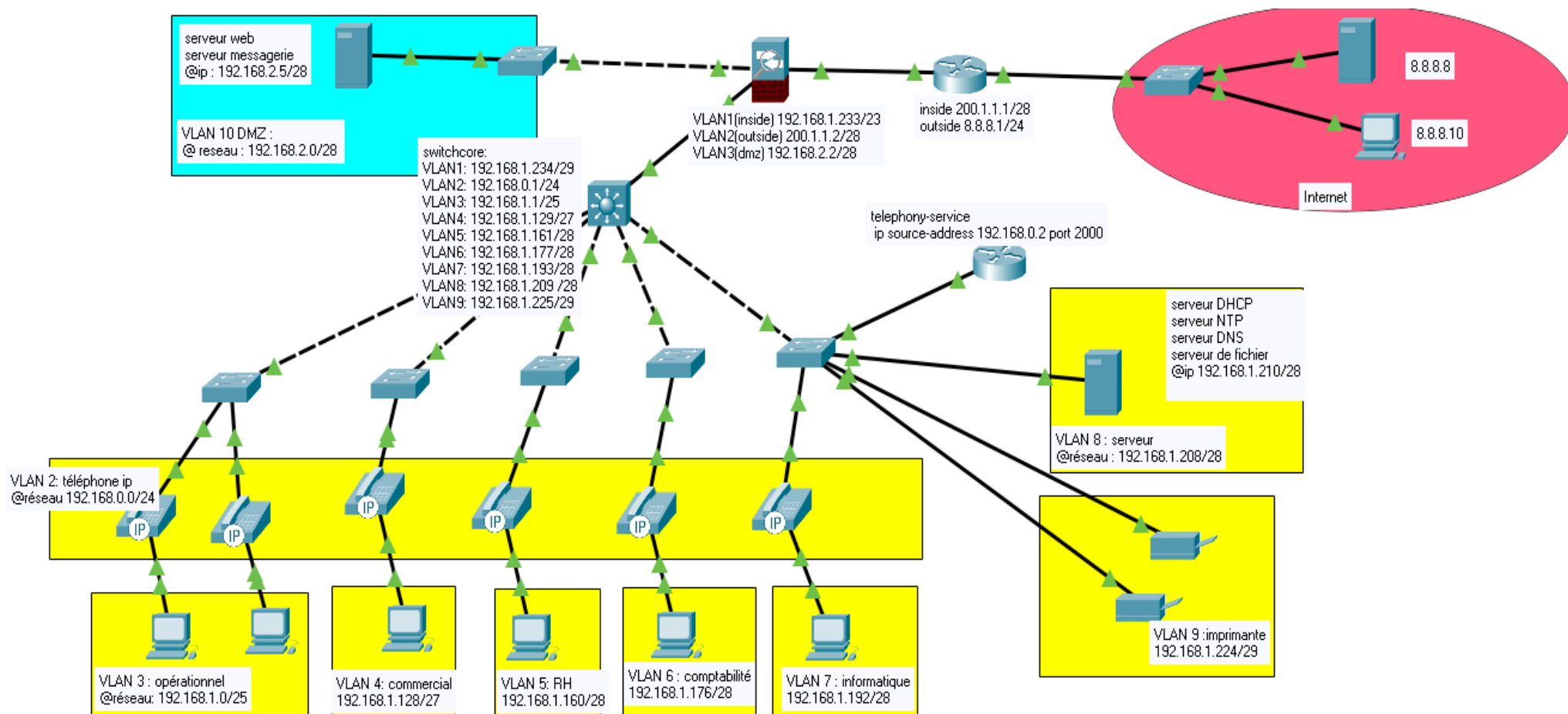
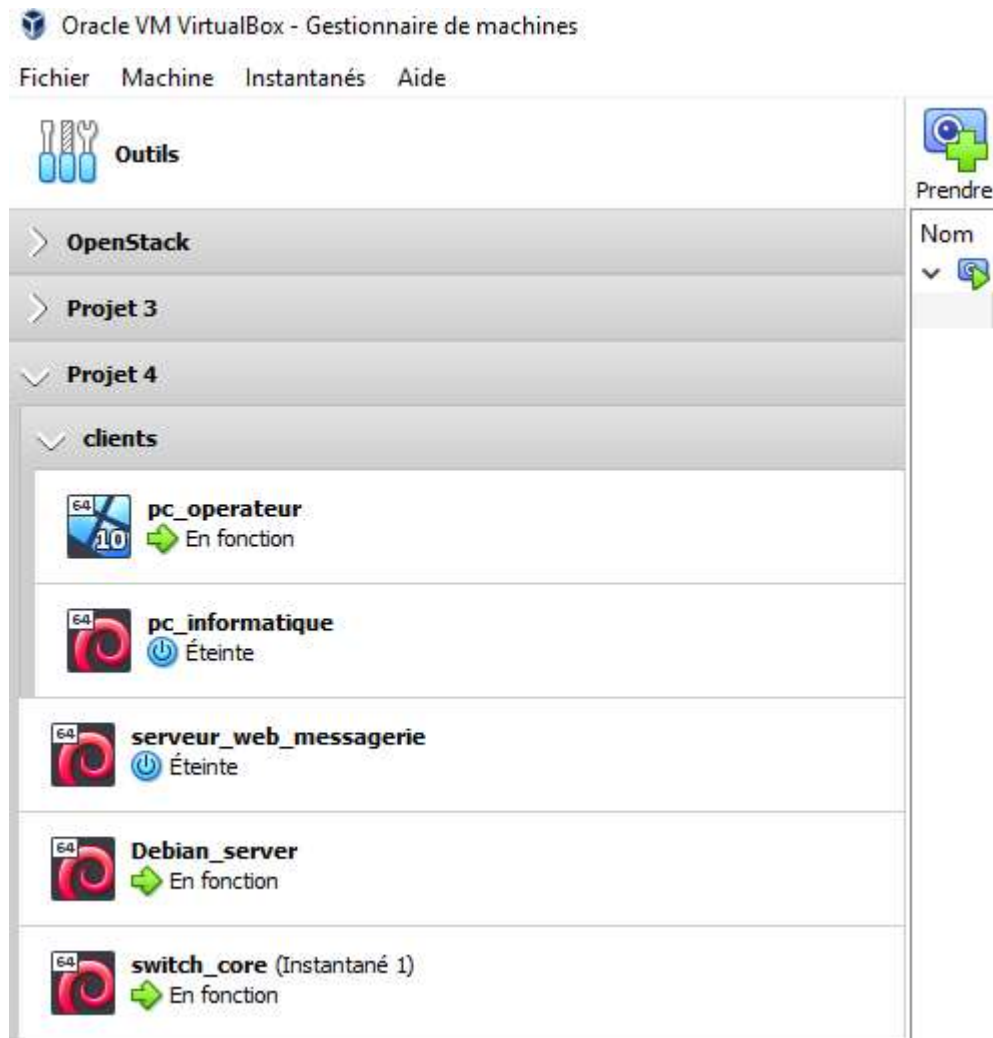


**Perfectionner
l'infrastructure
systèmes et réseaux
d'une entreprise**



Mettre en pratique cette infrastructure :



