

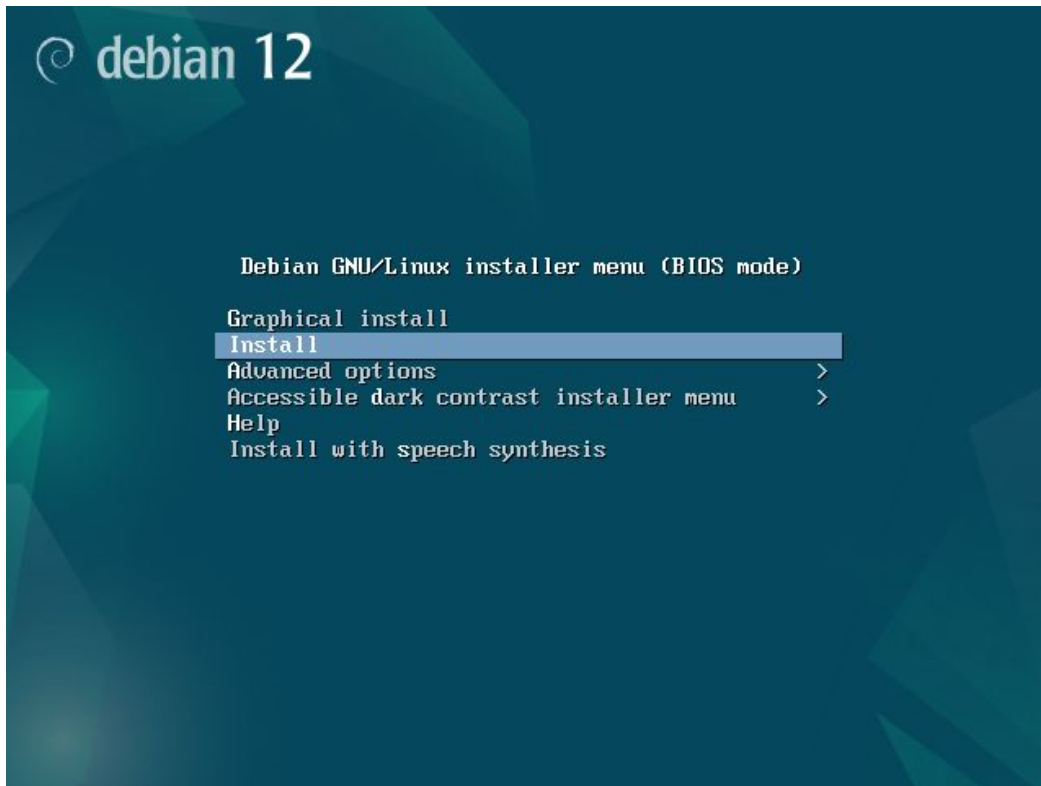


La Plateforme

DHCP, DNS, FTP et SSH

OUMAR , ALLAOUI & CLÉMENT

INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE



INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE

[!] Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.

Hostname:

debian

<Go Back> <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons



INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE

[[!]] Set up users and passwords

You need to set a password for 'root', the system administrative account. A malicious or unqualified user with root access can have disastrous results, so you should take care to choose a root password that is not easy to guess. It should not be a word found in dictionaries, or a word that could be easily associated with you.

A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.

The root user should not have an empty password. If you leave this empty, the root account will be disabled and the system's initial user account will be given the power to become root using the "sudo" command.

Note that you will not be able to see the password as you type it.

Root password:

☐ Show Password in Clear

<Go Back><Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons



INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE

[[!]] Set up users and passwords

A user account will be created for you to use instead of the root account for non-administrative activities.

Please enter the real name of this user. This information will be used for instance as default origin for emails sent by this user as well as any program which displays or uses the user's real name. Your full name is a reasonable choice.

Full name for the new user:

goldroger

<Go Back> <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons



INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE

[[!]] Set up users and passwords

A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.

