

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

- ▶ Vous êtes chargé d'installer un serveur Ansible. Il s'agit d'un outil open source DevOps qui automatise le provisionnement, la gestion des configurations ainsi que le déploiement des applications sur initialement des serveurs Linux. La plateforme Ansible gère les différents nœuds à l'aide du protocole SSH et ne nécessite aucune installation de logiciel supplémentaire sur ceux-ci.
- ▶ Pour mener à bien votre mission, vous disposez d'un serveur que vous nommerez **Ansible** sur lequel est installé le système d'exploitation Linux **Debian 13 (Trixie)**. L'environnement de bureau a été gardé pour bénéficier d'un navigateur.

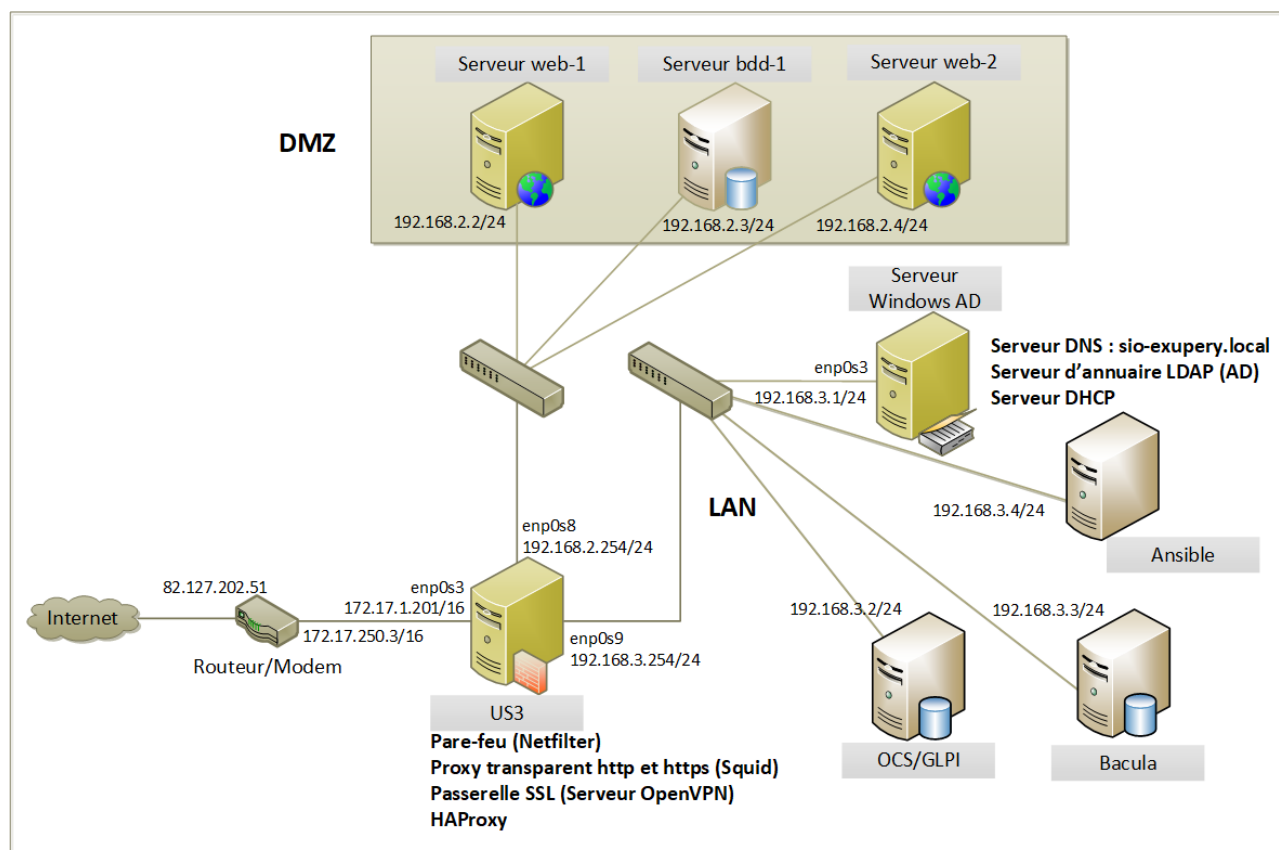


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https://docs.ansible.com/projects/ansible/latest/installation_guide/intro_installation.html

<https://blog.stephane-robert.info/docs/developper/programmation/python/pipx/>

<https://pipx.pypa.io/stable/installation/>

<https://blog.stephane-robert.info/docs/infra-as-code/gestion-de-configuration/ansible/>

1. Installation d'Ansible.

```

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

```

```

sio@Ansible: ~
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:~#

```

Installation d'Ansible via le gestionnaire de paquets Apt ou à l'aide de l'outil pip de Python

```

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:~#

```

```
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-sphinxdoc 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-sphinxdoc libpython3-dev libpython3.13-dev python3-dev
  python3-packaging python3-pip python3-wheel python3.13-dev zlib1g-dev
0 mis à jour, 10 nouvellement installés, 0 à enlever et 22 non mis à jour.
Il est nécessaire de prendre 8 477 kB dans les archives.
Après cette opération, 41,3 Mo d'espace disque supplémentaires seront utilisés.
Souhaitez-vous continuer ? [0/n] o
```

```
sio@Ansible: ~
root@Ansible:~# pip install ansible
error: externally-managed-environment

× 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 provider. You can override this, at the risk of breaking your
Python installation or OS, by passing --break-system-packages.
hint: See PEP 668 for the detailed specification.
root@Ansible:~#
```

```
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-packaging 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-packaging python3-pip-whl
  python3-platformdirs python3-setuptools-whl python3-userpath python3-venv
  python3.13-venv
0 mis à jour, 10 nouvellement installés, 0 à enlever et 109 non mis à jour.
Il est nécessaire de prendre 3 830 kB dans les archives.
Après cette opération, 7 745 ko d'espace disque supplémentaires seront utilisés.
Souhaitez-vous continuer ? [0/n] o
```

```
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
::: installing 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:~# █
```

```
sio@Ansible: ~  
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 (setup).

```
sio@Ansible: ~  
root@Ansible:~# ansible -m setup localhost > setup.txt  
[WARNING]: No inventory was parsed, only implicit localhost is available  
root@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:fe71:3345",
      "fe80::a00:27ff:fe71:3345",
      "fd17:625c:f037:2:406f:55c9:f0e6:2987"
    ],
    "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": "2025-11-15",
      "day": "15",
      "epoch": "1763241666",
      "epoch_int": "1763241666",
      "hour": "22",
      "iso8601": "2025-11-15T21:21:06Z",
      "iso8601_basic": "20251115T222106176844",
      "iso8601_basic_short": "20251115T222106",
      "iso8601_micro": "2025-11-15T21:21:06.176844Z",
      "minute": "21",
```

```
sio@Ansible: ~  
  "month": "11",  
  "second": "06",  
  "time": "22:21:06",  
  "tz": "CET",  
  "tz_dst": "CEST",  
  "tz_offset": "+0100",  
  "weekday": "samedi",  
  "weekday_number": "6",  
  "weeknumber": "45",  
  "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": "08:00:27:71:33:45",  
  "mtu": 1500,  
  "netmask": "255.255.255.0",  
  "network": "10.0.2.0",  
  "prefix": "24",  
  "type": "ether"  
},  
"ansible_default_ipv6": {  
  "address": "fd17:625c:f037:2:406f:55c9:f0e6:2987",  
  "gateway": "fe80::2",  
  "interface": "enp0s3",  
  "macaddress": "08:00:27:71:33:45",  
  "mtu": 1500,  
  "prefix": "64",  
  "scope": "global",  
  "type": "ether"  
},  
"ansible_device_links": {  
  "ids": {  
    "sda": [  
      "ata-VBOX_HARDDISK_VBc8b183cd-038f72b5"  
    ],  
    "sda1": [  
      "ata-VBOX_HARDDISK_VBc8b183cd-038f72b5-part1"  
    ],  
    "sda2": [  
      "ata-VBOX_HARDDISK_VBc8b183cd-038f72b5-part2"  
    ]  
  }  
}
```

3. Aide et documentation officielle

3.1. Ansible-doc setup

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

```
sio@Ansible: ~
> MODULE ansible.builtin.setup (/root/.local/share/pipx/venvs/ansible/lib/python3.11/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
:
```

```
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 particular fact
subsets. Use the filter parameter if you do not want
to display some collected facts.