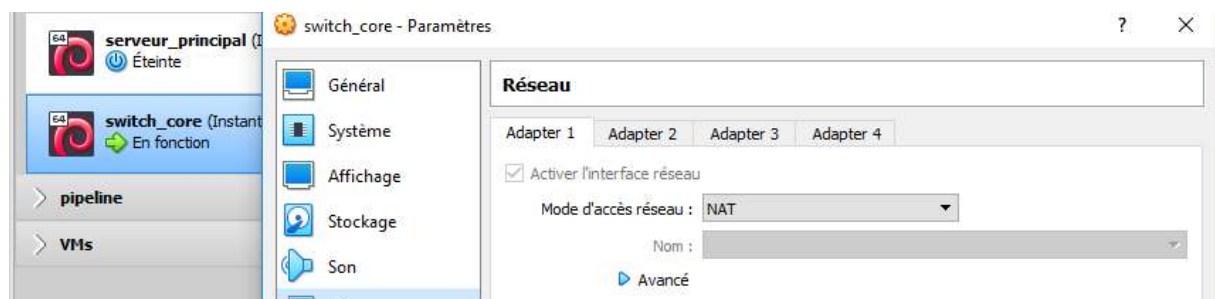
Configuration de switch_core :

Vm debian de 1go de ram

Création de 4 interfaces :

Nat pour accéder à Internet

Et 3 segments internes (VLAN)



switch_core - Paramètres

Général

Système

Affichage

Stockage

Son

Réseau

Réseau

Adapter 1Adapter 2Adapter 3Adapter 4

☒ Activer l'interface réseau

Mode d'accès réseau : Réseau interne

Nom : vlan_8

▶ Avancé

switch_core - Paramètres

Général

Système

Affichage

Stockage

Son

Réseau

Réseau

Adapter 1Adapter 2Adapter 3Adapter 4

☒ Activer l'interface réseau

Mode d'accès réseau : Réseau interne

Nom : vlan_7

▶ Avancé

switch_core - Paramètres

Général

Système

Affichage

Stockage

Son

Réseau

Réseau

Adapter 1Adapter 2Adapter 3Adapter 4

☒ Activer l'interface réseau

Mode d'accès réseau : Réseau interne

Nom : vlan_3

▶ Avancé

```
GNU nano 3.2 /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
auto enp0s3
iface enp0s3 inet static
    address 10.0.2.15
    netmask 255.255.255.0
    gateway 10.0.2.2

auto enp0s8
iface enp0s8 inet static
    address 192.168.1.209
    netmask 255.255.255.240

auto enp0s9
iface enp0s9 inet static
    address 192.168.1.193
    netmask 255.255.255.240
#up route add -net 0.0.0.0 netmask 0.0.0.0 gw 10.0.2.2
#pre-down route del -net 0.0.0.0 netmask 0.0.0.0 gw 10.0.2.15

auto enp0s10
iface enp0s10 inet static
    address 192.168.1.2
    netmask 255.255.255.128
```

On peut ne pas rendre static pour l'interface nat (d'accès à internet) , on peut la laisser en dhcp→

```
auto enp0s3
```

```
iface enp0s3 inet dhcp
```

```
systemctl restart networking
```

Activer le routage et le rendre permanent:

```
nano /etc/sysctl.conf
```

Eliminer # dans cette ligne :

```
net.ipv4.ip_forward=1
```

restart le service:

```
sudo systemctl restart procps
```

Lorsque je fais un ping vers internet à partir d'un pc client la trame se perd dans le réseau sans retour pour résoudre à ce problème :

Voici le lien pour cette procédure :

<https://www.thomaslaurenson.com/blog/2018-07-05/building-an-ubuntu-linux-gateway/>

Add a NAT forwarding rule using iptables:

```
sudo iptables -t nat -A POSTROUTING -o ens160 -j MASQUERADE
```

Save the iptables configuration:

```
sudo apt install iptables-persistent
sudo su
sudo iptables-save > /etc/iptables/rules.v4
exit
```

Installez le **Relais DHCP** :

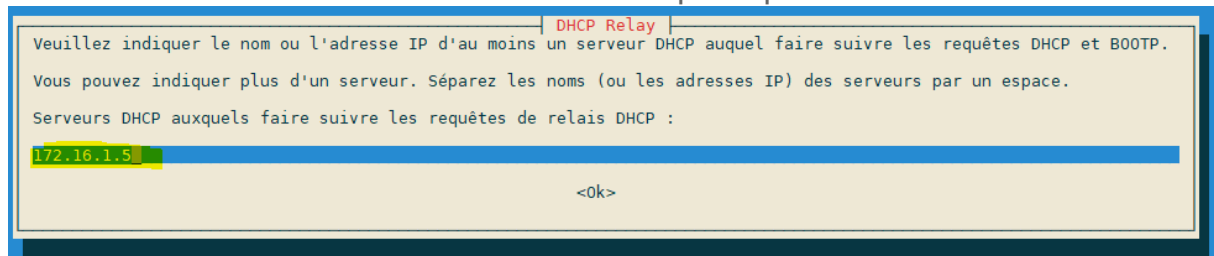
https://pixelabs.fr/dhcp-et-dhcp-relais-sous-debian-9/#Installation_DHCP_Debian-1

```
root@pixelabs:~# apt install isc-dhcp-relay
```

Lecture des listes de paquets... Fait

Construction de l'arbre des dépendances

- Mettez l'adresse du serveur DHCP principal. Ici c'est **Debian-1**



Serveurs DHCP auxquels faire suivre les requêtes de relais DHCP :

192.168.1.210

- Cliquez sur **Entrée**
- **Interface où le relais DHCP sera à l'écoute : Ne rien mettre**
- Cliquez sur **Entrée**

- **Option supplémentaires :** Ne rien mettre
- Cliquez sur **Entrée**.

I-\ Installation et Configuration du serveur DHCP

1-\ Installation du serveur DHCP sur un serveur DEBIAN 10

Installer le service :

```
apt install isc-dhcp-server
```

Sur Debian, il y a une petite spécificité, il faut indiquer dans **/etc/default/isc-dhcp-server** sur quelles interfaces va écouter le service DHCP.

```
nano /etc/default/isc-dhcp-server
```

On décommente :

```
DHCPDv4_CONF=/etc/dhcp/dhcpd.conf
```

Et un peu plus bas, on spécifie les interfaces d'écoute.

```
INTERFACESv4="enp23s0"
INTERFACESv6="enp23s0"
```

The screenshot shows a terminal window titled "192.168.56.102 - PuTTY". Inside the terminal, the GNU nano 3.2 editor is open, editing the file `/etc/default/isc-dhcp-server`. The editor shows the following configuration:

```
# 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="enp0s8"
INTERFACESv4="enp0s9"
#INTERFACESv6=""
```

At the bottom of the terminal, there is a status bar with various keyboard shortcuts for the nano editor, such as `^G Aide`, `^O Écrire`, `^W Chercher`, `^K Couper`, `^J Justifier`, `^C Pos. cur.`, `^X Quitter`, `^R Lire fich.`, `^_ Remplacer`, `^U Coller`, `^T Orthograp.`, and `^_ Aller lig.`

on lance notre DHCP:

```
systemctl start isc-dhcp-server
```

Et on ajoute le service au démarrage :

```
systemctl enable isc-dhcp-server
```

2-\ Configuration du serveur DHCP sur un serveur DEBIAN 10

Configurer le fichier /etc/dhcp/dhcpd.conf

```
option domain-name-servers 192.168.1.210, 8.8.8.8;
default-lease-time 600;
max-lease-time 7200;
ddns-update-style none;
subnet 192.168.0.0 netmask 255.255.255.0 {
    option subnet-mask 255.255.255.0;
    option routers 192.168.0.2;
    range 192.168.0.3 192.168.100.153;
}
subnet 192.168.1.128 netmask 255.255.255.224 {
    option subnet-mask 255.255.255.224;
    option routers 192.168.1.129;
    range 192.168.1.130 192.168.1.158;
}
subnet 192.168.1.160 netmask 255.255.255.240 {
    option subnet-mask 255.255.255.240;
    option routers 192.168.1.161;
    range 192.168.1.162 192.168.1.174;
}
subnet 192.168.1.176 netmask 255.255.255.240 {
    option subnet-mask 255.255.255.240;
    option routers 192.168.1.177;
    range 192.168.1.178 192.168.1.190;
}
subnet 192.168.1.192 netmask 255.255.255.240 {
    option subnet-mask 255.255.255.240;
    option routers 192.168.1.193;
    range 192.168.1.194 192.168.1.206;
}
subnet 192.168.1.208 netmask 255.255.255.240 {
    option subnet-mask 255.255.255.240;
    option routers 192.168.1.209;
    range 192.168.1.210 192.168.1.222;
}
subnet 192.168.1.224 netmask 255.255.255.248 {
    option subnet-mask 255.255.255.248;
    option routers 192.168.1.225;
    range 192.168.1.194 192.168.1.230;
}
```