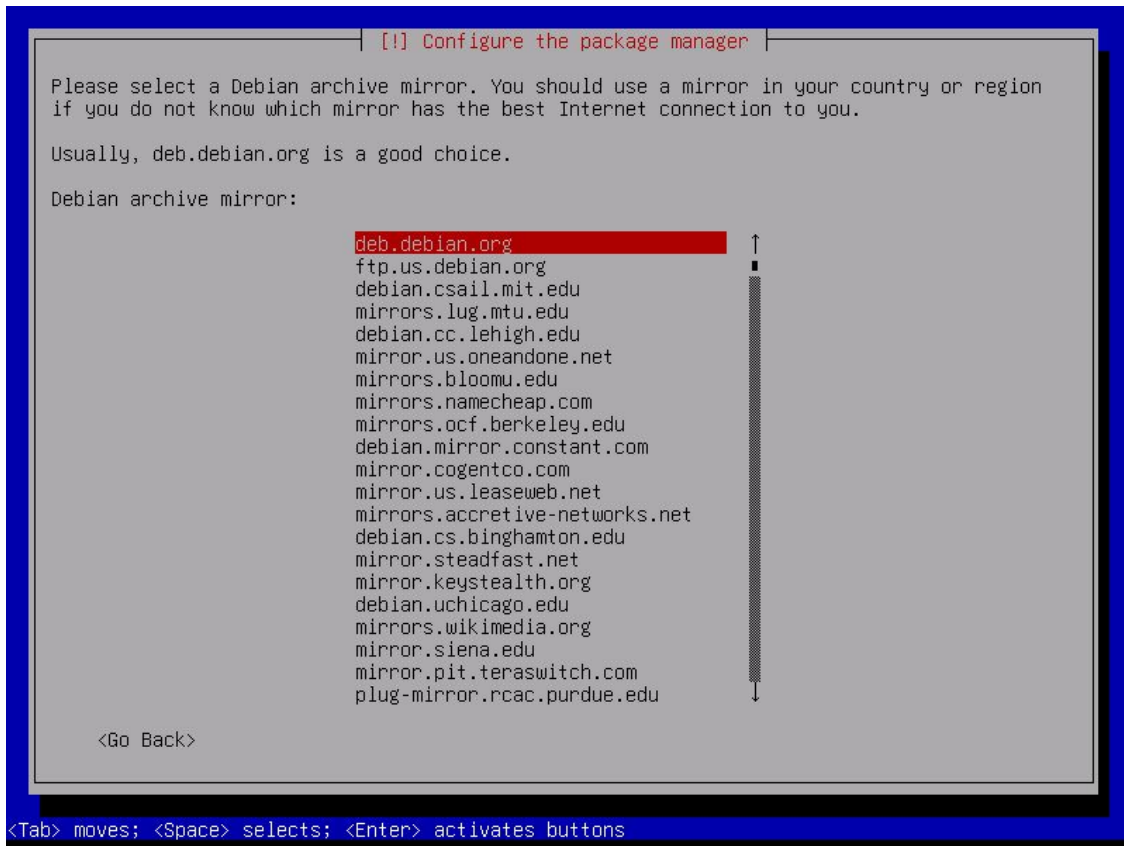
Choose a password for the new user:

☐ Show Password in Clear

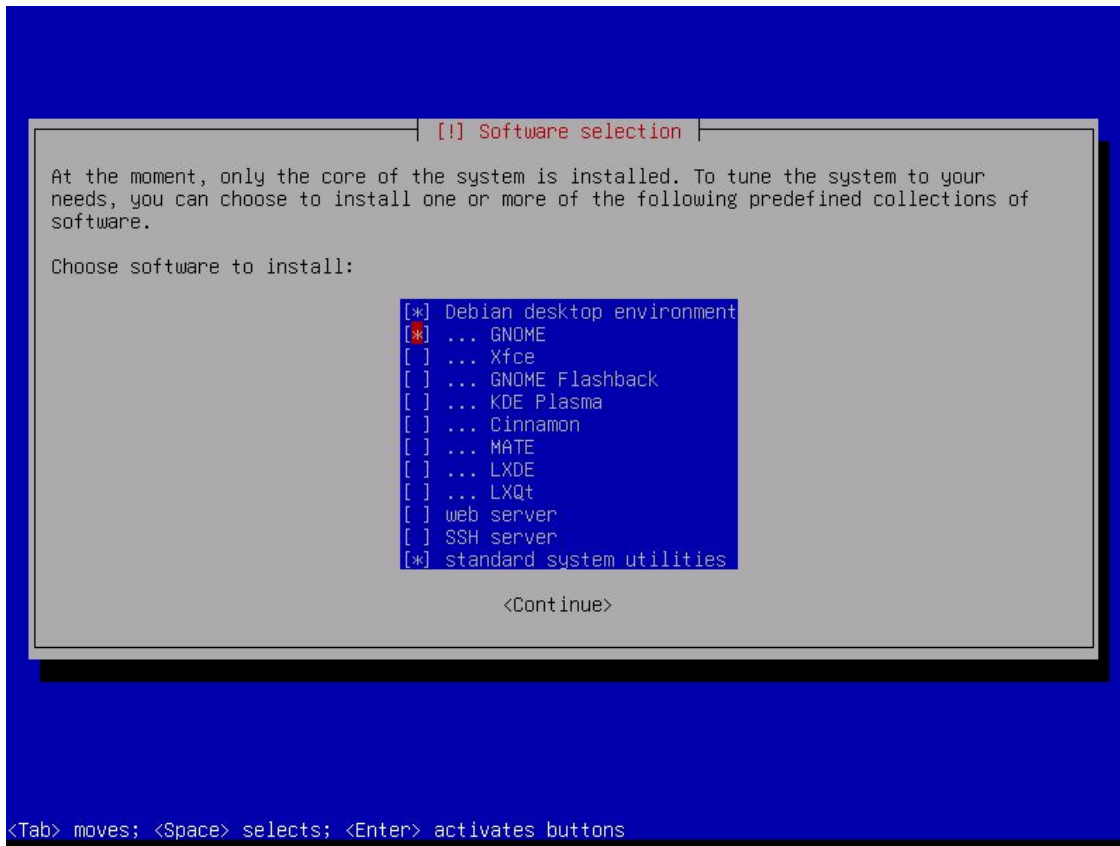
<Tab> moves; <Space> selects; <Enter> activates buttons



