sio/Documents/projetB1/Inventory/test.yml /home/sio/Documents/projetB1/Playbooks/install-mariadb2.yml
PLAY [Installation MariaDB] *****
TASK [Installation package MariaDB] *****
ok: [bdd1]
TASK [Démarrage du service] *****
ok: [bdd1]
TASK [Listen on 0.0.0.0] *****
changed: [bdd1]
RUNNING HANDLER [Restart MariaDB] *****
changed: [bdd1]
PLAY RECAP *****
bdd1 : ok=4  changed=2  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

root@Ansible:~#

```



- Création du répertoire group_vars dans le répertoire Inventory :



```

sio@Ansible: ~
root@Ansible:~# cd /home/sio/Documents
root@Ansible:/home/sio/Documents# ls
projetsB1
root@Ansible:/home/sio/Documents# cd projetsB1
root@Ansible:/home/sio/Documents/projetsB1# ls
Inventory Playbooks test.inv test.yml
root@Ansible:/home/sio/Documents/projetsB1# cd Inventory
root@Ansible:/home/sio/Documents/projetsB1/Inventory# ls
group_vars test.inv test.yml
root@Ansible:/home/sio/Documents/projetsB1/Inventory# cd group_vars
root@Ansible:/home/sio/Documents/projetsB1/Inventory/group_vars# ls
all.yml
root@Ansible:/home/sio/Documents/projetsB1/Inventory/group_vars#
root@Ansible:/home/sio/Documents/projetsB1/Inventory/group_vars#
root@Ansible:/home/sio/Documents/projetsB1/Inventory/group_vars#
root@Ansible:/home/sio/Documents/projetsB1/Inventory/group_vars#
root@Ansible:/home/sio/Documents/projetsB1/Inventory/group_vars#
root@Ansible:/home/sio/Documents/projetsB1/Inventory/group_vars# cd projetsB1
bash: cd: projetsB1: Aucun fichier ou dossier de ce nom
root@Ansible:/home/sio/Documents/projetsB1/Inventory/group_vars# cd
root@Ansible:~# cd /home/sio/Documents
root@Ansible:/home/sio/Documents# cd projetsB1
root@Ansible:/home/sio/Documents/projetsB1# cd Inventory
root@Ansible:/home/sio/Documents/projetsB1/Inventory# mkdir group_vars

```

```

all.yml — Kate
Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire
group_vars
all.yml
home sio Documents projetsB1 Inventory group_vars all.yml
1
2
3
4
5
6
7
8
9
10
11
domain_name: "sio-exupery.local"
wp_db_username: "wordpress"
wp_db_password: "wordpress"
wp_db_name: "wordpress"
wp_db_host: "{{ groups['database'][0] }}"
wp_url: "{{ inventory_hostname }}"

```

•Création du Playbook config-mariadb2.yml : création de la base de données et de l'utilisateur SQL avec les modules mysql_db et mysql_user pour chaque machine du groupe database

```

config-mariadb2.yml — Kate
Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire
Playbooks
config-mariadb2.yml
home sio Documents projetsB1 Playbooks config-mariadb2.yml
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
- name: "Configuration db MariaDB"
  hosts: ["database"]
  gather_facts: no
  tasks:
    - name: "Création base de données Wordpress"
      mysql_db:
        name: "{{ wp_db_name }}"
        state: present
    - name: "Création utilisateur"
      mysql_user:
        name: "{{ wp_db_username }}"
        password: "{{ wp_db_password }}"
        host: "{{ item }}"
        priv: "{{ wp_db_name }}.*:ALL"
        state: present
      loop: "{{ groups['front'] }}"

```

```

sio@Ansible: ~
root@Ansible:~# ansible-playbook -i /home/sio/Documents/projetB1/Inventory/test.yml /home/sio/Documents/projetB1/Playbooks/config-mariadb2.yml

PLAY [Configuration db MariaDB] *****

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: [bdd1]

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: [bdd1] => (item=web1)

PLAY RECAP *****
bdd1                : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