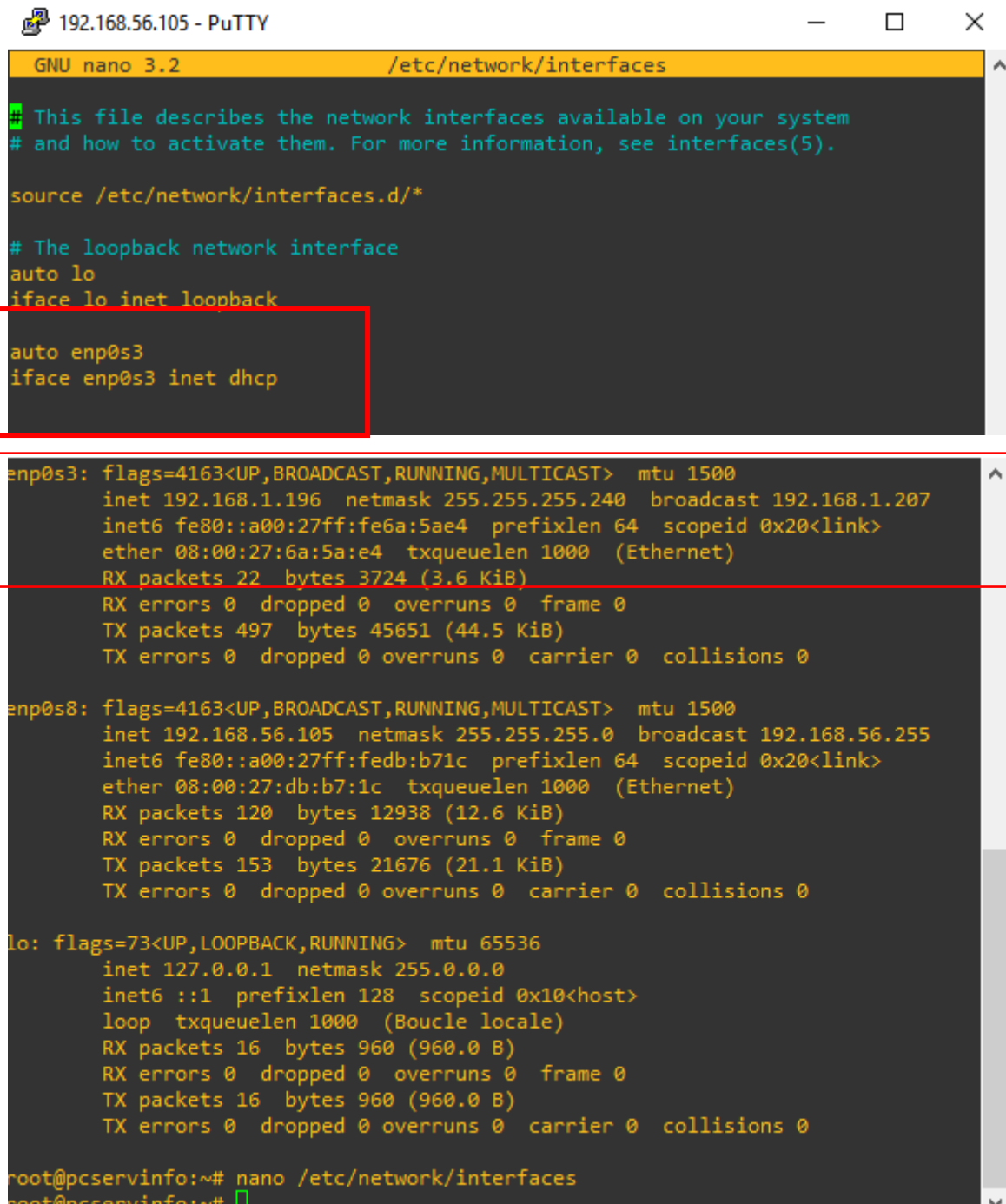
Après la modification, il faut toujours restart (dans les 2 sens serveur et client)

systemctl restart isc-dhcp-server

systemctl restart networking

3-\ Test du service DHCP sur un poste client :

Poste Debian :



```
192.168.56.105 - PuTTY
GNU nano 3.2 /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

auto enp0s3
iface enp0s3 inet dhcp

enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.196 netmask 255.255.255.240 broadcast 192.168.1.207
    inet6 fe80::a00:27ff:fe6a:5ae4 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:6a:5a:e4 txqueuelen 1000 (Ethernet)
    RX packets 22 bytes 3724 (3.6 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 497 bytes 45651 (44.5 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.56.105 netmask 255.255.255.0 broadcast 192.168.56.255
    inet6 fe80::a00:27ff:fedb:b71c prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:db:b7:1c txqueuelen 1000 (Ethernet)
    RX packets 120 bytes 12938 (12.6 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 153 bytes 21676 (21.1 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Boucle locale)
    RX packets 16 bytes 960 (960.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 16 bytes 960 (960.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@pcservinfo:~# nano /etc/network/interfaces
root@pcservinfo:~#
```

Fichier Édition Affichage Rechercher Terminal Aide

ahmed@pcservinfo:~\$ ip address

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

valid_lft forever preferred_lft forever

2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000

link/ether 08:00:27:6a:5a:e4 brd ff:ff:ff:ff:ff:ff

inet 192.168.1.196/28 brd 192.168.1.207 scope global dynamic enp0s3

valid_lft 344sec preferred_lft 344sec

inet6 fe80::a00:27ff:fe6a:5ae4/64 scope link

valid_lft forever preferred_lft forever

3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000

link/ether 08:00:27:db:b7:1c brd ff:ff:ff:ff:ff:ff

inet 192.168.56.105/24 brd 192.168.56.255 scope global dynamic noprefixroute enp0s8

valid_lft 390sec preferred_lft 390sec

inet6 fe80::a00:27ff:fedb:b71c/64 scope link noprefixroute

valid_lft forever preferred_lft forever

ahmed@pcservinfo:~\$

Poste Windows :

The screenshot shows the Windows Network and Sharing Center. The main window displays the title bar "Réseau et Internet > Centre Réseau et partage" and the subtitle "Afficher les informations de base de votre réseau et configurer des connexions". Below the title bar, there is a section "Afficher vos réseaux actifs" showing "Réseau 2" as a "Réseau public".

Two detail windows are open:

- Détails de connexion réseau**: This window shows a table of network properties for "Réseau 2".
- État de Ethernet**: This window shows the status of the Ethernet connection, including connectivity, media state, and activity.

