

# TP2 – Intégration au réseau

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## 1. Fichiers de configuration

→ On affiche le contenu des fichiers `/etc/hosts`, `/etc/resolv.conf` et `/etc/network/interfaces` à l'aide de la commande `cat` :

```
root@vboxDEB12Server: ~#cat /etc/hosts
127.0.0.1      localhost
127.0.1.1     vboxDEB12Server.sio-exupery.local    vboxDEB12Server

# The following lines are desirable for IPv6 capable hosts
::1          localhost ip6-localhost ip6-loopback
ff02::1     ip6-allnodes
ff02::2     ip6-allrouters
root@vboxDEB12Server: ~#cat /etc/resolv.conf
domain prince.local
search prince.local
nameserver 10.0.2.3
root@vboxDEB12Server: ~#cat /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 enp0s3
iface enp0s3 inet dhcp
# This is an autoconfigured IPv6 interface
iface enp0s3 inet6 auto
```

## 2. Disparition de la commande ipconfig

→ On affiche le manuel d'utilisation de la commande **ip** et tout ses paramètres avec la commande **man ip** :

```
root@DEB12Server: ~#man ip_
IP(8)                                Linux                                IP(8)
NAME
ip - show / manipulate routing, network devices, interfaces and tunnels
SYNOPSIS
ip [ OPTIONS ] OBJECT { COMMAND | help }

ip [ -force ] -batch filename

OBJECT := { link | address | addrlabel | route | rule | neigh | ntable
           | tunnel | tuntap | maddress | mroute | mrule | monitor | xfrm
           | netns | l2tp | tcp_metrics | token | macsec | vrf | mptcp |
           ioam | stats }

OPTIONS := { -V[ersion] | -h[uman-readable] | -s[tatistics] |
             -d[etails] | -r[esolve] | -iec | -f[amily] { inet | inet6 |
             link } | -4 | -6 | -B | -0 | -l[oops] { maximum-addr-flush-at-
             tempts } | -o[neline] | -rc[vbuf] [size] | -t[imestamp] |
             -ts[hort] | -n[etns] name | -N[umeric] | -a[ll] | -c[olor] |
             -br[ief] | -j[son] | -p[retty] }
```

→ Maintenant qu'on sait comment utiliser la commande on l'utilise pour afficher la configuration réseau avec **ip a** ou **ip address** :

```
root@vboxDEB12Server: ~#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 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:cc:ac:dc brd ff:ff:ff:ff:ff:ff
   inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s3
       valid_lft 85991sec preferred_lft 85991sec
   inet6 fd00::a00:27ff:fecc:acdc/64 scope global dynamic mngtmpaddr
       valid_lft 86400sec preferred_lft 14400sec
   inet6 fe80::a00:27ff:fecc:acdc/64 scope link
       valid_lft forever preferred_lft forever
```

# 4

→ On affiche la même chose mais en couleur avec la commande **ip -c a** :

```
root@vboxDEB12Server: ~#ip -c 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:cc:ac:dc brd ff:ff:ff:ff:ff:ff
  inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s3
    valid_lft 85929sec preferred_lft 85929sec
  inet6 fd00::a00:27ff:fecc:acdc/64 scope global dynamic mngtmpaddr
    valid_lft 86400sec preferred_lft 14400sec
  inet6 fe80::a00:27ff:fecc:acdc/64 scope link
    valid_lft forever preferred_lft forever
```

### 3. Mise en réseau des deux VM (réseau interne)

→ On change le réglage des cartes réseaux des deux VM pour les passer en mode **réseau interne** avec le même nom de **switch virtuel** pour qu'elles puissent communiquer entre elles :

The image displays two screenshots of the Oracle VM VirtualBox settings interface for two different VMs: DEB12Desktop and DEB12Server. Both windows are in the 'Réseau' (Network) section, specifically the 'Adapter 1' tab. The 'Activer l'interface réseau' (Enable network interface) checkbox is checked in both. The 'Mode d'accès réseau' (Network access mode) is set to 'Réseau interne' (Internal network) in both, highlighted with a red box. The 'Name' field is set to 'LAN' in both. The 'Type d'interface' (Interface type) is set to 'Intel PRO/1000 MT Desktop (82540EM)' in both. The 'Mode Promiscuité' (Promiscuity mode) is set to 'Refuser' (Deny) in both, also highlighted with a red box. The 'Adresse MAC' (MAC address) is set to '080027CCDFD0' for DEB12Desktop and '080027CCACDC' for DEB12Server. The 'Câble branché' (Cable plugged) checkbox is checked in both. The 'Ports séries' (Serial ports) section is visible below the network settings in both windows. At the bottom of the DEB12Server window, there are buttons for 'OK', 'Annuler' (Cancel), and 'Aide' (Help).