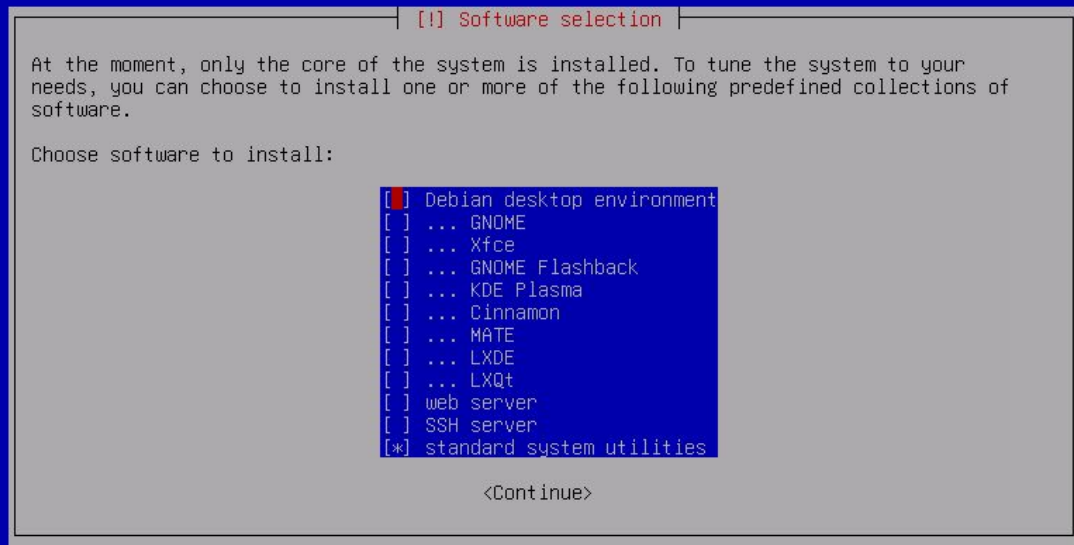
INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE



INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE



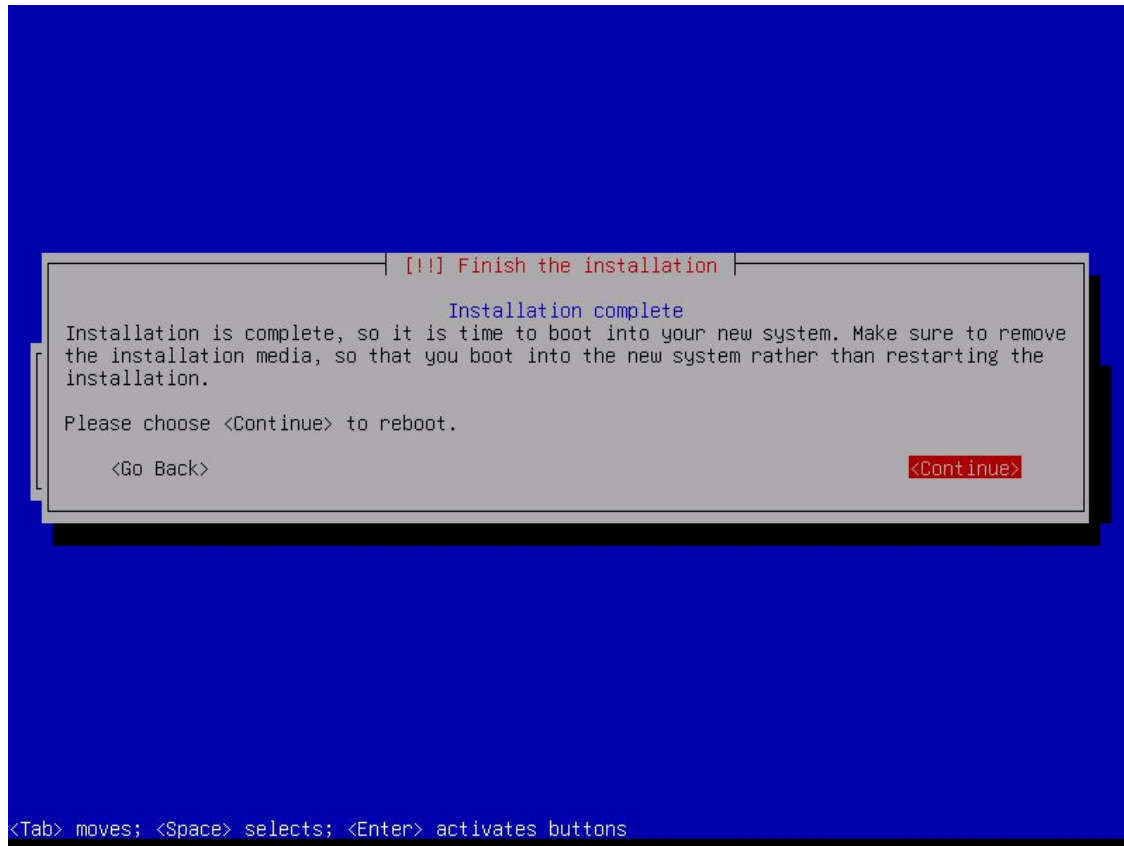
INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE



<Tab> moves; <Space> selects; <Enter> activates buttons



INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE



INSTALLATION DE DEBIAN SANS INTERFACE GRAPHIQUE

```
Debian GNU/Linux 12 debian tty1
```

DHCP SERVER / DNS

```
debian login: goldroger
```

```
Password:
```

```
Linux debian 6.1.0-18-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.76-1 (2024-02-01) 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.
```

```
Last login: Wed Mar 27 09:46:31 EDT 2024 on tty1
```

```
goldroger@debian:~$ _
```

Mise en place de deux VM sous
debian sans Interface
Graphique

La 1ere pour le **DHCP** et **DNS**

La 2nd pour **FTP** et **SSH**

```
Debian GNU/Linux 12 debian tty1
```

FTP / SSH

```
debian login: luffy
```

```
Password:
```

```
Linux debian 6.1.0-18-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.76-1 (2024-02-01) 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.
```

```
luffy@debian:~$
```

MISE À JOUR DES SYSTÈMES

Pour une faire mise à jour système, nous utiliserons la commande :

apt-get update et apt-get upgrade

```
root@debian:/home/luffy# apt-get upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@debian:/home/luffy#
```



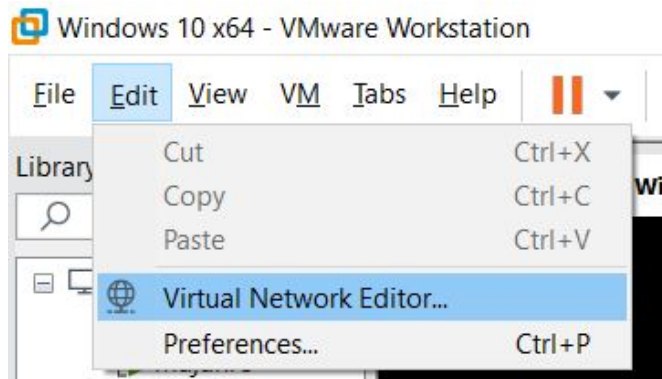
**COMME ON PEUT LE VOIR ICI NOUS AVONS 0 MISE À JOUR À FAIRE,
DONC TOUT EST À JOURS !!**