Détails de connexion réseau

| Propriété | Valeur |
|------------------------------|-----------------------------------|
| Suffixe DNS propre à la ... | numericable.fr |
| Description | Intel(R) PRO/1000 MT Desktop Adap |
| Adresse physique | 08-00-27-91-EE-B4 |
| DHCP activé | Oui |
| Adresse IPv4 | 192.168.1.4 |
| Masque de sous-réseau ... | 255.255.255.128 |
| Bail obtenu | vendredi 25 juin 2021 22:29:43 |
| Bail expirant | vendredi 25 juin 2021 22:39:42 |
| Passerelle par défaut IPv4 | 192.168.1.1 |
| Serveur DHCP IPv4 | 192.168.1.3 |
| Serveurs DNS IPv4 | 89.2.0.1 89.2.0.2 |
| Serveur WINS IPv4 | |
| NetBIOS sur TCP/IP act... | Oui |
| Adresse IPv6 locale de li... | fe80::fdc7:6f29:39c8:b0b1%4 |
| Passerelle par défaut IPv6 | |

État de Ethernet

Général

Connexion

- Connectivité IPv4 : Pas d'accès Internet
- Connectivité IPv6 : Pas d'accès réseau
- État du média : Activé
- Durée : 00:04:32
- Vitesse : 1,0 Gbits/s

Détails...

Activité

Envoyés — Reçus

Octets : 28 792 | 2 067

Propriétés Désactiver Diagnostiquer

Fermer

II-\ Installation et Configuration du serveur DNS

<https://www.linuxbabe.com/debian/authoritative-dns-server-debian-10-buster-bind9>

1-\ Installation du serveur DNS sur un serveur DEBIAN 10

```
sudo apt update
sudo apt install bind9 bind9utils bind9-doc
```

Check version number.

```
named -v
```

To check the version number and build options, run

```
named -V
```

By default, BIND automatically starts after installation. You check its status with:

```
systemctl status bind9
```

If it's not running, then start it with:

```
sudo systemctl start bind9
```

And enable auto start at boot time:

```
sudo systemctl enable bind9
```

2-\ Configuration du serveur DNS sur un serveur DEBIAN 10

The main BIND configuration file `/etc/bind/named.conf` sources the settings from 3 other files.

- `/etc/bind/named.conf.options`
- `/etc/bind/named.conf.local`
- `/etc/bind/named.conf.default-zones`

```
sudo nano /etc/bind/named.conf.options
```

Add the following lines in the options {...} clause.

```
// hide version number from clients for security reasons.
version "not currently available";
```

```
// disable recursion on authoritative DNS server.
recursion no;
```

```
// enable the query log
querylog yes;
```

```
// disallow zone transfer
allow-transfer { none; };
```

```

options {
    directory "/var/cache/bind";

    // If there is a firewall between you and nameservers you want
    // to talk to, you may need to fix the firewall to allow multiple
    // ports to talk.  See http://www.kb.cert.org/vuls/id/800113

    // If your ISP provided one or more IP addresses for stable
    // nameservers, you probably want to use them as forwarders.
    // Uncomment the following block, and insert the addresses replacing
    // the all-0's placeholder.

    // forwarders {
    //     0.0.0.0;
    // };

    //=====
    // If BIND logs error messages about the root key being expired,
    // you will need to update your keys.  See https://www.isc.org/bind-keys
    //=====
    dnssec-validation auto;

    listen-on-v6 { any; };

    // hide version number from clients for security reasons
    version "not currently available";

    // disable recursion on authoritative DNS server
    recursion no;

    // enable the query log
    querylog yes;

    // disallow zone transfer
    allow-transfer {none; };
};

```

```
sudo systemctl restart bind9
```

I.1 - Master DNS Server Configuration

```
sudo nano /etc/bind/named.conf.local
```

Add the following lines to this file. Replace example.com with your own domain name. Replace 12.34.56.78 with the IP address of slave DNS server.

```

zone "example.com" {
    type master;
    file "/etc/bind/db.example.com";
    allow-query { any; };
    allow-transfer { 12.34.56.78; };
};

```



Debian_server [En fonction] - Oracle VM VirtualBox

Fichier Machine Écran Entrée Périphériques Aide

GNU nano 3.2

/etc/bind/named.conf.local

```
//
// Do any local configuration here
//

// Consider adding the 1918 zones here, if they are not used in your
// organization

//include "/etc/bind/zones.rfc1918";

zone "stecherif.fr" {
    type master;
    file "/etc/bind/db.stecherif.fr";
    allow-query { any; };
};
```

Instead of creating a zone file from scratch, we can use a zone template file. Copy the content of `db.empty` to a new file.

```
sudo cp /etc/bind/db.empty /etc/bind/db.example.com
```

cp /etc/bind/db.empty /etc/bind/db.steabc.fr

By default, it looks like this:

```
; BIND reverse data file for empty rfc1918 zone
;
; DO NOT EDIT THIS FILE - it is used for multiple zones.
; Instead, copy it, edit named.conf, and use that copy.
;
$TTL      86400
@         IN      SOA      localhost. root.localhost. (
                                1           ; Serial
                                604800      ; Refresh
                                86400       ; Retry
                                2419200    ; Expire
                                86400      ) ; Negative Cache TTL
;
@         IN      NS       localhost.
```

You can change it to this instead.

nano /etc/bind/db.steabc.fr

```
Debian_server [En fonction] - Oracle VM VirtualBox
Fichier Machine Écran Entrée Périphériques Aide
GNU nano 3.2 /etc/bind/db.stecherif.fr

; BIND reverse data file for empty rfc1918 zone
;
; DO NOT EDIT THIS FILE - it is used for multiple zones.
; Instead, copy it, edit named.conf, and use that copy.
;
$TTL      86400
$ORIGIN   stecherif.fr.

@         IN      SOA      server1.stecherif.fr. root.stecherif.fr. (
                                1          ; Serial
                                604800     ; Refresh
                                86400      ; Retry
                                2419200    ; Expire
                                86400 )    ; Negative Cache TTL
;

@         IN      NS       server1.stecherif.fr.
server1   IN      A        192.168.1.210
```

Editer ou remplacer le nom de la machine

nano /etc/hostname

```
192.168.56.102 - PuTTY
GNU nano 3.2 /etc/hostname

server1
```

Affecter l'adresse ip au nom du host

```
Debian_server [En fonction] - Oracle VM VirtualBox
Fichier Machine Écran Entrée Périphériques Aide
GNU nano 3.2 /etc/hosts

127.0.0.1    localhost
127.0.1.1    server1

192.168.1.210 server1.stecherif.fr

# The following lines are desirable for IPv6 capable hosts
::1        localhost ip6-localhost ip6-loopback
ff02::1    ip6-allnodes
ff02::2    ip6-allrouters
```


3-\ Test du service DNS sur un poste client :

Poste linux (Debian)

```
ahmed@pcservinfo: ~  
Fichier  Édition  Affichage  Rechercher  Terminal  Aide  
Sending on  LFR/enp0s3/08:00:27:0a:5a:e4  
Sending on  Socket/fallback  
DHCPDISCOVER on enp0s3 to 255.255.255.255 port 67 interval 6  
DHCPDISCOVER on enp0s3 to 255.255.255.255 port 67 interval 9  
DHCPOFFER of 192.168.1.200 from 192.168.1.193  
DHCPREQUEST for 192.168.1.200 on enp0s3 to 255.255.255.255 port 67  
DHCPACK of 192.168.1.200 from 192.168.1.193  
bound to 192.168.1.200 -- renewal in 260 seconds.  
root@pcservinfo:~# nano /etc/resolv.conf  
root@pcservinfo:~# ping server1.stecherif.fr  
PING server1.stecherif.fr (192.168.1.210) 56(84) bytes of data.  
64 bytes from 192.168.1.210 (192.168.1.210): icmp_seq=1 ttl=63 time=0.587 ms  
64 bytes from 192.168.1.210 (192.168.1.210): icmp_seq=2 ttl=63 time=1.11 ms  
64 bytes from 192.168.1.210 (192.168.1.210): icmp_seq=3 ttl=63 time=1.45 ms  
64 bytes from 192.168.1.210 (192.168.1.210): icmp_seq=4 ttl=63 time=0.823 ms
```