default: all
elements: str
type: list
```

```
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": "2025-11-15",
      "day": "15",
      "epoch": "1763242128",
      "epoch_int": "1763242128",
      "hour": "22",
      "iso8601": "2025-11-15T21:28:48Z",
      "iso8601_basic": "20251115T222848152788",
      "iso8601_basic_short": "20251115T222848",
      "iso8601_micro": "2025-11-15T21:28:48.152788Z",
      "minute": "28",
      "month": "11",
      "second": "48",
      "time": "22:28:48",
      "tz": "CET",
      "tz_dst": "CEST",
      "tz_offset": "+0100",
      "weekday": "samedi",
      "weekday_number": "6",
      "weeknumber": "45",
      "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

```
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:~#
```

```
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 15 nov. 23:36 /tmp/test/  
root@Ansible:~#
```

5. Création d'un fichier d'inventaire

```
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 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 kpackagetool6 kwallet6 libb2-1 libdouble-conversion3 libhfstospell11  
libkf6archive-data libkf6archive6 libkf6attica6 libkf6auth-data  
libkf6authcore6 libkf6bookmarks-data libkf6bookmarks6  
libkf6bookmarkswidgets6 libkf6breezeicons6 libkf6codecs-data libkf6codecs6
```

VM pfSense à démarrer

VM Ansible : Réseau interne LAN

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	
192.168.3.4	255.255.255.0	192.168.3.254	⊗
			⊗

DNS Automatique

192.168.3.1

```
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 web-1 et bdd-1 (clones 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	
192.168.2.2	255.255.255.0	192.168.2.254	✕
			✕

DNS Automatique

192.168.3.1

```

sio@web1: ~
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@web1: ~
GNU nano 8.4 /etc/hostname
web-1
  
```

```

sio@web-1: ~
root@web-1:~# 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=1014,fd=6))
LISTEN  0        4096       127.0.0.1:631           0.0.0.0:*
  users: (("cupsd",pid=995,fd=7))
root@web-1:~#
  
```

```

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

# Authentication:

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

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

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

```
sio@bdd-1: ~
GNU nano 8.4 /etc/hosts
127.0.0.1 localhost
192.168.2.3 bdd-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@bdd-1: ~
GNU nano 8.4 /etc/hostname
bdd-1
```

```
sio@bdd-1: ~
root@bdd-1:~# 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=1017,fd=6))
LISTEN 0 4096 127.0.0.1:631 0.0.0.0:*
users: (("cupsd",pid=997,fd=7))
root@bdd-1:~#
```

```
sio@bdd-1: ~
GNU nano 8.4 /etc/ssh/sshd config

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:

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

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

Fichier d'inventaire au format INI :

```
test.inv — Kate
Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration »
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire
Inventory
test.inv
home sio Documents Inventory test.inv
1 localhost ansible_connection=local
2
3
4 [front]
5 web-1 ansible_host=192.168.2.2
6 [database]
7 bdd-1 ansible_host=192.168.2.3
8
9 [front:vars]
10 ansible_user=root
11
```

Connexion SSH

```
sio@Ansible: ~
root@Ansible:~# cd /home/sio/Documents/
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"
    ]
  }
}
```

Fichier d'inventaire au format YAML :

```
test.yml — Kate
Fichier Édition Sélection Affichage Aller Projets Client LSP Sessions Outils Configuration
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire
Inventory
test.yml
1 ---
2
3
4 all:
5   hosts:
6     localhost:
7       ansible_connection: local
8
9 front:
10  hosts:
11    web-1:
12      ansible_host: 192.168.2.2
13      ansible_user: root
14
15 database:
16  hosts:
17    bdd-1:
18      ansible_host: 192.168.2.3
19      ansible_user: root
```

Connexion SSH

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

6. Connexion aux serveurs avec le protocole SSH

⇒ Mettre en place l'authentification par clés (nous avons vu au Chapitre 10 - Administration à distance et échanges sécurisés - qu'il était fortement recommandé de recourir à une authentification par clés plutôt que par mot de passe lors d'une connexion SSH).

Sur le client SSH Ansible, générez, à l'aide de la commande `ssh-keygen -b 256 -t ecdsa`, la paire de clés publique/privée de l'utilisateur en cours (`root` en l'occurrence) pour l'algorithme **EcDSA** afin de pouvoir s'authentifier sur le serveur OpenSSH. Le générateur de clés va placer les deux clés dans `$HOME/.ssh/` : une validation du fichier de sauvegarde par défaut de la clé vous est demandée (tapez **Entrée**), ainsi qu'une **phrase pour crypter la clé privée qui va être enregistrée sur la machine cliente** (mettez « MaPassphrase »). Vous obtenez l'empreinte de la clé publique de l'utilisateur :

```
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:BqjS5I4PJQyuwT74CxrzRDKRD7GLaNU6C8nPWor+pLo root@Ansible
The key's randomart image is:
+---[ECDSA 256]---+
|.
| + ..
|* .....
|00o.. .
|X0Bo S
|=@+ o .
|0oo*
|oXB
|E**o
+-----[SHA256]-----+
root@Ansible:~# █
```

NB : la commande `ssh-keygen` saisie sans paramètre crée une paire de clés Ed25519 (cf. Chapitre 10).

`ssh-keygen` a généré deux clés :

- une **clé privée** qui est `$HOME/.ssh/id_ecdsa` à laquelle vous seul devez avoir accès ;
- une **clé publique** qui est `$HOME/.ssh/id_ecdsa.pub`, qui peut être connue par tout le monde.

```
sio@Ansible: ~  
root@Ansible:~# ls -al .ssh  
total 16  
drwx----- 2 root root 4096 17 nov. 22:22 .  
drwx----- 6 root root 4096 15 nov. 22:21 ..  
-rw----- 1 root root 557 17 nov. 22:22 id_ecdsa  
-rw-r--r-- 1 root root 174 17 nov. 22:22 id_ecdsa.pub  
root@Ansible:~#
```

Sur les deux serveurs SSH `web-1` et `bdd-1`, décommentez 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
```

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

```
sio@bdd-1: ~  
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
```

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

Sur le client SSH Ansible, enlevez le # de commentaire dans le fichier de configuration du client ssh (/etc/ssh/ssh_config) sur les lignes indiquées ci-dessous et relancez le service ssh :

```
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

sio@Ansible: ~
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) :

```
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 o
ut any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompte
d 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 o
ut any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompte
d 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:~#
```

La clé publique **id_ecdsa.pub** a été envoyée aux 2 serveurs et a été automatiquement ajoutée au fichier **authorized_keys**.

Sur les **serveurs SSH web-1 et bdd-1**, vérifiez la présence dans le fichier **/root/.ssh/authorized_keys** de la **clé publique** :

```
sio@web1: ~
root@web1:~# cd .ssh/
root@web1:~/.ssh# ls -l
total 4
-rw----- 1 root root 174 17 nov. 22:54 authorized_keys
root@web1:~/.ssh# cat authorized_keys
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAYNTYAAAAIbmlzdHAYNTYAAABBBInpDaLz
oechkm+1xmx0RlucBoVd+7VyGZuMRPtq+/gQsC2YnlyZCgB1ZMjIrrfGJayPeOI/gGiHxh0JbAX+tHM=
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 18 nov. 18:59 authorized_keys
root@bdd-1:~/ssh# cat authorized_keys
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBInpDaLz
oechkm+1xmx0R1ucBoVd+7VyGZuMRPtq+/gQsC2YnlyZCgB1ZMjIrrfGJayPeOI/gGiHxh0JbAX+tHM=
root@Ansible
root@bdd-1:~/ssh#
```

Pour vérifier le bon fonctionnement de l'authentification par clés, connectez-vous ensuite à partir du client SSH Ansible au serveur SSH web-1. La passphrase mise en place pour crypter la clé privée vous est demandée afin que le client puisse résoudre le challenge.

Cf. §6 Fonctionnement de l'authentification par clés de chiffrement avec OpenSSH (B3-SSH-MITM-Annexes accompagnant le Chapitre 10)

```
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:~#
```

Terminez la session SSH sur le client Ansible en saisissant **exit**.

Testez également la connexion au serveur ssh bdd-1 et terminez la session en saisissant exit.

Sur les deux serveurs SSH web-1 et bdd-1, désactivez l'authentification par mot de passe pour juste conserver celle par clés dans le fichier de configuration `/etc/ssh/sshd_config`. Décommentez pour ce faire la directive **PasswordAuthentication** et affectez-lui le paramètre **no**.

```
sio@web1: ~
GNU nano 8.4 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@bdd-1: ~
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
```

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

Activez l'**agent SSH** sur le client SSH Ansible (**programme qui tourne en arrière-plan et qui garde en mémoire la clé privée**) en saisissant les commandes **ssh-agent /bin/bash** et **ssh-add** (l'agent SSH vous demande la passphrase).