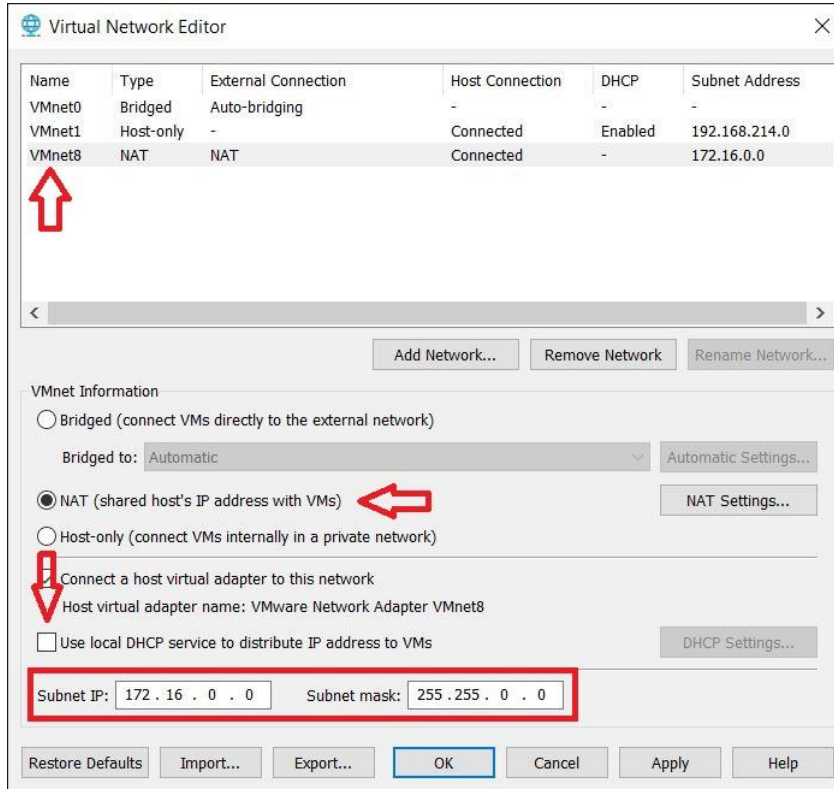
CONFIGURATION DU SERVEUR DHCP

Configurer un serveur DHCP en dehors de l'environnement VMWare nécessite quelques étapes.

Tout d'abord, désactivez le service DHCP de votre machine virtuelle en accédant à "Edit > Virtual Network Editor".



Choisissez votre réseau, accédez à "VMnet Information" (en mode **NAT**), décochez "Use local DHCP...", puis spécifiez le réseau et le masque (par exemple, **172.16.0.0 255.255.0.0**). Enregistrez les modifications.



The screenshot shows the "Virtual Network Editor" window. At the top, a table lists three VMnets:

Name	Type	External Connection	Host Connection	DHCP	Subnet Address
VMnet0	Bridged	Auto-bridging	-	-	-
VMnet1	Host-only	-	Connected	Enabled	192.168.214.0
VMnet8	NAT	NAT	Connected	-	172.16.0.0

A red arrow points to the "VMnet8" row. Below the table, there are buttons: "Add Network...", "Remove Network", and "Rename Network...".

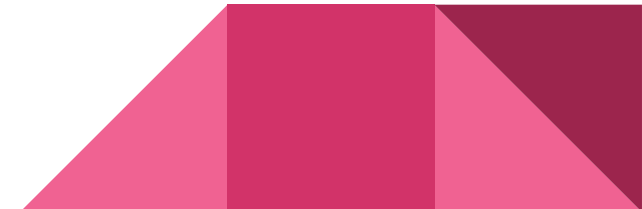
The "VMnet Information" section is expanded for VMnet8. It shows three radio buttons: "Bridged (connect VMs directly to the external network)", "NAT (shared host's IP address with VMs)" (which is selected and has a red arrow pointing to it), and "Host-only (connect VMs internally in a private network)".

Below the radio buttons, there is a checkbox labeled "Connect a host virtual adapter to this network" which is checked and has a red arrow pointing to it. Below this checkbox, the text "Host virtual adapter name: VMware Network Adapter VMnet8" is displayed.

There is another checkbox labeled "Use local DHCP service to distribute IP address to VMs" which is unchecked.