Poste Windows 10

```
Invite de commandes  
Microsoft Windows [version 10.0.19041.264]  
(c) 2020 Microsoft Corporation. Tous droits réservés.  
  
C:\Users\pc1>nslookup  
Serveur par défaut : UnKnown  
Address: 192.168.1.210  
  
> ^C  
C:\Users\pc1>ping server1.stecherif.fr  
  
Envoi d'une requête 'ping' sur server1.stecherif.fr [192.168.1.210] avec 32 octets de données :  
Réponse de 192.168.1.210 : octets=32 temps<1ms TTL=63  
Réponse de 192.168.1.210 : octets=32 temps=1 ms TTL=63  
Réponse de 192.168.1.210 : octets=32 temps=1 ms TTL=63  
Réponse de 192.168.1.210 : octets=32 temps=1 ms TTL=63  
  
Statistiques Ping pour 192.168.1.210:  
    Paquets : envoyés = 4, reçus = 4, perdus = 0 (perte 0%),  
Durée approximative des boucles en millisecondes :  
    Minimum = 0ms, Maximum = 1ms, Moyenne = 0ms
```

III-\ Installation et Configuration du serveur NTP

1-\ Installation du serveur NTP sur un serveur DEBIAN 10

<https://openclassrooms.com/fr/courses/1733551-gerez-votre-serveur-linux-et-ses-services/5236031-configurer-un-serveur-de-temps-pour-etre-toujours-a-l-heure>

```
$ sudo apt-get install chrony
```

```
Nano /etc/chrony/chrony.conf
```

Add the following lines :

Allow 192.168.0.0/23

```
$ sudo systemctl enable chrony  
$ sudo systemctl start chrony
```

```
$ sudo timedatectl set-ntp false
```

2-\ Configuration du service NTP sur un client DEBIAN 10

http://perso.univ-lemans.fr/~emicoul/Documentations/Linux/utils_syst/Timesyncd.html

1 - Retirer les services ntp (et ntpdate)

```
systemctl stop ntp.service  
systemctl disable ntp.service  
systemctl status ntp.service
```

2 - Configurer timesyncd pour utiliser un serveur de temps :

```
vi /etc/systemd/timesyncd.conf
```

[Time]

NTP= 192.168.1.210

3 - Activer la synchro ntp :

```
timedatectl set-ntp true
```

4- Activer le service timesyncd :

```
systemctl enable systemd-timesyncd.service  
systemctl start systemd-timesyncd.service  
systemctl status systemd-timesyncd.service
```

Si les erreurs suivantes apparaissent :

ConditionFileIsExecutable=!/usr/sbin/ntpd was not met

Condition check resulted in Network Time Synchronization being skipped.

Supprimer ntp :

```
apt remove ntp ntpdate
```

3-\ Test du service NTP sur le client debian :

```
systemctl status systemd-timesyncd.service
```

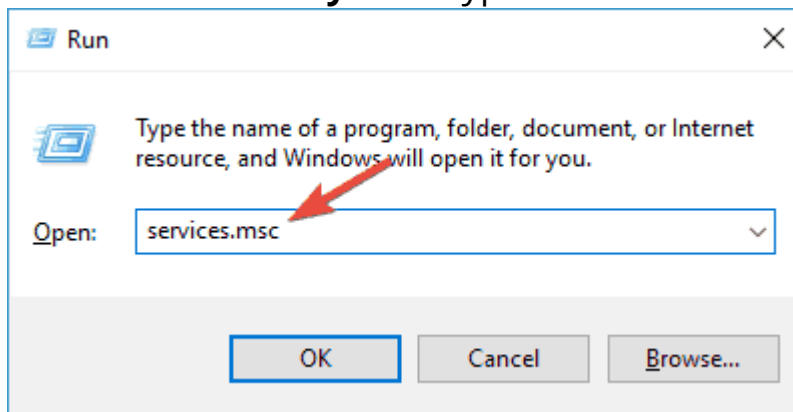
```
root@pcservinfo:~# systemctl restart systemd-timesyncd.service
root@pcservinfo:~# systemctl status systemd-timesyncd.service
● systemd-timesyncd.service - Network Time Synchronization
   Loaded: loaded (/lib/systemd/system/systemd-timesyncd.service; enabled; vendor preset: enabled)
   Drop-In: /usr/lib/systemd/system/systemd-timesyncd.service.d
            └─disable-with-time-daemon.conf
   Active: active (running) since Mon 2021-07-12 16:51:23 CEST; 2s ago
     Docs: man:systemd-timesyncd.service(8)
  Main PID: 2919 (systemd-timesyn)
    Status: "Synchronized to time server for the first time 192.168.1.210:123 (192.168.1.210:123)"
      Tasks: 2 (limit: 2347)
    Memory: 1.2M
    CGroup: /system.slice/systemd-timesyncd.service
            └─2919 /lib/systemd/systemd-timesyncd
```