```
sio@Ansible: ~
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)
Identity added: /root/.ssh/id_ed25519 (root@Ansible)
root@Ansible:~# █
```

⇒ **Pensez à ressaisir ces 2 commandes à chaque redémarrage de la VM Ansible.**

7. Test de communication avec le module ping

Réalisez le test de communication avec les machines de l'inventaire (groupe all puis front) :

```
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 '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"
  },
  "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 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"
  },
  "changed": false,
  "ping": "pong"
}
root@Ansible:~# █
```

```
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 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"
  },
  "changed": false,
  "ping": "pong"
}
root@Ansible:~# █
```

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

S'assurer de la présence d'un paquet (exemple bash) : module apt

```
sio@Ansible: ~
root@Ansible:~# ansible -m apt -a "name=bash state=present" -i ./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": 1763398682,
  "cache_updated": false,
  "changed": false
}
root@Ansible:~#
```

Si distribution différente (Debian et Red Hat par exemple) : module package

```
sio@Ansible: ~
root@Ansible:~# ansible -m package -a "name=bash state=present" -i ./projetB1/test.yml front,database
[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": 1763398682,
  "cache_updated": false,
  "changed": false
}
[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": 1763398114,
  "cache_updated": false,
  "changed": false
}
root@Ansible:~# █
```

⇒ Vérifier au préalable la résolution DNS (adresse IP du serveur DNS dans la configuration IP des VM web-1 et bdd-1 ainsi que les règles sur OPT1 de pfSense : requêtes DNS port UDP 53)

Installation du serveur Apache sur les machines du groupe front (module apt) :

```
sio@Ansible: ~
root@Ansible:~# ansible -i ./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 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"
  },
  "cache_update_time": 1763398682,
  "cache_updated": false,
  "changed": true,
  "stderr": "",
  "stderr_lines": [],
  "stdout": "Reading package lists...\nBuilding dependency tree...\nReading state information...\n\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 109 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 2s (384 kB/s)\nSelecting previously unselected package apache2-data.\r\n(Reading database ... \r(Reading database ... 5%\r(Reading 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 database ... 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 package apache2-utils.\r\nPreparing to unpack .../apache2-utils_2.4.65-2_amd64.deb ... \r\nUnpacking apache2-utils (2.4.65-2) ... \r\nSelecting previously unselected package apache2.\r\nPreparing to unpack .../apache2_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_event.\r\nEnabling module authz_core.\r\nEnabling module authz_host.\r\nEnabling module authn_core.\r\nEnabling module auth_basic.\r\nEnabling module access_compat.\r\nEnabling module authn_file.\r\nEnabling module authz_user.\r\nEnabling module alias.\r\nEnabling module dir.\r\nEnabling module autoindex.\r\nEnabling 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 reqtimeout.\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\nCreated symlink '/etc/systemd/system/multi-user.target.wants/apache2.service' -> '/usr/lib/systemd/system/apache2.service'.\r\nCreated symlink '/etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service' -> '/u
```

```
sr/lib/systemd/system/apache-htcacheclean.service'.\r\n\r\nProcessing triggers for man-db (2.13.1-1) ..
.\r\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 109 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 2s (384 kB/s)",
    "Selecting previously unselected package apache2-data.",
    "(Reading database ... ",
    "(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:~# █

```

Fichier de configuration `.ansible.cfg` à créer dans le répertoire personnel pour évincer le Warning :



```

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

```



```

sio@Ansible: ~
root@Ansible:~# ansible -i ./projetB1/test.yml -m apt -a "name=apache2 state=present" front
web-1 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "cache_update_time": 1763897039,
  "cache_updated": false,
  "changed": false
}
root@Ansible:~#

```

Systemctl status apache2 sur la VM web-1 :

```
sio@web-1: ~
● apache2.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
  Active: active (running) since Sun 2025-11-23 11:48:31 CET; 22min ago
  Invocation: c3a061dda03349ed9286d03535fc427b
  Docs: https://httpd.apache.org/docs/2.4/
  Main PID: 3927 (apache2)
  Tasks: 55 (limit: 2281)
  Memory: 7M (peak: 7.5M)
  CPU: 183ms
  CGroup: /system.slice/apache2.service
          └─3927 /usr/sbin/apache2 -k start
            └─3930 /usr/sbin/apache2 -k start
              └─3931 /usr/sbin/apache2 -k start

nov. 23 11:48:30 web-1 systemd[1]: Starting apache2.service - The Apache HTTP Server...
nov. 23 11:48:31 web-1 apachectl[3907]: AH00558: apache2: Could not reliably determine
nov. 23 11:48:31 web-1 systemd[1]: Started apache2.service - The Apache HTTP Server.
~
```

Test depuis la VM Ansible :

← → ↻ Non sécurisé http://192.168.2.2

Apache2 Debian Default Page

debian

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Debian systems. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Debian's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Debian tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Debian systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|   |-- ports.conf
|-- mods-enabled
|   |-- *.load
|   |-- *.conf
|-- conf-enabled
|   |-- *.conf
|-- sites-enabled
|   |-- *.conf
```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.
- Configuration files in the `mods-enabled/`, `conf-enabled/` and `sites-enabled/` directories contain particular configuration snippets which manage modules, global configuration fragments, or

Page test.html à créer pour la copier dans le répertoire de publication avec Ansible (module copy) :

```
sio@Ansible: ~
GNU nano 8.4 test.html
copie de la page test.html dans /var/www/html des machines du groupe front
```

```
sio@Ansible: ~
root@Ansible:~# ansible -i ./projetB1/test.yml -m copy -a "src=test.html owner=ww-data group=www-data mode=644 dest=/var/www/html" front
web-1 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.13"
  },
  "changed": true,
  "checksum": "d3c3890b45137715790bd760fc53af9c23f76d7d",
  "dest": "/var/www/html/test.html",
  "gid": 33,
  "group": "www-data",
  "md5sum": "7eb8a9a52d77577bd3bae298d9f818a8",
  "mode": "0644",
  "owner": "www-data",
  "size": 73,
  "src": "/root/.ansible/tmp/ansible-tmp-1763902532.9556792-4856-26426130376893/.source.html",
  "state": "file",
  "uid": 33
}
root@Ansible:~#
```

```
← → ↻ http://192.168.2.2/test.html ☆ 👤 📄 ☰
```

copie de la page test.html dans /var/www/html des machines du groupe front

9. Premier playbook

Un playbook est un fichier au format YAML qui va lister un ensemble d'opérations.

Structure d'un playbook :

- Un fichier yaml démarre par 3 tirets ;
- le nom du playbook (champ name) ;
- La liste des machines concernées (champ hosts) ;
- La gestion du lancement de la collecte des informations (module setup) concernant la machine (champ gather_facts) ;
- la liste des opérations à effectuer (tasks).

Playbook apache.yml : modules apt et copy

apache.yml — Kate

Fichier Édition Sélection Affichage Aller Projets Client LSP Sessions Outils Configuration Aide

Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire

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
  
```

sio@Ansible: ~

```

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

PLAY [Installation Apache] *****

TASK [Gathering Facts] *****
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:~#
  
```

⇒ Pas de récupération des informations concernant les machines (gather_facts : no) :

```

1
2
3
4 - name: "Installation Apache"
5   hosts: front
6   gather_facts: no
7   tasks:
8     - name: "Installation package Apache2"
9       apt:
10        name: "apache2"
11        state: "present"
12     - name: "Copie test.html"
13       copy:
14        src: "~/test.html"
15        dest: "/var/www/html"
16        owner: "www-data"
17        group: "www-data"

```

```

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

PLAY [Installation Apache] *****

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

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

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

root@Ansible:~#

```

10. Installation d'un serveur MariaDB

⇒ Installation du serveur MariaDB sur les machines du groupe database :

Playbook install-mariadb.yml : modules apt et service

install-mariadb.yml — Kate ✕

Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide

Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire

home ▶ sio ▶ Documents ▶ Playbooks ▶ 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: "Demarrage du service"
12       service:
13         name: "mysql"
14         state: started
15         enabled: yes

```

sio@Ansible: ~

```

root@Ansible:~# ansible-playbook -i projetB1/Inventory/test.yml projetB1/Playbooks/install-mariadb.yml

PLAY [Installation MariaDB] *****

TASK [Installation package MariaDB] *****
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