## 6

→ On **désactive** l'interface **enp0s3** sur la machine serveur pour arrêter le **client DHCP** avec la commande **ifdown enp0s3** :

```
root@vboxDEB12Server: ~#ifdown enp0s3
Killed old client process
Internet Systems Consortium DHCP Client 4.4.3-P1
Copyright 2004-2022 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/enp0s3/08:00:27:cc:ac:dc
Sending on   LPF/enp0s3/08:00:27:cc:ac:dc
Sending on   Socket/fallback
DHCPRELEASE of 10.0.2.15 on enp0s3 to 10.0.2.2 port 67
```

→ On **modifie** le fichier **/etc/network/interfaces** avec l'éditeur **nano** pour changer la configuration de la carte réseau et lui attribuer une **adresse ip statique** :

```
root@DEB12Server: ~#nano /etc/network/interfaces_
GNU nano 7.2
# 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/*

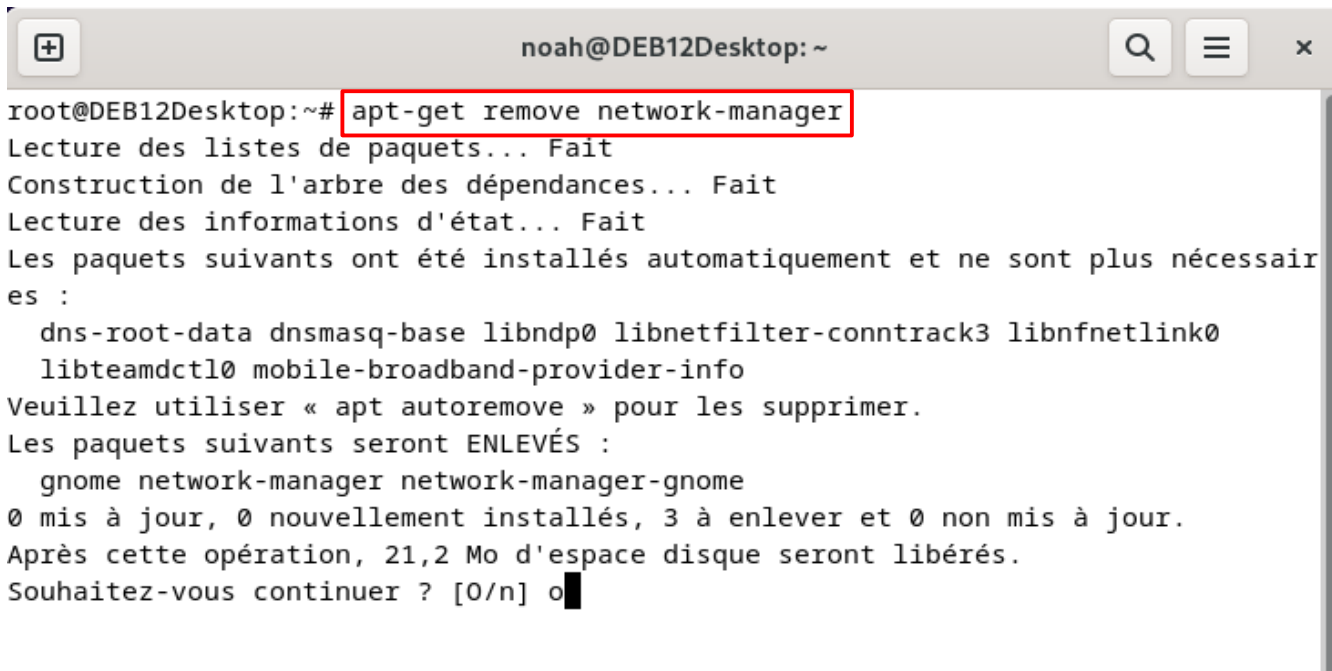
# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
allow-hotplug enp0s3
auto enp0s3
iface enp0s3 inet static
address 192.168.1.100
netmask 255.255.255.0
network 192.168.1.0
broadcast 192.168.1.255_
```