4-\ Configuration du service NTP sur un client windows 10

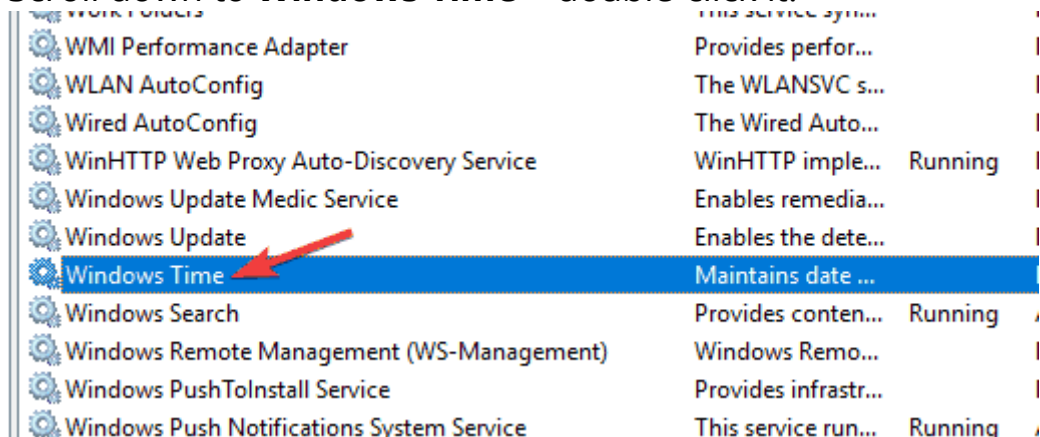
Démarrer le service

<https://windowsreport.com/wrong-time-on-windows-clock-fix/>

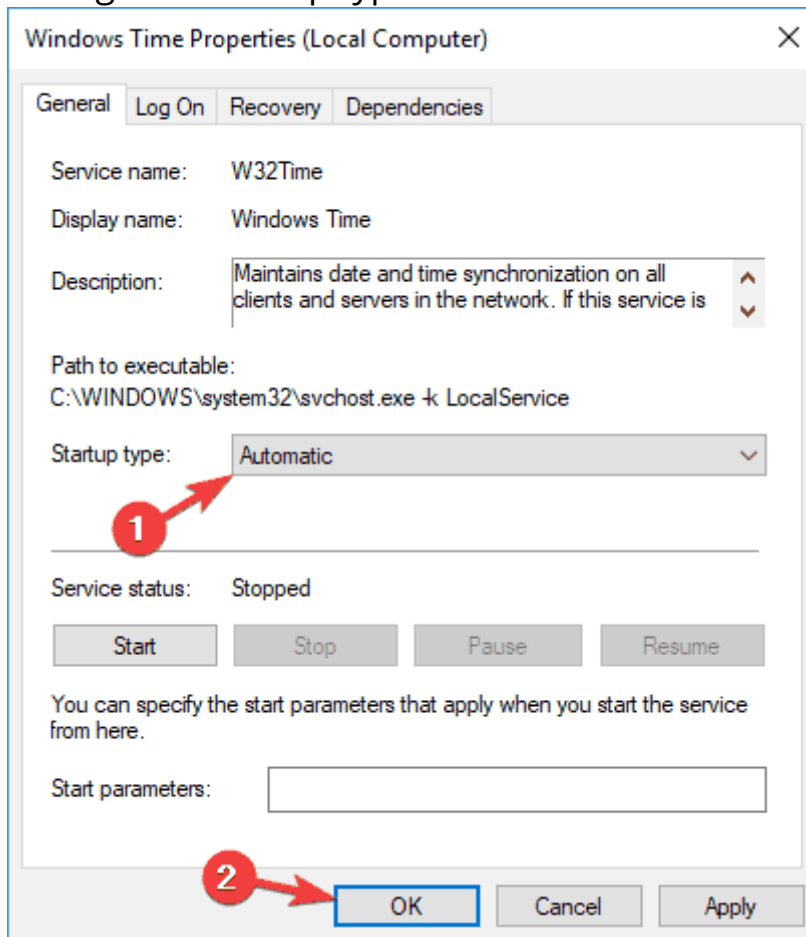
1. Press **Windows Key + R** > type **services.msc** > hit **Enter**.



2. Scroll down to **Windows Time** > double-click it.



3. Change the startup type to **Automatic** > click on **Apply** > **OK**.



Exécuter cmd en tant que administrateur et saisir les commandes suivants

w32tm /config /syncfromflags:manual /manualpeerlist:192.168.1.210

w32tm /config /update

w32tm /resync

```
C:\Windows\system32>W32TM /config /syncfromflags:manual /manualpeerlist:192.168.1.210
La commande s'est terminée correctement.

C:\Windows\system32>w32tm /config /update
La commande s'est terminée correctement.

C:\Windows\system32>w32tm /resync
Envoi de la commande de resynchronisation à l'ordinateur local
La commande s'est terminée correctement.
```

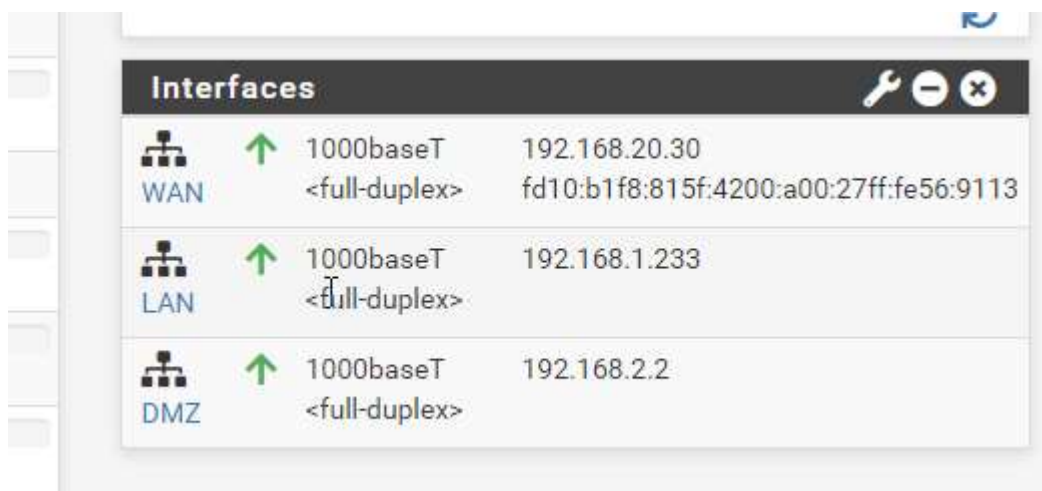
5-\ Test du service NTP sur le client windows :

```
C:\Windows\system32>w32tm /query /peers
Nb d'homologues : 1

Homologue : 192.168.1.210
État : Actif
Temps restant : 549.2541343s
Mode : 3 (Client)
Couche : 3 (Référence secondaire, synchronisée par (S)NTP)
HomologueIntervalle d'interrogation : 10 (1024s)
HôteIntervalle d'interrogation : 10 (1024s)
```

w32tm /query /peers

configuration pfSense



| Interfaces | | | |
|------------|---|----------------------------|---|
| WAN | ↑ | 1000baseT <full-duplex> | 192.168.20.30 fd10:b1f8:815f:4200:a00:27ff:fe56:9113 |
| LAN | ↑ | 1000baseT <full-duplex> | 192.168.1.233 |
| DMZ | ↑ | 1000baseT <full-duplex> | 192.168.2.2 |

| | |
|-------------------------|--|
| Enable | <input checked="" type="checkbox"/> Enable interface |
| Description | <div>WAN</div> <div>Enter a description (name) for the interface here.</div> |
| IPv4 Configuration Type | <div>Static IPv4</div> |
| IPv6 Configuration Type | <div>DHCP6</div> |
| MAC Address | <div>xx:xx:xx:xx:xx:xx</div> <div>This field can be used to modify ("spoof") the MAC address of this interface Enter a MAC address in the following format: xx:xx:xx:xx:xx:xx or leave blank</div> |
| MTU | <div></div> <div>If this field is blank, the adapter's default MTU will be used. This is typically</div> |
| MSS | <div></div> <div>If a value is entered in this field, then MSS clamping for TCP connections to header size) will be in effect.</div> |
| Speed and Duplex | <div>Default (no preference, typically autoselect)</div> <div>Explicitly set speed and duplex mode for this interface. WARNING: MUST be set to autoselect (automatically negotiate speed) unless</div> |

Static IPv4 Configuration

IPv4 Address 192.168.20.30 / 24

IPv4 Upstream gateway

default - 192.168.20.1

[+ Add a new gateway](#)

If this interface is an Internet connection, select an existing Gateway from the list or add a new one using the 'On local area network interfaces the upstream gateway should be "none". Gateways can be managed by [clicki](#)

DHCPv6 Client Configuration

Options

☐ Advanced Configuration

Use advanced DHCPv6 configuration options.

☐ Configuration Override

Override the configuration from this file.

Use IPv4 connectivity as parent interface

☐ Request a IPv6 prefix/information through the IPv4 connectivity link

Request only an IPv6 prefix

☐ Only request an IPv6 prefix, do not request an IPv6 address

DHCPv6 Prefix Delegation size

64

The value in this field is the delegated prefix length provided by the DHCPv6 server. Normally specified by the l

Send IPv6 prefix hint




☐ Send an IPv6 prefix hint to indicate the desired prefix size for delegation

Activer Window
Accédez aux paramè

Firewall / NAT / Port Forward

Port Forward 1:1 Outbound NPT:

Rules

| | Interface | Protocol | Source Address | Source Ports | Dest. Address | Dest. Ports | NAT IP | NAT Ports | Description | Actions |
|--------------------------|-----------|----------|----------------|--------------|---------------|-------------|-------------|-----------|---------------------------------|---|
| <input type="checkbox"/> | WAN | TCP | * | * | WAN address | 80 (HTTP) | 192.168.2.5 | 80 (HTTP) | redirection vers le serveur web |    |

[↑ Add](#) [↓ Add](#) [Delete](#) [Save](#) [Separator](#)

Firewall / Rules / WAN



Floating WAN LAN DMZ

Rules (Drag to Change Order)

| <input type="checkbox"/> | States | Protocol | Source | Port | Destination | Port | Gateway | Queue | Schedule | Description | Actions |
|-------------------------------------|---------------|-------------|-------------------------------------|------|-------------|--------------|---------|-------|----------|--|--------------|
| <input checked="" type="checkbox"/> | 0 / 3 KiB | * | Reserved Not assigned by IANA | * | * | * | * | * | | Block bogon networks | |
| <input type="checkbox"/> | 0 / 15 KiB | IPv4 TCP | * | * | 192.168.2.5 | 80 (HTTP) | * | none | | NAT redirection vers le serveur web | |