```

Vérification sur la VM bdd-1 :

```

sio@bdd-1: ~
root@bdd-1:~# 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=1013,fd=6))
LISTEN     0         4096       127.0.0.1:631           0.0.0.0:*
  users: (("cupsd",pid=991,fd=7))
LISTEN     0         80        127.0.0.1:3306          0.0.0.0:*
  users: (("mariadb",pid=4482,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 Sun 2025-11-23 17:07:20 CET; 8min ago
 Invocation: 212b52d8086042d599fb20d395a4e7f3
   Docs: man:mariabdd(8)
        https://mariadb.com/kb/en/library/systemd/
 Main PID: 4482 (mariabdd)
   Status: "Taking your SQL requests now..."
    Tasks: 9 (limit: 15060)
  Memory: 121.6M (peak: 126.4M)
     CPU: 1.920s
   CGroup: /system.slice/mariadb.service
           └─4482 /usr/sbin/mariabdd

```

11. Configuration de la base de données

⇒ Création de la base de données wordpress

Playbook config-mariadb.yml : module mysql_db

The screenshot shows a text editor window titled "config-mariadb.yml — Kate". The editor displays the following YAML configuration:

```

---
- name: "Configuration de MariaDB"
  hosts: database
  gather_facts: no
  tasks:
    - name: "Création base de données Wordpress"
      mysql_db:
        name: "wordpress"
        state: present

```

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

PLAY [Configuration de 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: /root/projetB1/Playbooks/config-mariadb.yml:7:7

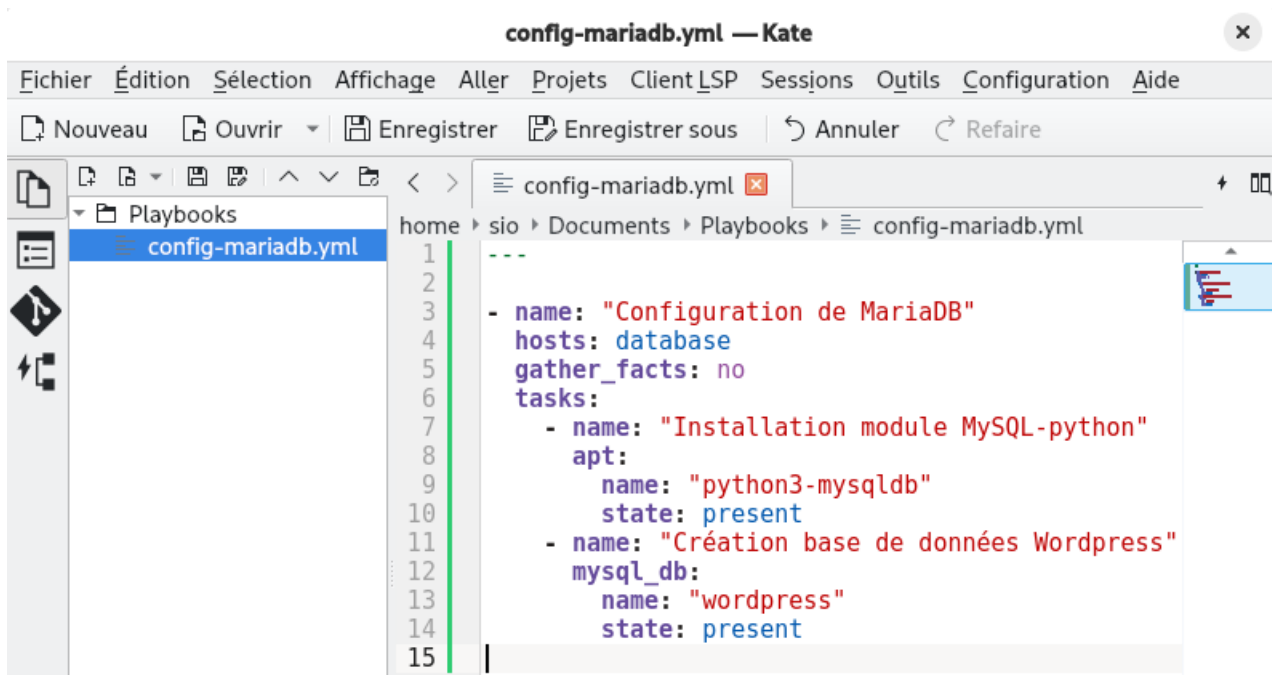
5  gather_facts: no
6  tasks:
7    - name: "Création base de données Wordpress"
      ^ column 7

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:~#
```

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



```
config-mariadb.yml — Kate
Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire
Playbooks
config-mariadb.yml
home sio Documents Playbooks config-mariadb.yml
1
2
3
4 - name: "Configuration de MariaDB"
5   hosts: database
6   gather_facts: no
7   tasks:
8     - name: "Installation module MySQL-python"
9       apt:
10        name: "python3-mysqldb"
11        state: present
12     - name: "Création base de données Wordpress"
13       mysql_db:
14        name: "wordpress"
15        state: present
```

```

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

PLAY [Configuration de MariaDB] *****

TASK [Installation module MySQL-python] *****
changed: [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.
changed: [bdd-1]

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

root@Ansible:~#

```

⇒ Création de l'utilisateur SQL « wordpress » et octroi des droits sur les tables de la base de données wordpress à l'utilisateur wordpress : module `mysql_user`

```

config-mariadb.yml * — Kate
Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire
home > sio > Documents > Playbooks > config-mariadb.yml
1 ---
2
3
4 - name: "Configuration de MariaDB"
5   hosts: database
6   gather_facts: no
7   tasks:
8     - name: "Installation module MySQL-python"
9       apt:
10        name: "python3-mysqldb"
11        state: present
12    - name: "Création base de données Wordpress"
13      mysql_db:
14        name: "wordpress"
15        state: present
16    - name: "Création utilisateur"
17      mysql_user:
18        name: "wordpress"
19        password: "wordpress"
20        priv: "wordpress.*:ALL"
21        state: present

```

⇒ Documentation sur le module `mysql_user` (les options) :

```
root@Ansible:~# ansible-doc mysql_user
> MODULE community.mysql.mysql_user (/root/.local/share/pipx/venvs/ansible/lib/python3.11/site-packages/ansible_collections/community/mysql/plugins/modules/mysql_user.py)

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

...

priv MySQL privileges string in the format:
  `db.table:priv1,priv2'.
  Additionally, there must be no spaces between the table and the privilege as this will yield a non-idempotent check mode.
  Multiple privileges can be specified by separating each one using a forward slash:
  `db.table1:priv/db.table2:priv'.
  The format is based on MySQL `GRANT' statement.
  Database and table names can be quoted, MySQL-style.
  If column privileges are used, the `priv1,priv2' part must be exactly as returned by a `SHOW GRANT' statement. If not followed, the module will always report changes. It includes grouping columns by permission (`SELECT(col1,col2') instead of `SELECT(col1',SELECT(col2))).
  Can be passed as a dictionary (see the examples).
  Supports GRANTS for procedures and functions (see the examples).
  Note: If you pass the same `db.table' combination to this parameter two or more times with different privileges, for example, `*.*:SELECT/*.*:SHOW VIEW'', only the last one will be applied, in this example, it will be `SHOW VIEW' respectively. Use `*.*:SELECT,SHOW VIEW'' instead to apply both.
  default: null
  type: raw
```

```

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

PLAY [Configuration de MariaDB] *****

TASK [Installation module MySQL-python] *****
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

Playbook php.yml : modules apt et service

The screenshot shows a text editor window titled 'php-apache.yml — Kate'. The editor displays the following Ansible playbook content:

```

---
- name: "Installation de PHP et Apache2"
  hosts: front
  gather_facts: no
  tasks:
    - name: "Installation PHP"
      apt:
        name: "php,php-mysql,libapache2-mod-
        php,php-curl,php-gd,php-mcrypt,php-zip"
        state: present

    - name: "Installation Apache2"
      apt:
        name: "apache2"
        state: present

    - name: "Démarrer Apache"
      service:
        name: "apache2"
        state: started
        enabled: yes

```

```

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

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

TASK [Installation PHP] *****
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

Playbook install-wordpress1.yml : modules get_url et unarchive