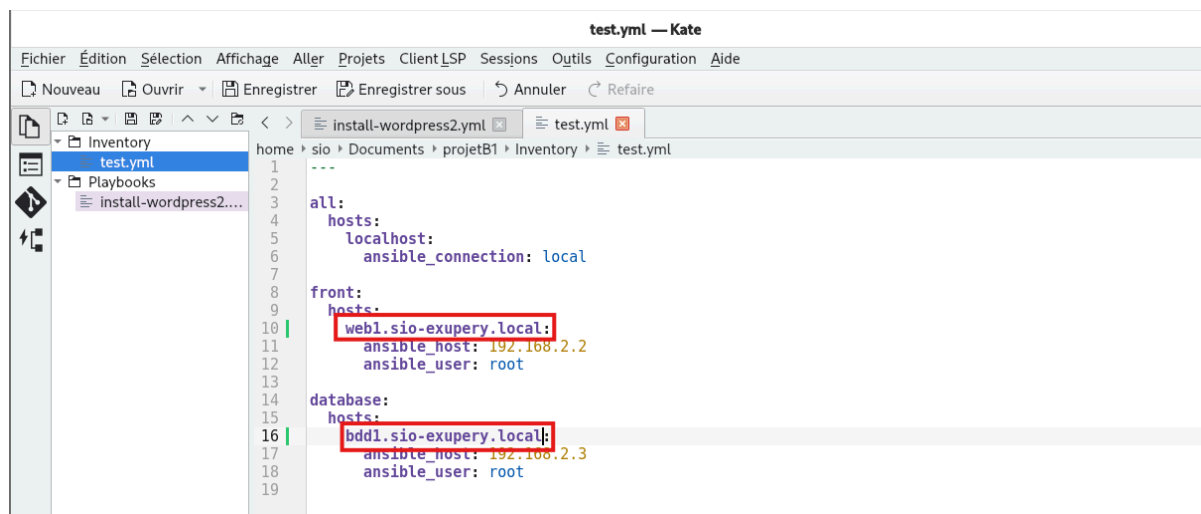
root@Ansible:~# █
    
```

•Création du Playbook install-wordpress2.yml

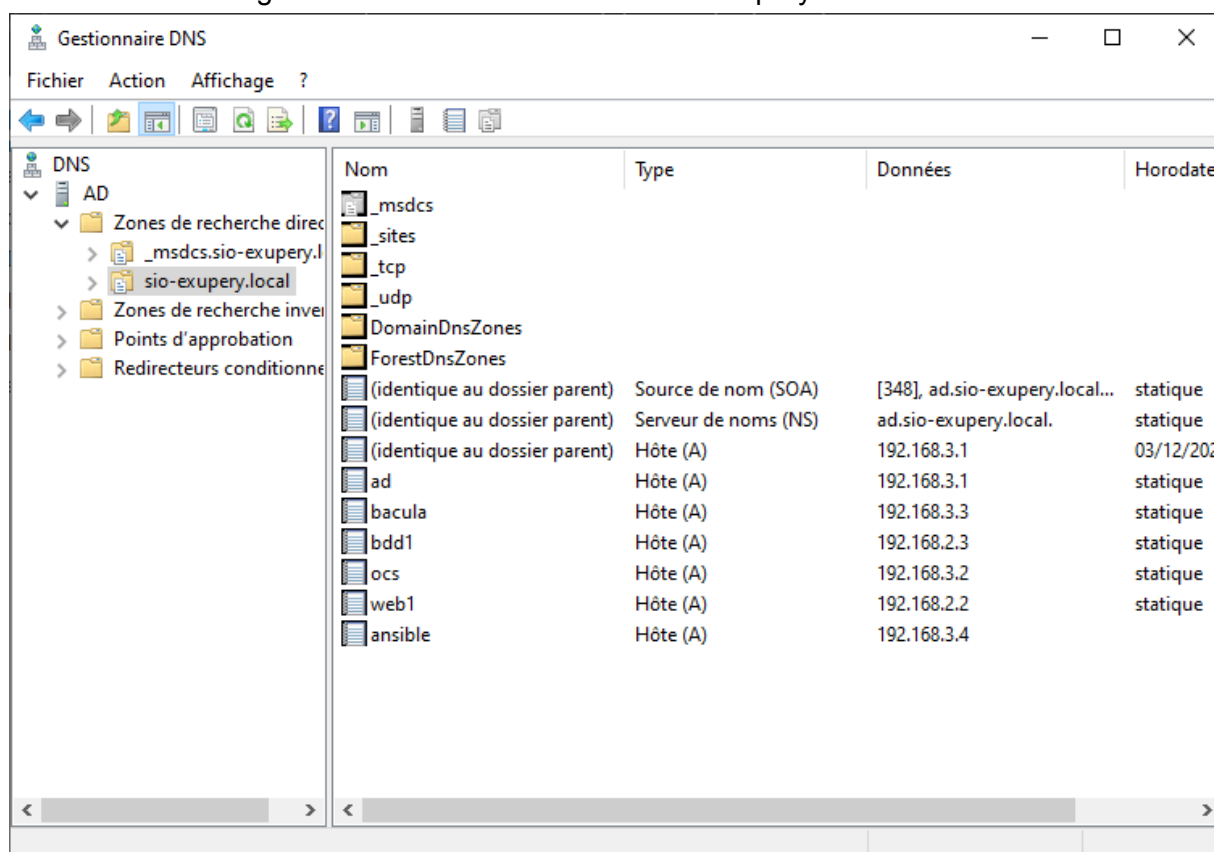
```

1  ---
2
3  - name: "Install Wordpress"
4    hosts: front
5    gather_facts: no
6    vars:
7      wp_path: "/var/www/html"
8    tasks:
9
10   - name: "Install wp-cli"
11     get_url:
12       url: https://raw.githubusercontent.com/wp-cli/builds/gh-pages/phar/wp-cli.phar
13       dest: "/usr/local/bin/wp-cli"
14       owner: root
15       group: root
16       mode: "0755"
17
18   - name: "Download WP"
19     command: >
20       wp-cli core download
21       --allow-root --no-color --path='{{ wp_path }}'
22       --locale='fr_FR'
23     args:
24       creates: "{{ wp_path }}/wp-load.php"
25
26   - name: "Configure WP"
27     command: >
28       wp-cli core config
29       --allow-root --no-color --path='{{ wp_path }}'
30       --dbname='{{ wp_db_name }}'
31       --dbuser='{{ wp_db_username }}'
32       --dbpass='{{ wp_db_password }}'
33       --dbhost='{{ wp_db_host }}'
34     args:
35       creates: "{{ wp_path }}/wp-config.php"
36
37   - name: "Install WP"
38     run_once: yes
39     command: >
40       wp-cli core install.
41       --allow-root --no-color --path='{{ wp_path }}'
42       --title='Blog B1' --url=http://{{ wp_url }}/
43       --admin_name='admin'
44       --admin_email='admin@sio-exupery.fr'
45       --admin_password='Azerty0'
46       --skip-email
47     changed_when: "'installed successfully.' in _stdout"
48     register: _
49
    
```

▪ Modification du fichier d'inventaire :



▪ Création des enregistrements DNS dans la zone sio-exupery.local :



14. Installation d'un serveur HAproxy

15. Ansible et administration machine Windows