Add Add Delete Save Separator

Firewall / Rules / LAN



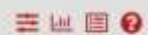
Floating WAN LAN DMZ

Rules (Drag to Change Order)

| <input type="checkbox"/> | States | Protocol | Source | Port | Destination | Port | Gateway | Queue | Schedule | Description | Actions |
|-------------------------------------|-----------------|----------|------------|------|----------------|------|---------|-------|----------|---------------------------------------|--------------|
| <input checked="" type="checkbox"/> | 6 / 1.54 MiB | * | * | * | LAN Address | 80 | * | * | | Anti-Lockout Rule | |
| <input type="checkbox"/> | 7 / 3.61 MiB | IPv4 * | LAN net | * | * | * | * | none | | Default allow LAN IPv4 to any rule | |
| <input type="checkbox"/> | 0 / 0 B | IPv6 * | LAN net | * | * | * | * | none | | Default allow LAN IPv6 to any rule | |

Add Add Delete Save Separator

Firewall / Rules / DMZ



Floating WAN LAN DMZ

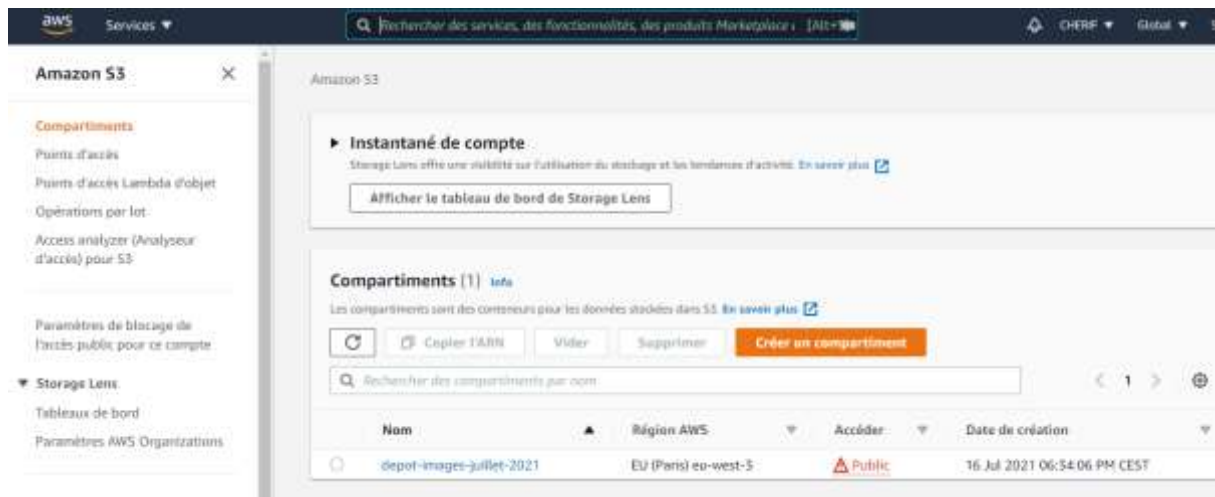
Rules (Drag to Change Order)

| <input type="checkbox"/> | States | Protocol | Source | Port | Destination | Port | Gateway | Queue | Schedule | Description | Actions |
|--------------------------|-----------|----------|---------|------|-------------|------|---------|-------|----------|-------------------------------|--------------|
| <input type="checkbox"/> | 0 / 336 B | IPv4 * | DMZ net | * | LAN net | * | * | none | | Bloc DMZ to LAN rule | |
| <input type="checkbox"/> | 0 / 4 KiB | IPv4 * | DMZ net | * | * | * | * | none | | Default allow DMZ to any rule | |
| <input type="checkbox"/> | 0 / 0 B | IPv6 * | DMZ net | * | * | * | * | none | | Default allow DMZ to any rule | |

Add Add Delete Save Separator

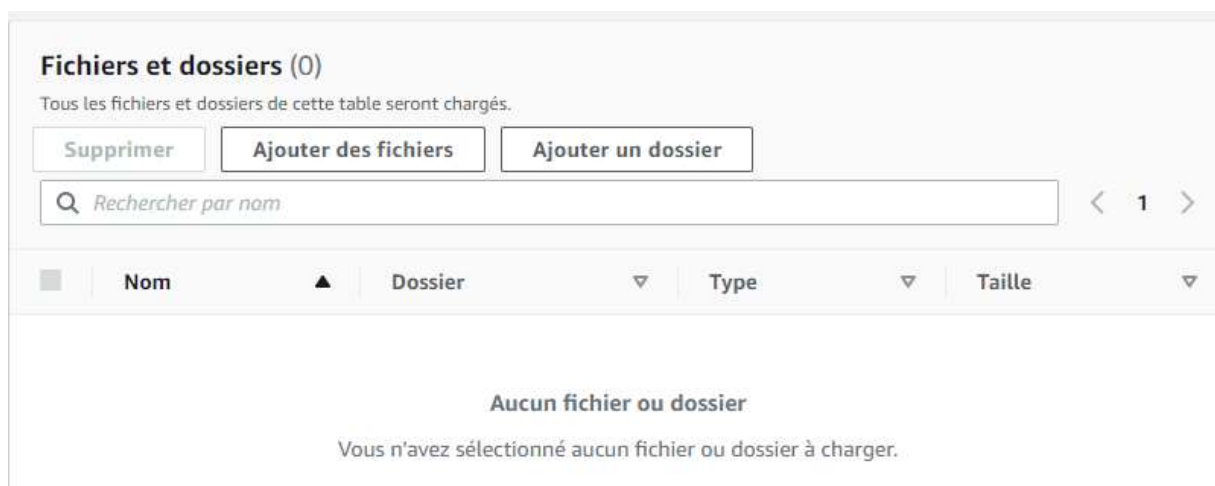
Amazon S3

Stocker des fichiers statiques sur Amazon S3



Cliquer sur créer un compartiment (bucket) → donner un nom unique → choisir les options par défaut

Accéder a ce compartiment dans mon cas (depot-images-juillet-2021) → Ajouter un objet (charger un fichier (upload file))



Pour rendre le projet accessible par tous le monde → il faut le rendre public
1-\ désactiver Bloquer l'accès public (paramètres de compartiment)

Bloquer l'accès public (paramètres de compartiment)

L'accès public aux compartiments et objets est accordé via des listes de contrôle d'accès (ACL), des stratégies de compartiment, des stratégies de point d'accès ou tous ces éléments à la fois. Pour bloquer l'accès public à tous vos compartiments et objets S3, activez « Bloquer tous les accès publics ». Ces paramètres s'appliquent uniquement à ce compartiment et ses points d'accès. AWS recommande d'activer « Bloquer tous les accès publics ». Toutefois, avant d'appliquer ces paramètres, vérifiez que vos applications fonctionneront correctement sans accès public. Si vous avez besoin d'un certain niveau d'accès public à vos compartiments ou objets, vous pouvez personnaliser les paramètres individuels ci-dessous en fonction de vos cas d'utilisation de stockage spécifiques. [En savoir plus](#)

Modifier

Bloquer tous les accès publics

⚠ Désactivé

Bloquer l'accès public aux compartiments et aux objets, accordé via de *nouvelles* listes de contrôle d'accès (ACL)

⚠ Désactivé

Bloquer l'accès public aux compartiments et aux objets, accordé via *n'importe quelles* listes de contrôle d'accès (ACL)

⚠ Désactivé

Bloquer l'accès public aux compartiments et aux objets, accordé via de *nouvelles* stratégies de compartiment ou de point d'accès public