```

install-wordpress1.yml — Kate
Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire
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

```

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

PLAY [Install Wordpress] *****
*

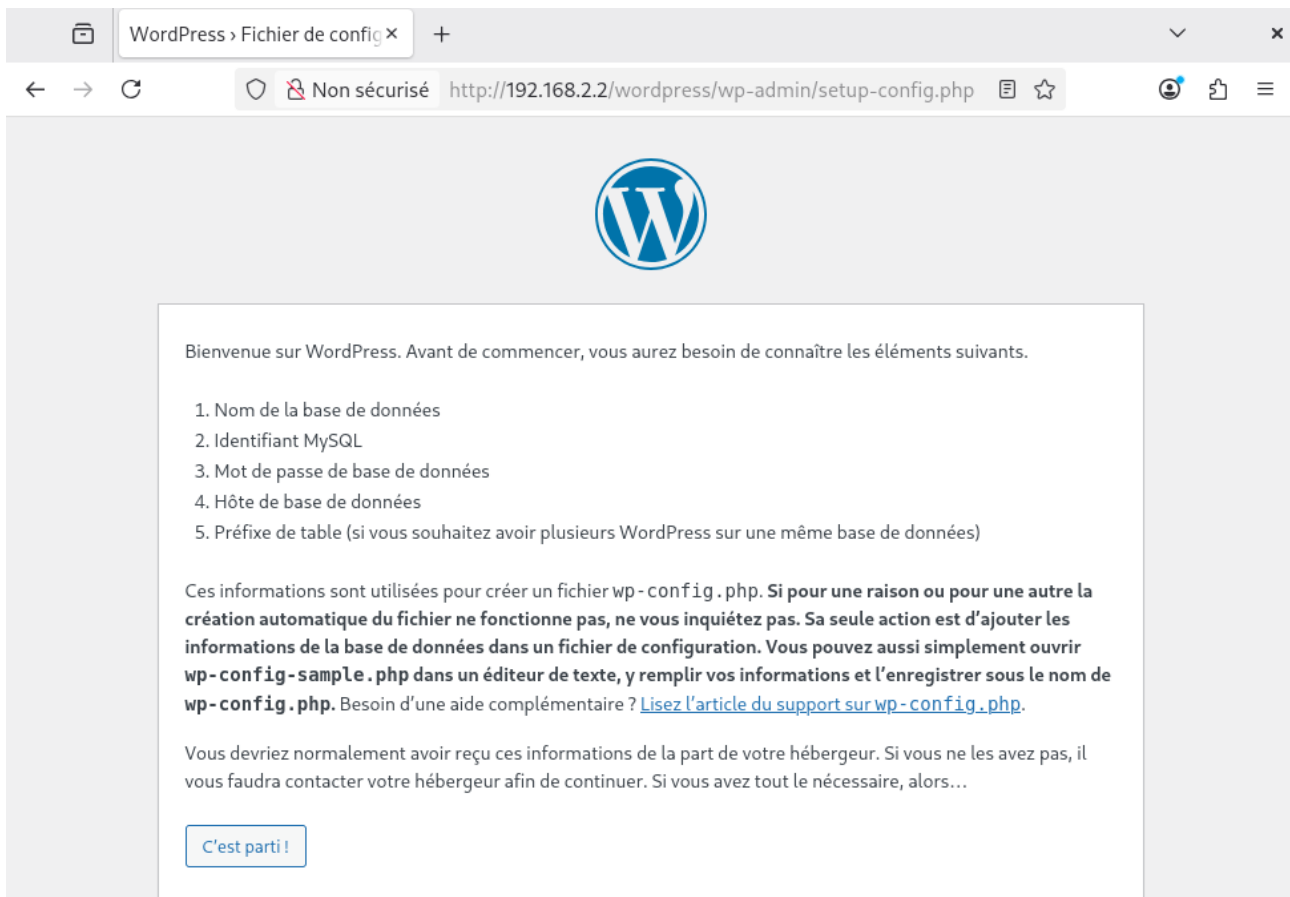
TASK [Téléchargement Wordpress] *****
*
ok: [web-1 -> localhost]

TASK [Unarchive Wordpress] *****
*
changed: [web-1]

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

root@Ansible:~#
```

```
sio@web-1: ~
root@web-1:~# cd /var/www/html
root@web-1:/var/www/html# ls -l
total 20
-rw-r--r-- 1 root    root    10703 23 nov.  11:48 index.html
-rw-r--r-- 1 www-data www-data  75 23 nov.  13:59 test.html
drwxr-xr-x 5 www-data www-data 4096 14 nov.  11:00 wordpress
root@web-1:/var/www/html# cd wordpress
root@web-1:/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  7 mars   2025 readme.html
-rw-r--r-- 1 www-data www-data  7387 13 févr.  2024 wp-activate.php
drwxr-xr-x 9 www-data www-data 4096 14 nov.  11:00 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  3336 15 oct.   2024 wp-config-sample.php
drwxr-xr-x 5 www-data www-data 4096 30 nov.  11:16 wp-content
-rw-r--r-- 1 www-data www-data  5617  2 août   2024 wp-cron.php
drwxr-xr-x 30 www-data www-data 16384 14 nov.  11:00 wp-includes
-rw-r--r-- 1 www-data www-data  2502 26 nov.  2022 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  51414 3 févr.  2025 wp-login.php
-rw-r--r-- 1 www-data www-data  8727  8 févr.  2025 wp-mail.php
-rw-r--r-- 1 www-data www-data  30081  4 mars   2025 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  5102 18 oct.   2024 wp-trackback.php
-rw-r--r-- 1 www-data www-data  3205  8 nov.   2024 xmlrpc.php
root@web-1:/var/www/html/wordpress#
```



Ne pas poursuivre la création du fichier wp-config.php

Nouveau playbook install-mariadb2.yml : handlers et module lineinfile

Un **handler** est une tâche qui permet ici de redémarrer le service si une autre tâche modifie le fichier de configuration. La section **handlers** se place au même niveau que **tasks**. Un handler sera appelé avec **notify**. Il n'intervient qu'une seule fois même s'il a été appelé par plusieurs tâches et uniquement en cas de changement.

Mariadb répond uniquement par défaut en local host.

- ⇒ Faire un **grep bind-address /etc/mysql/mariadb.conf.d/50-server.cnf** sur la machine **bdd-1** pour montrer que mariadb écoute depuis 127.0.0.1 et non pas depuis toutes les interfaces de la machine. Affichez également le **fichier 50-server.cnf** afin de montrer la ligne **bind-address**.

```
sio@bdd-1: ~  
root@bdd-1:~# cd /etc/mysql/mariadb.conf.d/  
root@bdd-1:/etc/mysql/mariadb.conf.d# ls  
50-client.cnf          60-galera.cnf        provider_lzo.cnf  
50-mariadb-clients.cnf provider_bzip2.cnf    provider_snappy.cnf  
50-mysqld_safe.cnf    provider_lz4.cnf  
50-server.cnf         provider_lzma.cnf  
root@bdd-1:/etc/mysql/mariadb.conf.d# cat 50-server.cnf █
```

Le module **lineinfile** va permettre de modifier la ligne **bind-address**.

install-mariadb2.yml * — Kate

Fichier Édition Sélection Affichage Aller Projets Client LSP Sessions Outils Configuration Aide

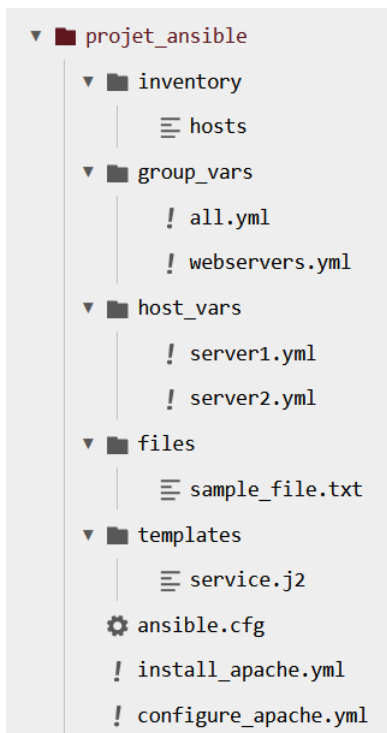
Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire

home > sio > Documents > Playbooks > install-mariadb2.yml

```
1 ---
2
3 - name: "Installation MariaDB"
4   hosts: ["database"]
5   gather facts: no
6   handlers:
7     - name: "Restart MariaDB"
8       service:
9         name: mysql
10        state: restarted
11  tasks:
12    - name: "Installation package MariaDB"
13      package:
14        name: "mariadb-server,python3-mysqldb"
15        state: present
16
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
```

sio@Ansible: ~

```
root@Ansible:~# ansible-playbook -i ~/projetB1/Inventory/test.yml ~/projetB1/Playbooks/install-mariadb2.yml
PLAY [Installation MariaDB] *****
TASK [Installation package MariaDB] *****
ok: [bdd-1]
TASK [Démarrage du service] *****
ok: [bdd-1]
TASK [Listen on 0.0.0.0] *****
changed: [bdd-1]
RUNNING HANDLER [Restart MariaDB] *****
changed: [bdd-1]
PLAY RECAP *****
bdd-1 : ok=4 changed=2 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
root@Ansible:~#
```



Cf. <https://blog.stephane-robert.info/docs/infra-as-code/gestion-de-configuration/ansible/variables/>