→ On **réactive** l'interface **enp0s3 (ifup enp0s3)** puis on vérifie sa **configuration (ip -c a)** :

```
root@vboxDEB12Server: ~#ifup enp0s3
root@vboxDEB12Server: ~#ip -c 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:cc:ac:dc brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.100/24 brd 192.168.1.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fecc:acdc/64 scope link
        valid_lft forever preferred_lft forever
```

→ On **supprime** l'interface graphique de configuration de la carte réseau sur la machine desktop avec **apt-get remove** :



```
noah@DEB12Desktop: ~
root@DEB12Desktop:~# apt-get remove network-manager
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 :
  dns-root-data dnsmasq-base libndp0 libnetfilter-contrack3 libnfnetwork0
  libteamctl0 mobile-broadband-provider-info
Veuillez utiliser « apt autoremove » pour les supprimer.
Les paquets suivants seront ENLEVÉS :
  gnome network-manager network-manager-gnome
0 mis à jour, 0 nouvellement installés, 3 à enlever et 0 non mis à jour.
Après cette opération, 21,2 Mo d'espace disque seront libérés.
Souhaitez-vous continuer ? [0/n] o
```

→ On **ajoute** aussi la carte **enp0s3** manuellement dans les réglages réseaux de la machine desktop :

```

noah@DEB12Desktop: ~
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

#interface enp0s3
allow-hotplug enp0s3
auto enp0s3
iface enp0s3 inet static
address 192.168.1.100
netmask 255.255.255.0
network 192.168.1.0

```

→ On **active** la carte **enp0s3 (ifup enp0s3)** puis on vérifie sa **configuration ip (ip -c a)**:

```

noah@DEB12Desktop: ~
root@DEB12Desktop:~# ifup enp0s3
root@DEB12Desktop:~# ip -c 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:cc:df:d0 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.100/24 brd 192.168.1.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fecc:dfd0/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
root@DEB12Desktop:~#

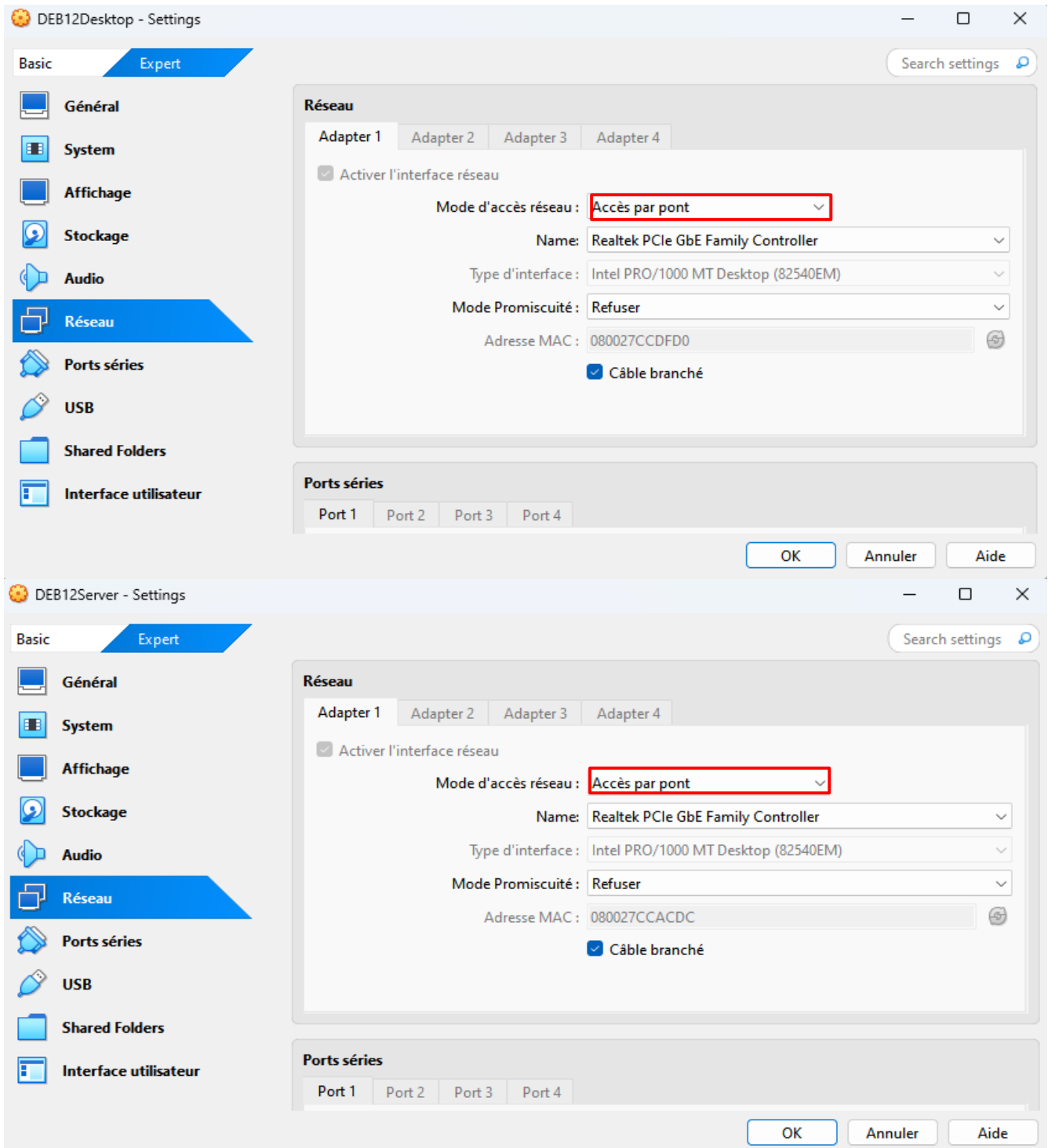
```