⚠ Désactivé

Bloquer l'accès public et entre comptes aux compartiments et objets via *n'importe quelles* stratégies de compartiment ou de point d'accès public

⚠ Désactivé

2- Ajouter une règle (stratégie de compartiment)

Stratégie de compartiment

La stratégie de compartiment, écrite au format JSON, permet d'accéder aux objets stockés dans le compartiment. Les stratégies de compartiment ne s'appliquent pas aux objets appartenant à d'autres comptes. [En savoir plus](#)

Modifier

Supprimer

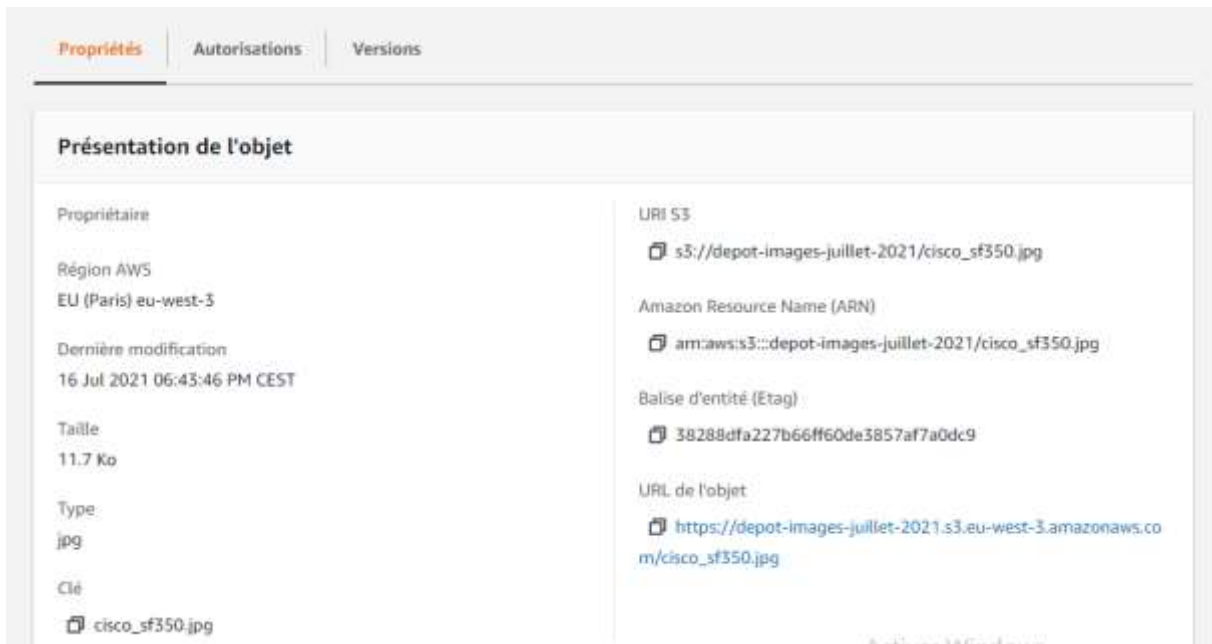
```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicRead",
      "Effect": "Allow",
      "Principal": "*",
      "Action": [
        "s3:GetObject",
        "s3:GetObjectVersion"
      ],
      "Resource": "arn:aws:s3:::depot-images-juillet-2021/*"
    }
  ]
}
```

Copier

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicRead",
      "Effect": "Allow",
      "Principal": "*",
      "Action": [
        "s3:GetObject",
        "s3:GetObjectVersion"
      ],
      "Resource": "arn:aws:s3:::depot-images-juillet-2021/*"
    }
  ]
}
```

]
}

Accéder aux objets publiés



Cliquer sur l'url de l'objet

Liens sur S3 :

<https://medium.com/@kyle.galbraith/how-to-host-a-website-on-s3-without-getting-lost-in-the-sea-e2b82aa6cd38>

<https://openclassrooms.com/fr/courses/4810836-decouvrez-le-cloud-avec-amazon-web-services/5047911-stocker-et-acceder-a-des-fichiers-sur-s3>

<https://www.youtube.com/watch?v=s1Tu0yKmDKU>

IV-\ Installation et Configuration du serveur NFS

1-\ Installation du serveur NTP sur un serveur DEBIAN 10

```
apt-get update  
  
apt-get install ntp  
  
ntp --version  
  
systemctl restart ntp
```

```
systemctl status ntp
```

Installing an NTP client

```
apt-get install ntpdate
```

```
apt-get install ntp
```

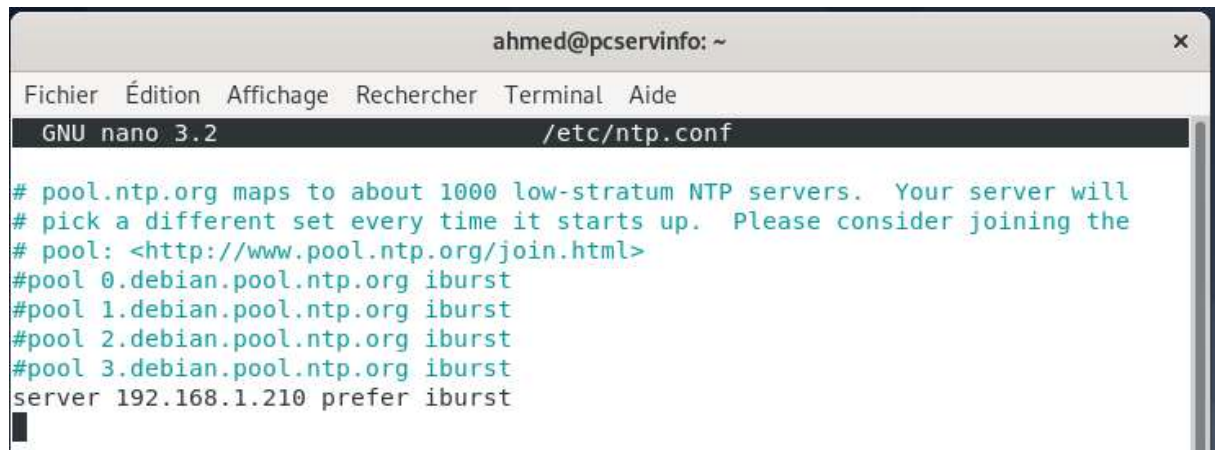
2-\ Configuration du serveur NTP sur pc client DEBIAN 10

Run the following command to open a configuration file in the nano editor.

```
nano /etc/ntp.conf
```

Add the following lines,

```
server 10.1.1.1 prefer iburst
```



```
ahmed@pcservinfo: ~
Fichier  Édition  Affichage  Rechercher  Terminal  Aide
GNU nano 3.2 /etc/ntp.conf

# pool.ntp.org maps to about 1000 low-stratum NTP servers. Your server will
# pick a different set every time it starts up. Please consider joining the
# pool: <http://www.pool.ntp.org/join.html>
#pool 0.debian.pool.ntp.org iburst
#pool 1.debian.pool.ntp.org iburst
#pool 2.debian.pool.ntp.org iburst
#pool 3.debian.pool.ntp.org iburst
server 192.168.1.210 prefer iburst
```

Systemctl restart ntp

Ntpq -p

```
root@pcservinfo:~# nano /etc/ntp.conf
root@pcservinfo:~# systemctl restart ntp
root@pcservinfo:~# ntpq -p
      remote           refid      st t when poll reach   delay   offset  jitter
=====
192.168.1.210 .INIT.          16 u   -   64    0   0.000   0.000   0.000
root@pcservinfo:~# nano /etc/ntp.conf
root@pcservinfo:~#
```

3-\ Test du service NTP sur un poste client :