At the bottom, there are two input fields: "Subnet IP:" with the value "172 . 16 . 0 . 0" and "Subnet mask:" with the value "255 . 255 . 0 . 0". These two fields are enclosed in a red rectangular box.

At the very bottom, there are buttons: "Restore Defaults", "Import...", "Export...", "OK" (highlighted with a blue border), "Cancel", "Apply", and "Help".



Sur Linux, installez le serveur **DHCP ISC-DHCP** avec la commande "sudo apt install isc-dhcp-server".

```
goldroger@debian:~$ sudo apt install isc-dhcp-server
[sudo] password for goldroger:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  linux-image-6.1.0-10-amd64
Use 'sudo apt autoremove' to remove it.
```

Maintenant on va aller modifier le fichier interfaces avec la commande :

nano /etc/network/interfaces

```
GNU nano 7.2 /etc/network/interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
allow-hotplug ens33
iface ens33 inet dhcp_
```

on change le **dhcp** en **static**



On définit notre ip **static** et notre **masque réseau**

```
GNU nano 7.2 interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interfa
auto ens33
iface ens33 inet static
    address 172.16.0.2
    netmask 255.255.255.0
    gateway 172.16.0.1
    dns-nameservers 8.8.8.8 1.1.1.1
```

Ensuite on utilisera cette commande pour redémarrer la carte réseau :

systemctl restart networking.service

```
root@debian:/etc/network# 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: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:bf:d1:fc brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 172.16.0.2/24 brd 172.16.0.255 scope global ens33
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:febf:d1fc/64 scope link
        valid_lft forever preferred_lft forever
root@debian:/etc/network#
```



Dans le répertoire `"/etc/default/"`, ouvrez et modifiez le fichier `"isc-dhcp-server"` avec `"nano"`. Décommenter la ligne `DHCPDv4_CONF` et indiquez l'interface réseau sur laquelle écoute le serveur `INTERFACESv4`. Enregistrez les modifications.

```
GNU nano 7.2 isc-dhcp-server
# Defaults for isc-dhcp-server (sourced by /etc/init.d/isc-dhcp-server)

# Path to dhcpd's config file (default: /etc/dhcp/dhcpd.conf).
DHCPDv4_CONF=/etc/dhcp/dhcpd.conf
#DHCPDv6_CONF=/etc/dhcp/dhcpd6.conf

# Path to dhcpd's PID file (default: /var/run/dhcpd.pid).
#DHCPDv4_PID=/var/run/dhcpd.pid
#DHCPDv6_PID=/var/run/dhcpd6.pid

# Additional options to start dhcpd with.
# Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
#OPTIONS=""

# On what interfaces should the DHCP server (dhcpd) serve DHCP requests?
# Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACESv4="ens33"
INTERFACESv6=""
```

Accédez à `"/etc/dhcp/"` et ouvrez le fichier `"dhcpd.conf"` avec `"nano"`. Commentez les lignes `"option domain-name"` et `"domain-name-server"`.

```
GNU nano 7.2 dhcpd.conf
# dhcpd.conf
#
# Sample configuration file for ISC dhcpd
#
# option definitions common to all supported networks...
#option domain-name "example.org";
#option domain-name-servers ns1.example.org, ns2.example.org;
```



Décommentez la configuration pour un sous-réseau interne, puis configurez votre réseau.
Enregistrez et quittez.

```
GNU nano 7.2                                dhcpd.conf
subnet 172.16.0.0 netmask 255.255.255.0 {
  range 172.16.0.10 172.16.0.100;
  option domain-name-servers 8.8.8.8;
  option routers 172.16.0.1;
  option broadcast-address 172.16.0.255;
  default-lease-time 600;
  max-lease-time 7200;
}
```

Redémarrez et activez le serveur avec les commandes :

```
sudo systemctl restart isc-dhcp-server
sudo systemctl enable isc-dhcp-server
```

```
root@debian:/etc/dhcp# systemctl restart isc-dhcp-server
root@debian:/etc/dhcp# systemctl enable isc-dhcp-server
isc-dhcp-server.service is not a native service, redirecting to systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable isc-dhcp-server
root@debian:/etc/dhcp#
```