Créez le répertoire **group_vars** dans le répertoire Inventory :

```

root@Ansible:~# ls
projetB1 setup.txt test.html
root@Ansible:~# cd projetB1/
root@Ansible:~/projetB1# ls
Inventory Playbooks test.inv test.yml
root@Ansible:~/projetB1# cd Inventory/
root@Ansible:~/projetB1/Inventory# ls
group_vars test.inv test.yml
root@Ansible:~/projetB1/Inventory# cd group_vars/
root@Ansible:~/projetB1/Inventory/group_vars# ls
all.yml
root@Ansible:~/projetB1/Inventory/group_vars# █

```

mkdir group_vars dans Inventory

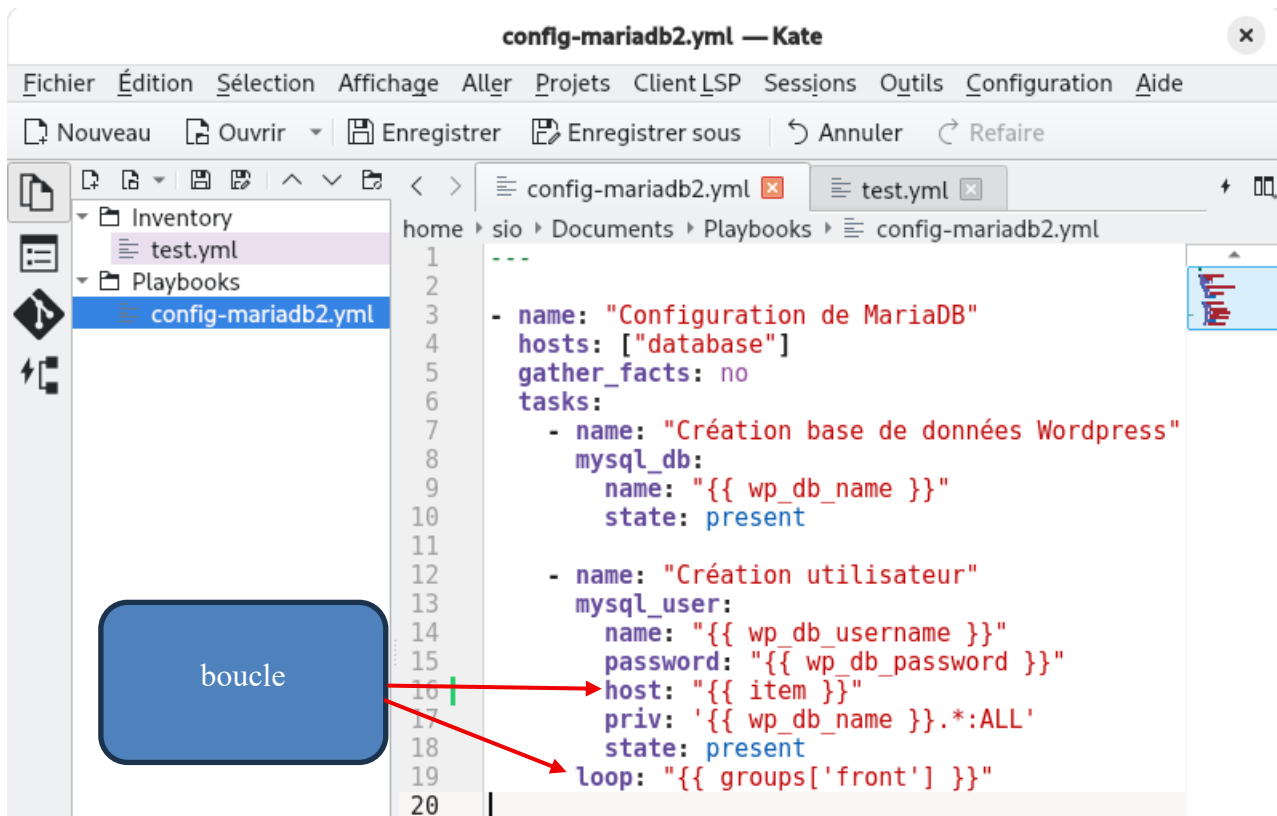
Créez, dans le répertoire **group_vars**, le fichier **all.yml** contenant les variables qui seront utilisées dans les playbooks **config-mariadb2.yml** et **install-wordpress2.yml** :

```

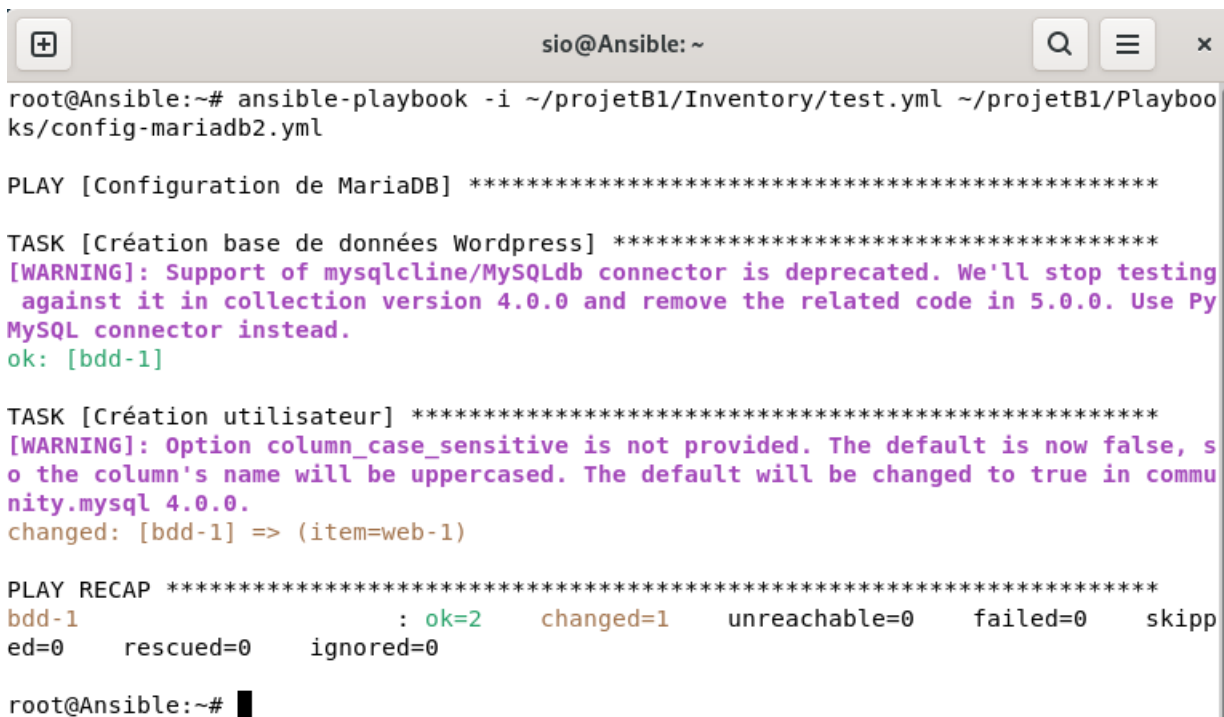
1 ---
2
3 domain_name: "sio-exupery.local"
4
5 wp_db_username: "wordpress"
6 wp_db_password: "wordpress"
7 wp_db_name: "wordpress"
8 wp_db_host: "{{ groups['database'][0] }}"
9
10 wp_url: "{{ inventory_hostname }}"
11

```

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` (cf. fichier initial page 35 en comparaison)



```
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: "{{ wp_db_name }}"
10        state: present
11
12    - name: "Création utilisateur"
13      mysql_user:
14        name: "{{ wp_db_username }}"
15        password: "{{ wp_db_password }}"
16        host: "{{ item }}"
17        priv: '{{ wp_db_name }}.*:ALL'
18        state: present
19        loop: "{{ groups['front'] }}"
20
```



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

PLAY [Configuration de 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: [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] => (item=web-1)

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

root@Ansible:~#
```

Playbook `install-wordpress2.yml` destiné à automatiser la configuration (cf. pages 38 à 40 en comparaison) : `wp-cli` téléchargé avec le module `get_url` et `module command` pour télécharger les binaires de wordpress puis initialiser la base de données.

```
install-wordpress2.yml — Kate
Fichier Édition Sélection Affichage Aller Projets Client LSP Sessions Outils Configuration Aide
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Inventory
  all.yml
  test.yml
Playbooks
  install-wordpress2...
home sio Documents Playbooks 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: _
```

Modifiez le fichier d'inventaire :

test.yml — Kate

Fichier Édition Sélection Affichage Aller Projets Client LSP Sessions Outils Configuration Aide

Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire

Inventory
 all.yml
 test.yml
 Playbooks
 install-wordpress2....