→ On teste la **connectivité** entre les deux machines avec un **ping** :

```
noah@DEB12Desktop: ~  
root@DEB12Desktop:~# ping 192.168.1.100  
PING 192.168.1.100 (192.168.1.100) 56(84) bytes of data.  
64 bytes from 192.168.1.100: icmp_seq=1 ttl=64 time=0.016 ms  
64 bytes from 192.168.1.100: icmp_seq=2 ttl=64 time=0.035 ms  
64 bytes from 192.168.1.100: icmp_seq=3 ttl=64 time=0.033 ms  
64 bytes from 192.168.1.100: icmp_seq=4 ttl=64 time=0.039 ms  
64 bytes from 192.168.1.100: icmp_seq=5 ttl=64 time=0.037 ms  
^C  
--- 192.168.1.100 ping statistics ---  
5 packets transmitted, 5 received 0% packet loss, time 4089ms  
rtt min/avg/max/mdev = 0.016/0.032/0.039/0.008 ms  
* Toutes les trames envoyées par la machine desktop sont bien reçues par la machine serveur donc la connectivité est présente.
```

## 4. VM en accès pont

→ On change le réglage des deux cartes réseau pour un **accès par pont** :



→ On **désactive** la carte réseau et on modifie sa configuration par une **configuration automatique DHCP** :

```
root@DEB12Desktop: ~#ifdown enp0s3
```

```
noah@DEB12Desktop: ~
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

#interface enp0s3
allow-hotplug enp0s3
auto enp0s3
iface enp0s3 inet dhcp
```

→ On réactive la carte réseau puis on constate l'échange de **trames DHCP** avec le **serveur DHCP ROI** :

```
noah@DEB12Desktop: ~
root@DEB12Desktop:~# ifup enp0s3
Internet Systems Consortium DHCP Client 4.4.3-P1
Copyright 2004-2022 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/enp0s3/08:00:27:cc:df:d0
Sending on LPF/enp0s3/08:00:27:cc:df:d0
Sending on Socket/fallback
Created duid "\000\001\000\001.\211o\251\010\000'\314\337\320".
DHCPDISCOVER on enp0s3 to 255.255.255.255 port 67 interval 5
DHCPOFFER of 172.17.2.40 from 172.17.254.1
DHCPREQUEST for 172.17.2.40 on enp0s3 to 255.255.255.255 port 67
DHCPACK of 172.17.2.40 from 172.17.254.1
bound to 172.17.2.40 -- renewal in 286 seconds.
root@DEB12Desktop:~#
```

→ On vérifie l'obtention de la **configuration ip** :

```

noah@DEB12Desktop: ~
root@DEB12Desktop:~# ip -c 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:cc:df:d0 brd ff:ff:ff:ff:ff:ff
    inet 172.17.2.40/16 brd 172.17.255.255 scope global dynamic enp0s3
        valid_lft 366sec preferred_lft 366sec
root@DEB12Desktop:~#