Vérifiez l'état du serveur avec : `sudo systemctl status isc-dhcp-server`

```
root@debian:/etc/dhcp# systemctl status isc-dhcp-server
● isc-dhcp-server.service - LSB: DHCP server
   Loaded: loaded (/etc/init.d/isc-dhcp-server; generated)
   Active: active (running) since Wed 2024-03-27 18:51:49 EDT; 5min ago
     Docs: man:systemd-sysv-generator(8)
    Tasks: 1 (limit: 2265)
   Memory: 6.7M
      CPU: 110ms
   CGroup: /system.slice/isc-dhcp-server.service
           └─987 /usr/sbin/dhcpd -4 -q -cf /etc/dhcp/dhcpd.conf ens33

Mar 27 18:51:46 debian systemd[1]: Starting isc-dhcp-server.service - LSB: DHCP server...
Mar 27 18:51:46 debian isc-dhcp-server[975]: Launching IPv4 server only.
Mar 27 18:51:46 debian dhcpd[987]: Wrote 4 leases to leases file.
Mar 27 18:51:46 debian dhcpd[987]: Server starting service.
Mar 27 18:51:49 debian isc-dhcp-server[975]: Starting ISC DHCPv4 server: dhcpd.
Mar 27 18:51:49 debian systemd[1]: Started isc-dhcp-server.service - LSB: DHCP server.
root@debian:/etc/dhcp# _
```



Tout a l'air parfait maintenant vérifions sur les autres VM si, une adresse leur ont été assignées !!

```
luffy@debian:~$ 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: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:90:4b:1e brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 172.16.0.11/16 brd 172.16.255.255 scope global dynamic ens33
        valid_lft 491sec preferred_lft 491sec
    inet6 fe80::20c:29ff:fe90:4b1e/64 scope link
        valid_lft forever preferred_lft forever
luffy@debian:~$
```

CAPTURE D'ÉCRAN WINDOWS 7

Carte Ethernet Connexion au réseau local :

```
Suffixe DNS propre à la connexion. . . . :
Adresse IPV6 de liaison locale. . . . . : fe80::b4b8:aa5f:fc93:d864%11
Adresse IPv4. . . . . : 172.16.0.13
Masque de sous-réseau. . . . . : 255.255.0.0
Passerelle par défaut. . . . . : 172.16.0.1
```

NOTRE DHCP FONCTIONNE !!



INSTALLATION DU SERVEUR FTP ET SSH

INSTRUCTION !

Pour mettre en place notre serveur, on doit installer le paquet **ProFTPd**.

Pour ce faire, on utilise la commande : *"apt install proftpd ssh"*.

```
root@debian:/home/luffy# apt install proftpd ssh
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'proftpd-core' instead of 'proftpd'
proftpd-core is already the newest version (1.3.8+dfsg-4+deb12u3).
ssh is already the newest version (1:9.2p1-2+deb12u2).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@debian:/home/luffy#
```

ProFTPd est un serveur FTP utilisé pour faciliter le transfert de fichiers entre un serveur et un client via le protocole FTP

SSH (ou **Secure Shell**) est une méthode permettant d'envoyer en toute sécurité des commandes à un ordinateur sur un réseau non sécurisé.

Ensuite on va ouvrir le fichier de configuration **proFTPd**

avec la commande : *nano /etc/proftpd/proftpd.conf*

Maintenant on décommenter la ligne : *#DefaultRoot ~*

(pour que les utilisateurs soit emprisonner dans leur home directory)

et aussi ajouter la ligne : *MaxClients 1*, pour pour limiter le nombre de connexions à une seule session

```
GNU nano 7.2 /etc/proftpd/proftpd.conf
# Use this to jail all users in their homes
DefaultRoot ~
# Users require a valid shell listed in /etc/shells to login.
# Use this directive to release that constrain.
# RequireValidShell off
# Port 21 is the standard FTP port.
Port 21
MaxClients 1
# In some cases you have to specify passive ports range to by-pass
# firewall limitations. Ephemeral ports can be used for that, but
# feel free to use a more narrow range.
# PassivePorts 49152 65534
```

On enregistre et ferme le fichier.