```

home > sio > Documents > Inventory > test.yml
1 ---
2
3 all:
4   hosts:
5     localhost:
6     ansible_connection: local
7
8 front:
9   hosts:
10    web-1.sio-exupery.local:
11     ansible_host: 192.168.2.2
12     ansible_user: root
13
14 database:
15   hosts:
16    bdd-1.sio-exupery.local:
17     ansible_host: 192.168.2.3
18     ansible_user: root
19

```

Créez les enregistrements DNS dans la zone sio-exupery.local :

Gestionnaire DNS

Fichier Action Affichage ?

DNS	Nom	Type	Données	Horodate
AD	_msdcs			
Zones de recherche directe	_sites			
_msdc.sio-exupery.local	_tcp			
sio-exupery.local	_udp			
Zones de recherche inverses	DomainDnsZones			
2.168.192.in-addr.arpa	ForestDnsZones			
3.168.192.in-addr.arpa	(identique au dossier parent)	Source de nom (SOA)	[149], ad.sio-exupery.local...	statique
Points d'approbation	(identique au dossier parent)	Serveur de noms (NS)	ad.sio-exupery.local.	statique
Redirecteurs conditionnels	(identique au dossier parent)	Hôte (A)	192.168.3.1	07/12/202
	ad	Hôte (A)	192.168.3.1	statique
	Ansible	Hôte (A)	192.168.3.4	statique
	bdd-1	Hôte (A)	192.168.2.3	statique
	ocs	Hôte (A)	192.168.3.2	statique
	us3	Hôte (A)	192.168.3.254	statique
	web-1	Hôte (A)	192.168.2.2	statique
	web-2	Hôte (A)	192.168.2.4	statique

```
sio@Ansible: ~
root@Ansible:~# ansible-playbook -i ~/projetB1/Inventory/test.yml ~/projetB1/Playbooks/install-wordpress2.yml

PLAY [Install Wordpress] *****

TASK [Install wp-cli] *****
ok: [web-1.sio-exupery.local]

TASK [Download WP] *****
ok: [web-1.sio-exupery.local]

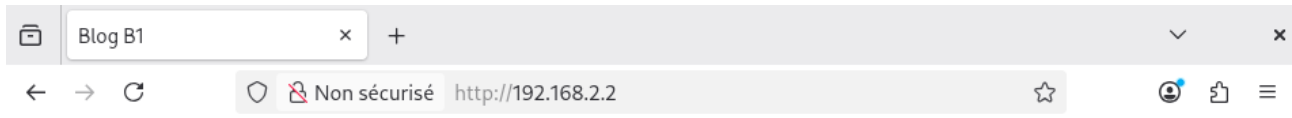
TASK [Configure WP] *****
changed: [web-1.sio-exupery.local]

TASK [Install WP] *****
changed: [web-1.sio-exupery.local]

PLAY RECAP *****
web-1.sio-exupery.local : ok=4    changed=2    unreachable=0    failed=0    skipped=0
                        rescued=0    ignored=0

root@Ansible:~#
```

```
sio@web-1: ~
root@web-1:~# cd /var/www/html/
root@web-1:/var/www/html# ls
index.html.sauv  wp-activate.php      wp-content          wp-mail.php
index.php        wp-admin             wp-cron.php         wp-settings.php
license.txt      wp-blog-header.php  wp-includes         wp-signup.php
readme.html     wp-comments-post.php wp-links-opml.php   wp-trackback.php
test.html       wp-config.php        wp-load.php         xmlrpc.php
wordpress       wp-config-sample.php wp-login.php
root@web-1:/var/www/html#
```



Blog

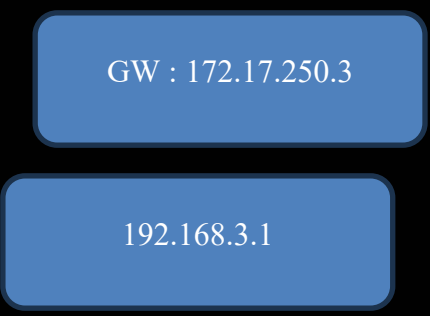
Bonjour tout le monde !

Bienvenue sur WordPress. Ceci est votre premier article. Modifiez-le ou supprimez-le, puis commencez à écrire !

14. Installation d'un serveur HAproxy

Vérification US3 :

```
GNU nano 7.2 /etc/netplan/50-cloud-init.yaml
network:
  version: 2
  ethernets:
    enp0s3:
      dhcp4: no
      addresses: [192.168.1.101/24]
      routes:
        - to: default
          via: 192.168.1.1
      nameservers:
        addresses: [192.168.1.1]
    enp0s8:
      addresses: [192.168.2.254/24]
      dhcp4: no
    enp0s9:
      addresses: [192.168.3.254/24]
      dhcp4: no
```




```
root@US3:/etc/netplan# netplan apply
root@US3:/etc/netplan# _
```

```
root@us3:~# iptables -t nat -L
Chain PREROUTING (policy ACCEPT)
target prot opt source destination
Chain INPUT (policy ACCEPT)
target prot opt source destination
Chain OUTPUT (policy ACCEPT)
target prot opt source destination
Chain POSTROUTING (policy ACCEPT)
target prot opt source destination
MASQUERADE all -- anywhere anywhere
root@us3:~#
```



```
GNU nano 7.2 /etc/sysctl.conf
#
# /etc/sysctl.conf - Configuration file for setting system variables
# See /etc/sysctl.d/ for additional system variables.
# See sysctl.conf (5) for information.
#
#kernel.domainname = example.com
# Uncomment the following to stop low-level messages on console
#kernel.printk = 3 4 1 3
#####
# Functions previously found in netbase
#
# Uncomment the next two lines to enable Spoof protection (reverse-path filter)
# Turn on Source Address Verification in all interfaces to
# prevent some spoofing attacks
#net.ipv4.conf.default.rp_filter=1
#net.ipv4.conf.all.rp_filter=1
# Uncomment the next line to enable TCP/IP SYN cookies
# See http://lwn.net/Articles/277146/
# Note: This may impact IPv6 TCP sessions too
#net.ipv4.tcp_syncookies=1
# Uncomment the next line to enable packet forwarding for IPv4
net.ipv4.ip_forward=1
# Uncomment the next line to enable packet forwarding for IPv6
# Enabling this option disables Stateless Address Autoconfiguration
# based on Router Advertisements for this host
#net.ipv6.conf.all.forwarding=1
```



```

root@us3:~# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:09:e5:3f brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.101/24 brd 192.168.1.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 2a01:cb1d:79a:4c00:a00:27ff:fe09:e53f/64 scope global dynamic mngtmpaddr noprefixroute
        valid_lft 86379sec preferred_lft 579sec
    inet6 fe80::a00:27ff:fe09:e53f/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:c6:ad:f9 brd ff:ff:ff:ff:ff:ff
    inet 192.168.2.254/24 brd 192.168.2.255 scope global enp0s8
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fec6:adf9/64 scope link
        valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:6c:13:10 brd ff:ff:ff:ff:ff:ff
    inet 192.168.3.254/24 brd 192.168.3.255 scope global enp0s9
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe6c:1310/64 scope link
        valid_lft forever preferred_lft forever
root@us3:~# ip r
default via 192.168.1.1 dev enp0s3 proto static
192.168.1.0/24 dev enp0s3 proto kernel scope link src 192.168.1.101
192.168.2.0/24 dev enp0s8 proto kernel scope link src 192.168.2.254
192.168.3.0/24 dev enp0s9 proto kernel scope link src 192.168.3.254
root@us3:~# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data:
64 bytes from 8.8.8.8: icmp_seq=1 ttl=115 time=20.2 ms
^C
--- 8.8.8.8 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 20.231/20.231/20.231/0.000 ms
root@us3:~#

```

```

root@us3:~# cd /run/systemd/resolve
root@us3:/run/systemd/resolve# ls -l
total 8
srw-rw-rw- 1 systemd-resolve systemd-resolve 0 déc. 7 12:52 io.systemd.Resolve
srw----- 1 systemd-resolve systemd-resolve 0 déc. 7 12:52 io.systemd.Resolve.Monitor
-rw-r--r-- 1 systemd-resolve systemd-resolve 878 déc. 7 12:53 resolv.conf
-rw-r--r-- 1 systemd-resolve systemd-resolve 923 déc. 7 12:53 stub-resolv.conf
root@us3:/run/systemd/resolve# cat resolv.conf
# This is /run/systemd/resolve/resolv.conf managed by man:systemd-resolved(8).
# Do not edit.
#
# This file might be symlinked as /etc/resolv.conf. If you're looking at
# /etc/resolv.conf and seeing this text, you have followed the symlink.
#
# This is a dynamic resolv.conf file for connecting local clients directly to
# all known uplink DNS servers. This file lists all configured search domains.
#
# Third party programs should typically not access this file directly, but only
# through the symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a
# different way, replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.
nameserver 192.168.1.1

```

192.168.3.1

Si problème résolution DNS : <https://www.linuxtricks.fr/wiki/systemd-la-resolution-de-nom-avec-systemd-resolved>