```

→ On affiche la **table de routage** de la machine desktop avec la commande **ip route** et on obtient la **passerelle du routeur Cisco** :

```

noah@DEB12Desktop: ~
root@DEB12Desktop:~# ip route
default via 172.17.250.2 dev enp0s3
169.254.0.0/16 dev enp0s3 scope link metric 1000
172.17.0.0/16 dev enp0s3 proto kernel scope link src 172.17.2.40
root@DEB12Desktop:~#

```

→ On effectue les mêmes **modifications réseau** pour la machine **serveur** :

```
GNU nano 7.2
# 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 enp0s3
auto enp0s3
iface enp0s3 inet dhcp
```

```
root@vboxDEB12Server: ~#ifup enp0s3
Internet Systems Consortium DHCP Client 4.4.3-P1
Copyright 2004-2022 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/enp0s3/08:00:27:cc:ac:dc
Sending on   LPF/enp0s3/08:00:27:cc:ac:dc
Sending on   Socket/fallback
DHCPDISCOVER on enp0s3 to 255.255.255.255 port 67 interval 7
DHCPOFFER of 172.17.110.24 from 172.17.244.1
DHCPREQUEST for 172.17.110.24 on enp0s3 to 255.255.255.255 port 67
DHCPACK of 172.17.110.24 from 172.17.244.1
bound to 172.17.110.24 -- renewal in 232 seconds.
root@vboxDEB12Server: ~#
```

→ On vérifie aussi l'obtention de la **configuration ip** :

```

root@vboxDEB12Server: ~#ip -c 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:cc:ac:dc brd ff:ff:ff:ff:ff:ff
   inet 172.17.110.24/16 brd 172.17.255.255 scope global dynamic enp0s3
       valid_lft 491sec preferred_lft 491sec
   inet6 fe80::a00:27ff:fecc:acdc/64 scope link
       valid_lft forever preferred_lft forever

```

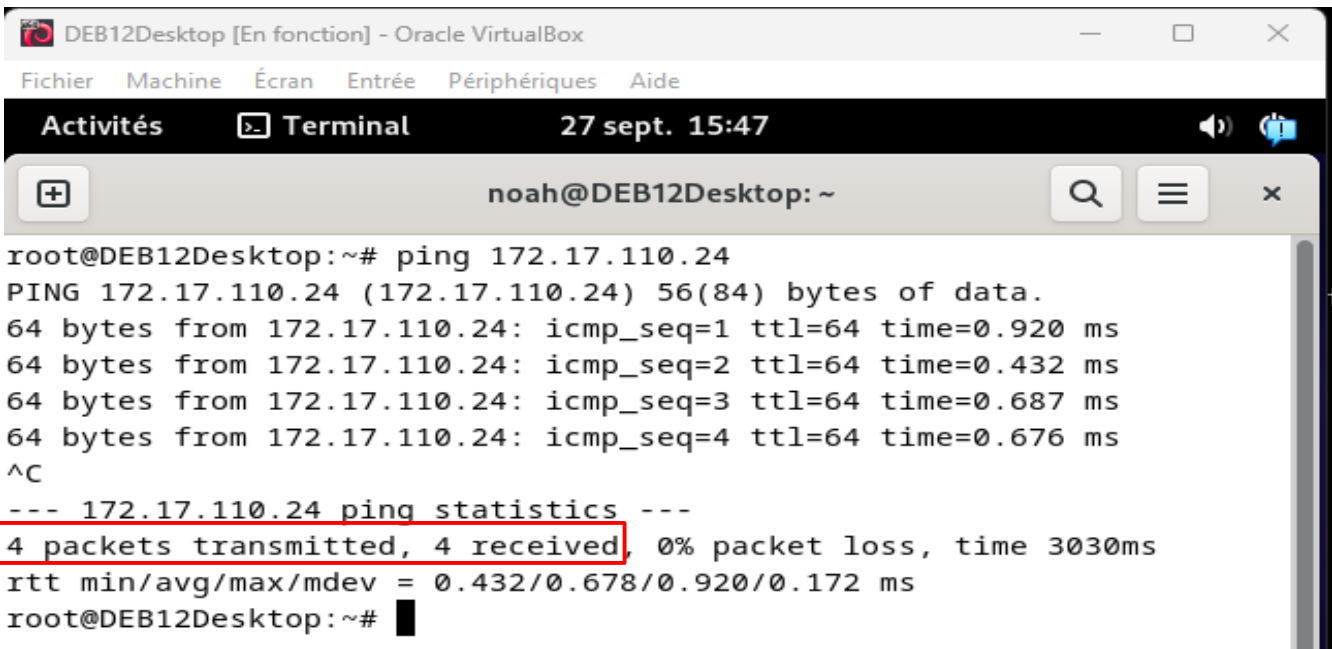
→ On affiche la **table de routage** :

```

root@DEB12Server: ~#ip r
default via 192.168.1.254 dev enp0s3
192.168.1.0/24 dev enp0s3 proto kernel scope link src 192.168.1.86