Redémarrez le service proFTPd pour appliquer les changements :

systemctl restart proftpd



On va maintenant créer l'utilisateur pour notre serveur :

sudo adduser laplateforme

Ensuite vous suivez les instructions à l'écran pour définir le mot de passe et les détails supplémentaires.

```
root@debian:/home/luffy# systemctl restart proftpd
root@debian:/home/luffy# sudo adduser laplateforme
Adding user `laplateforme' ...
Adding new group `laplateforme' (1001) ...
Adding new user `laplateforme' (1001) with group `laplateforme (1001)' ...
Creating home directory `/home/laplateforme' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
Sorry, passwords do not match.
passwd: Authentication token manipulation error
passwd: password unchanged
Try again? [y/N] y
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for laplateforme
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
Adding new user `laplateforme' to supplemental / extra groups `users' ...
Adding user `laplateforme' to group `users' ...
root@debian:/home/luffy#
```



Maintenant on va configurer OpenSSH pour **SFTP**

Pour le faire on va ouvrir le fichier de configuration SSH :

sudo nano /etc/ssh/sshd_config

et ensuite s'assurer que cette ligne est présente et non commentée :

Subsystem sftp /usr/lib/openssh/sftp-server

```
# override default of no subsystems
Subsystem      sftp      /usr/lib/openssh/sftp-server
```

On enregistre et redémarre le service SSH pour appliquer les changements :

systemctl restart ssh



INSTALLATION DU SERVEUR DNS

Pour associer l'adresse IP de notre serveur à un nom de domaine, la première étape consiste à modifier le fichier `hosts` en y ajoutant l'adresse IP et le nom de domaine.

Pour ce faire, utilisez la commande suivante : `sudo nano /etc/hosts` et ajoutez l'IP ainsi que le nom de domaine.

```
GNU nano 7.2 /etc/hosts
127.0.0.1    localhost
127.0.1.1    debian
172.16.0.15  dns.ftp.com
```

Ensuite, on redémarre le service DNS avec la commande : `sudo systemctl restart networking`

```
goldroger@debian:~$ sudo systemctl restart networking
```

hosts, un fichier texte local qui associe des adresses IP à des noms de domaine.

Il est utilisé pour résoudre les noms de domaine en adresses IP localement, contournant ainsi le besoin de consulter un serveur DNS distant.

Lorsque vous essayez d'accéder à un site Web, votre système d'exploitation vérifie d'abord le fichier `hosts` pour voir s'il contient une entrée correspondant au nom de domaine que vous essayez d'atteindre.

TEST DE CONNEXION AU SERVEUR SFTP

```
goldroger@debian:~$ sftp laplateforme@dns.ftp.com
laplateforme@dns.ftp.com's password:
Connected to dns.ftp.com.
sftp> _
```

```
root@debian:/home/luffy# cd /home/laplateforme
root@debian:/home/laplateforme# mkdir shared_folder
root@debian:/home/laplateforme# cd shared_folder/
root@debian:/home/laplateforme/shared_folder# touch file.txt
root@debian:/home/laplateforme/shared_folder#
```

```
goldroger@debian:~$ sftp laplateforme@dns.ftp.com
laplateforme@dns.ftp.com's password:
Connected to dns.ftp.com.
sftp> ls
shared_folder
sftp> cd shared_folder/
sftp> ls
file.txt
sftp> _
```



PARAMÈTRES DE SÉCURITÉ ADDITIONNELS

Pour renforcer la sécurité du serveur SFTP , sur notre serveur ftp ou va ouvrir et modifier le fichier de configuration SSH : *sudo nano /etc/ssh/sshd_config*

Ensuite on va ajouter les lignes suivantes :

```
GNU nano 7.2 /etc/ssh/sshd_config *  
  
# This is the sshd server system-wide configuration file.  See  
# sshd_config(5) for more information.  
  
# This sshd was compiled with PATH=/usr/local/bin:/usr/bin:/bin:/usr/games  
  
# The strategy used for options in the default sshd_config shipped with  
# OpenSSH is to specify options with their default value where  
# possible, but leave them commented.  Uncommented options override the  
# default value.  
  
Include /etc/ssh/sshd_config.d/*.conf  
  
Port 6500  
PermitEmptyPasswords no  
PasswordAuthentication yes  
PermitRootLogin no  
AllowUsers laplateforme
```

Port 6500 : Configure le serveur SSH pour écouter sur le port 6500

PermitEmptyPasswords no

Empêche les connexions avec un mot de passe vide

PasswordAuthentication yes

Active l'authentification par mot de passe

PermitRootLogin no :

Interdit la connexion directe en tant que root

AllowUsers laplateforme :

Restreint l'accès au seul utilisateur "laplateforme"

Ensuite on redémarre le service SSH : *sudo systemctl restart ssh*

TEST DE CONNEXION

```
goldroger@debian:~$ sftp -P 6500 laplateforme@dns.ftp.com
laplateforme@dns.ftp.com's password:
Connected to dns.ftp.com.
sftp> _
```