```
GNU nano 7.2 /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
```



Transfert de la clé publique du client SSH Ansible vers le fichier authorized_keys du serveur SSH US3 :

```
sio@Ansible: ~
root@Ansible:~# ssh-copy-id root@192.168.3.254
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: ssh-add -L
The authenticity of host '192.168.3.254 (192.168.3.254)' can't be established.
ED25519 key fingerprint is SHA256:py+96UF1wsAe0T7r/Fonwhl2Eqq7piD3XorNCf4ubvI.
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: 2 key(s) remain to be installed -- if you are prompt
ed now it is to install the new keys
root@192.168.3.254's password:

Number of key(s) added: 2

Now try logging into the machine, with: "ssh 'root@192.168.3.254'"
and check to make sure that only the key(s) you wanted were added.

root@Ansible:~# █
```

```
sio@Web-2: ~
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
```



```
sio@Web-2: ~
root@Web-2:~# systemctl restart sshd
root@Web-2:~# █
```

Transfert de la clé publique du client SSH Ansible vers le fichier authorized_keys du serveur SSH web-2 :

```
sio@Ansible: ~  
root@Ansible:~# ssh-copy-id -i .ssh/id_ecdsa.pub root@192.168.2.4  
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: ".ssh/id_ecdsa.pub"  
"  
The authenticity of host '192.168.2.4 (192.168.2.4)' can't be established.  
ED25519 key fingerprint is SHA256:VGQSh0WT3H8BYmK+RUPxe516LgXCR/mBXvVOETmonwM.  
This host key is known by the following other names/addresses:  
  ~/.ssh/known_hosts:2: [hashed name]  
  ~/.ssh/known_hosts:5: [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 prompt  
ed now it is to install the new keys  
root@192.168.2.4's password:  
  
Number of key(s) added: 1  
  
Now try logging into the machine, with: "ssh -i .ssh/id_ecdsa 'root@192.168.2.4'  
"  
and check to make sure that only the key(s) you wanted were added.  
  
root@Ansible:~# █
```

Test accès SSH au serveur web-2 :

```
sio@Ansible: ~  
root@Ansible:~# ssh root@192.168.2.4  
Linux Web-2 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@Web-2:~# exit  
déconnexion  
Connection to 192.168.2.4 closed.  
root@Ansible:~# █
```

test.yml — Kate

Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide

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home sio Documents Inventory test.yml

```

1 ---
2
3 all:
4   hosts:
5     localhost:
6       ansible_connection: local
7
8   front:
9     hosts:
10    web-1.sio-exupery.local:
11      ansible_host: 192.168.2.2
12      ansible_user: root
13    web-2.sio-exupery.local:
14      ansible_host: 192.168.2.4
15      ansible_user: root
16
17   database:
18     hosts:
19      bdd-1.sio-exupery.local:
20        ansible_host: 192.168.2.3
21        ansible_user: root
22
23   haproxy:
24     hosts:
25      us3.sio-exupery.local:
26        ansible_host: 192.168.3.254
27        ansible_user: root
28

```

Installation PHP et Apache sur web-2 :

sio@Ansible: ~

```

root@Ansible:~# ansible-playbook -i ~/projetB1/Inventory/test.yml ~/projetB1/Playbooks/php-apache.yml
PLAY [Installation de PHP et Apache2] *****

TASK [Installation PHP] *****
ok: [web-1.sio-exupery.local]
changed: [web-2.sio-exupery.local]

TASK [Installation Apache2] *****
ok: [web-1.sio-exupery.local]
ok: [web-2.sio-exupery.local]

TASK [Démarrer Apache] *****
ok: [web-1.sio-exupery.local]
ok: [web-2.sio-exupery.local]

PLAY RECAP *****
web-1.sio-exupery.local : ok=3    changed=0    unreachable=0    failed=0    skipped=0    rescued=0
                        ignored=0
web-2.sio-exupery.local : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=0
                        ignored=0

root@Ansible:~# █

```

Modification Création de l'utilisateur SQL sur bdd-1 (pour web-2) :

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

PLAY [Configuration de 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: [bdd-1.sio-exupery.local]

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.
ok: [bdd-1.sio-exupery.local] => (item=web-1.sio-exupery.local)
changed: [bdd-1.sio-exupery.local] => (item=web-2.sio-exupery.local)

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

root@Ansible:~#
```

Installation de wordpress sur web-2 :

```
root@Ansible:~# ansible-playbook -i ~/projetB1/Inventory/test.yml ~/projetB1/Playbooks/install-wordpress2.yml -e wp_url=us3.sio-exupery.local

PLAY [Install Wordpress] *****

TASK [Install wp-cli] *****
changed: [web-2.sio-exupery.local]
ok: [web-1.sio-exupery.local]

TASK [Download WP] *****
ok: [web-1.sio-exupery.local]
changed: [web-2.sio-exupery.local]

TASK [Configure WP] *****
ok: [web-1.sio-exupery.local]
changed: [web-2.sio-exupery.local]

TASK [Install WP] *****
ok: [web-1.sio-exupery.local]

PLAY RECAP *****
web-1.sio-exupery.local : ok=4    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
web-2.sio-exupery.local : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

root@Ansible:~#
```

Module **template** et moteur de template **Jinja** pour modifier dynamiquement un fichier de configuration :

```
root@Ansible:~/projetB1/Playbooks# mkdir templates
root@Ansible:~/projetB1/Playbooks#
```

haproxy.cfg.j2 — Kate

Fichier Édition Sélection Affichage Aller Projets Client_LSP Sessions Outils Configuration Aide

Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire

Inventory
test.yml
Playbooks
Templates
haproxy.cfg.j2
haproxy.yml

home › sio › Documents › Playbooks › Templates › haproxy.cfg.j2

```
1 global
2     daemon
3     maxconn 256
4
5 defaults
6     mode http
7     timeout connect 5000ms
8     timeout client 50000ms
9     timeout server 50000ms
10
11 frontend http-in
12     bind *:80
13     default_backend servers
14
15 backend servers
16     {% for front in groups['front'] %}
17         server server{{ loop.index }} {{ front }}:80
18         maxconn 32
19     {% endfor %}
```

haproxy.yml * — Kate

Fichier Édition Sélection Affichage Aller Projets Client LSP Sessions Outils Configuration Aide

Nouveau Ouvrir Enregistrer Enregistrer sous Annuler Refaire

home > sio > Documents > Playbooks > haproxy.yml

```
1 ---
2
3 - name: "Install haproxy"
4   hosts: "haproxy"
5   gather_facts: no
6   handlers:
7     - name: "Restart haproxy"
8       service:
9         name: "haproxy"
10        state: restarted
11  tasks:
12    - name: "Installation haproxy"
13      apt:
14        name: "haproxy"
15        state: present
16
17    - name: "Configuration haproxy"
18      template:
19        src: "haproxy.cfg.j2"
20        dest: "/etc/haproxy/haproxy.cfg"
21        notify: "Restart haproxy"
22
23    - meta: flush_handlers
24
25    - name: "Start haproxy"
26      service:
27        name: "haproxy"
28        enabled: yes
29        state: started
30
```

sio@Ansible: ~

```
root@Ansible:~/projetB1/Playbooks# mkdir templates
root@Ansible:~/projetB1/Playbooks#
```

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

PLAY [Install haproxy] *****

TASK [Installation haproxy] *****
ok: [us3.sio-exupery.local]

TASK [Configuration haproxy] *****
ok: [us3.sio-exupery.local]

TASK [meta] *****

TASK [Start haproxy] *****
changed: [us3.sio-exupery.local]

PLAY RECAP *****
us3.sio-exupery.local : ok=3    changed=1    unreachable=0    failed=0    skipped=0
                      rescued=0    ignored=0

root@Ansible:~#
```

```
root@us3:~# cat /etc/haproxy/haproxy.cfg
global
    daemon
    maxconn 256

defaults
    mode http
    timeout connect 5000ms
    timeout client 50000ms
    timeout server 50000ms

frontend http-in
    bind *:80
    default_backend servers

backend servers
    server server1 web-1.sio-exupery.local:80 maxconn 32
    server server2 web-2.sio-exupery.local:80 maxconn 32
root@us3:~#
```



Blog

Bonjour tout le monde !

Bienvenue sur WordPress. Ceci est votre premier article. Modifiez-le ou supprimez-le, puis commencez à écrire !