```

→ On vérifie la **connectivité** entre les deux machines avec un **ping** :



```

DEB12Desktop [En fonction] - Oracle VirtualBox
Fichier Machine Écran Entrée Périphériques Aide
Activités Terminal 27 sept. 15:47
noah@DEB12Desktop: ~
root@DEB12Desktop:~# ping 172.17.110.24
PING 172.17.110.24 (172.17.110.24) 56(84) bytes of data.
64 bytes from 172.17.110.24: icmp_seq=1 ttl=64 time=0.920 ms
64 bytes from 172.17.110.24: icmp_seq=2 ttl=64 time=0.432 ms
64 bytes from 172.17.110.24: icmp_seq=3 ttl=64 time=0.687 ms
64 bytes from 172.17.110.24: icmp_seq=4 ttl=64 time=0.676 ms
^C
--- 172.17.110.24 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3030ms
rtt min/avg/max/mdev = 0.432/0.678/0.920/0.172 ms
root@DEB12Desktop:~#

```

\* Les deux machines sont bien en **connectivité** puisque les **trames** sont reçues.

→ On **ping** aussi la **passerelle** par défaut :

```
root@DEB12Desktop:~# ping 172.17.250.2
PING 172.17.250.2 (172.17.250.2) 56(84) bytes of data.
64 bytes from 172.17.250.2: icmp_seq=1 ttl=255 time=0.612 ms
64 bytes from 172.17.250.2: icmp_seq=2 ttl=255 time=0.691 ms
64 bytes from 172.17.250.2: icmp_seq=3 ttl=255 time=0.705 ms
^C
--- 172.17.250.2 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2050ms
rtt min/avg/max/mdev = 0.612/0.669/0.705/0.040 ms
root@DEB12Desktop:~# █
```

## 5. La commande ss

→ On installe le **serveur ssh** sur la machine serveur avec la commande **apt-get install** :

```
root@DEB12Server: ~#apt-get install openssh-server
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 :
  libwrap0 openssh-sftp-server runit-helper
Paquets suggérés :
  molly-guard monkeysphere ssh-askpass ufw
Les NOUVEAUX paquets suivants seront installés :
  libwrap0 openssh-server openssh-sftp-server runit-helper
0 mis à jour, 4 nouvellement installés, 0 à enlever et 0 non mis à jour.
Il est nécessaire de prendre 583 ko dans les archives.
Après cette opération, 2 327 ko d'espace disque supplémentaires seront utilisés.
Souhaitez-vous continuer ? [O/n] o
```

→ On test la commande **ss** avec les différents paramètres :

```
root@DEB12Server: ~#ss -t
State Recv-Q Send-Q Local Address:Port Peer Address:Port Process
root@DEB12Server: ~#ss -lt
State Recv-Q Send-Q Local Address:Port Peer Address:Port Process
LISTEN 0 128 0.0.0.0:ssh 0.0.0.0:*
LISTEN 0 128 [::]:ssh [::]:*
root@DEB12Server: ~#ss -ta
State Recv-Q Send-Q Local Address:Port Peer Address:Port Process
LISTEN 0 128 0.0.0.0:ssh 0.0.0.0:*
LISTEN 0 128 [::]:ssh [::]:*
root@DEB12Server: ~#ss -ltn
State Recv-Q Send-Q Local Address:Port Peer Address:Port Process
LISTEN 0 128 0.0.0.0:22 0.0.0.0:*
LISTEN 0 128 [::]:22 [::]:*
root@DEB12Server: ~#ss -ltnp
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=999,fd=3))
LISTEN 0 128 [::]:22 [::]:*
users:(("sshd",pid=999,fd=4))
```

\* **ss -t** : afficher les différentes **connexions TCP** établies

\* **ss -lt** : afficher les **ports d'écoutes**

\* **ss -ta** : afficher les **connexions TCP** et les **ports d'écoutes (all)**

\* **ss -ltn** : afficher aussi le **numéro des ports** plutôt que leur noms

\* **ss -ltnp** : rajoute le nom du **processus** et son **PID**

→ On tente d'ouvrir une **session SSH** à partir de la machine desktop sur la machine serveur avec la commande **ssh @IP du serveur** :

```

root@DEB12Desktop: ~#ssh 172.17.2.30
The authenticity of host '172.17.2.30 (172.17.2.30)' can't be established.
ED25519 key fingerprint is SHA256:d2017vCpD7e4iF3PVbxY96KbuI2Nexlu3w5qxAhSMGY.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.17.2.30' (ED25519) to the list of known hosts.
root@172.17.2.30's password:
Permission denied, please try again.
root@172.17.2.30's password: |

```

\* La session SSH est refusée par la machine serveur

→ On autorise **root** à établir une **connexion SSH** avec la machine serveur à partir du fichier de configuration :

```

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 22
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:
#LoginGraceTime 3m
PermitRootLogin yes
#PermitRootLogin prohibit-password
#StrictModes yes

```

→ On **relance** le **service sshd** avec **systemctl restart sshd** pour que les changements prennent effet :

```
root@DEB12Server: ~#systemctl restart sshd
```

→ On retente d'établir la **connexion ssh** :

```
noah@DEB12Desktop: ~
root@DEB12Desktop: ~#ssh 172.17.2.30
root@172.17.2.30's password:
Linux DEB12Server 6.1.0-25-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.106-3 (2024-08-26) 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 Oct  2 08:57:35 2024
root@DEB12Server: ~#ls -l
total 0
root@DEB12Server: ~#ls -la
total 32
drwx-----  4 root root 4096 29 sept. 22:08 .
drwxr-xr-x  18 root root 4096 28 sept. 14:27 ..
-rw-----  1 root root  267 28 sept. 14:41 .bash_history
-rw-r--r--  1 root root  643 28 sept. 14:40 .bashrc
-rw-----  1 root root   20 29 sept. 22:08 .lessht
drwxr-xr-x  3 root root 4096 28 sept. 14:32 .local
-rw-r--r--  1 root root  161  9 juil. 2019 .profile
drwx-----  2 root root 4096 28 sept. 14:26 .ssh
```

→ On affiche les **connexions TCP actives** depuis le serveur :

```
root@DEB12Server: ~#ss -tn
State      Recv-Q      Send-Q      Local Address:Port      Peer Address:Port
ESTAB      0            0            172.17.2.30:22         172.17.2.36:53060
root@DEB12Server: ~#ss -t
State      Recv-Q      Send-Q      Local Address:Port      Peer Address:Port
ESTAB      0            0            172.17.2.30:ssh        172.17.2.36:53060
root@DEB12Server: ~#
```

→ On affiche aussi l'état **listen** :

```

root@DEB12Server: ~#ss -tan
State      Recv-Q      Send-Q      Local Address:Port      Peer Address:Port
LISTEN     0            128         0.0.0.0:22               0.0.0.0:*
ESTAB      0            0           172.17.2.30:22          172.17.2.36:53060
LISTEN     0            128         [::]:22                  [::]:*
root@DEB12Server: ~#ss -tan4
State      Recv-Q      Send-Q      Local Address:Port      Peer Address:Port
LISTEN     0            128         0.0.0.0:22               0.0.0.0:*
ESTAB      0            0           172.17.2.30:22          172.17.2.36:53060
root@DEB12Server: ~#_

```

→ On ferme la **connexion ssh** depuis la machine desktop avec **exit** :

```

root@DEB12Server: ~#exit
déconnexion
Connection to 172.17.2.30 closed.
root@DEB12Desktop: ~#

```

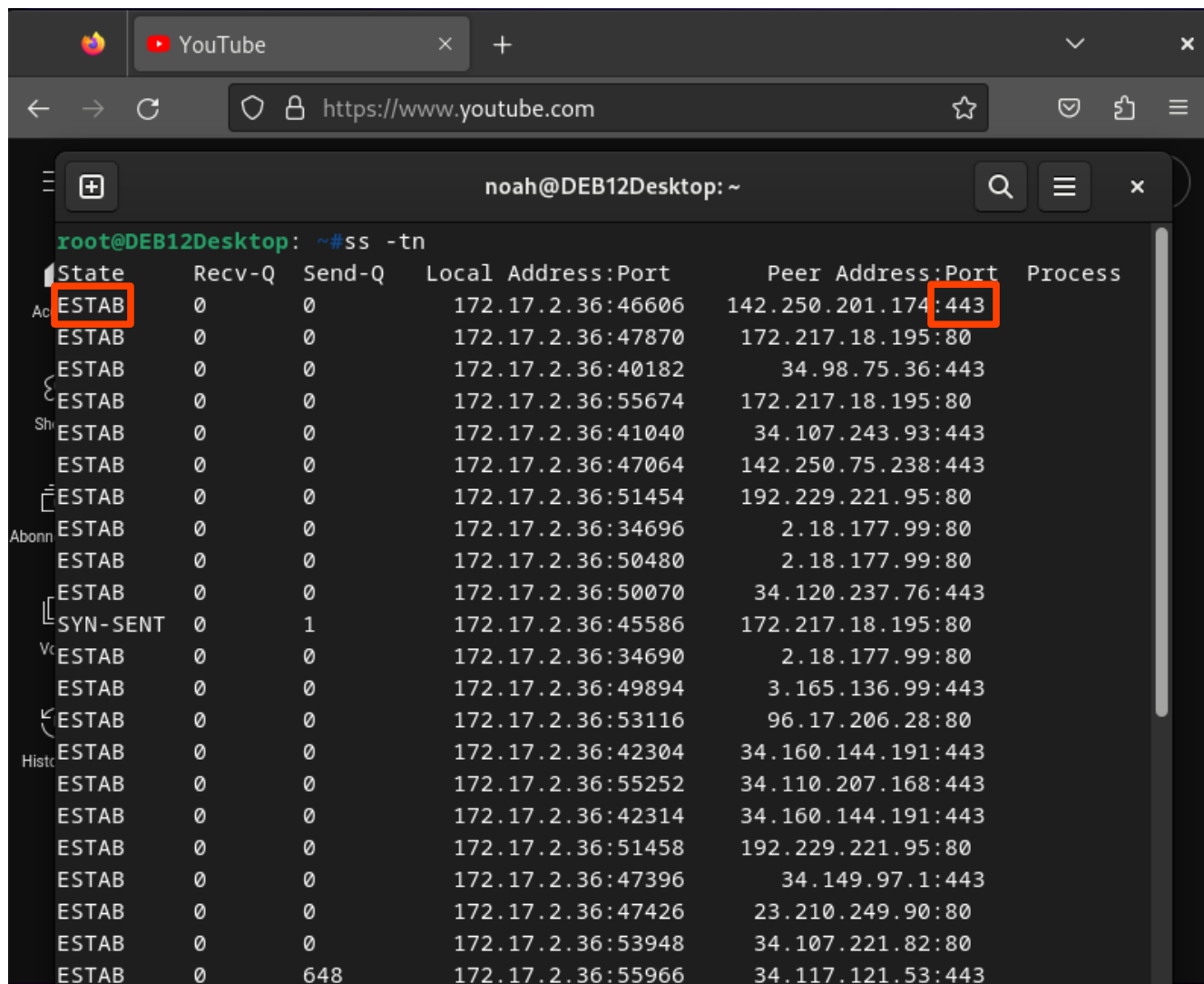
→ On constate qu'il n'y a plus de **connexions TCP établies** depuis la machine serveur :

```

root@DEB12Server: ~#ss -tan4
State      Recv-Q      Send-Q      Local Address:Port      Peer Address:Port      Process
LISTEN     0            128         0.0.0.0:22               0.0.0.0:*

```

→ On ouvre une **page Web** sur la machine desktop puis on affiche les **connexions TCP établies** sur le terminal. On voit que le port de connexion du côté **application** est le **port HTTPS (443)** :



```
noah@DEB12Desktop: ~#ss -tn
State      Recv-Q  Send-Q  Local Address:Port  Peer Address:Port  Process
Ac ESTAB    0       0       172.17.2.36:46606  142.250.201.174:443
ESTAB      0       0       172.17.2.36:47870  172.217.18.195:80
ESTAB      0       0       172.17.2.36:40182  34.98.75.36:443
ESTAB      0       0       172.17.2.36:55674  172.217.18.195:80
Sh ESTAB    0       0       172.17.2.36:41040  34.107.243.93:443
ESTAB      0       0       172.17.2.36:47064  142.250.75.238:443
ESTAB      0       0       172.17.2.36:51454  192.229.221.95:80
Abonn ESTAB    0       0       172.17.2.36:34696  2.18.177.99:80
ESTAB      0       0       172.17.2.36:50480  2.18.177.99:80
ESTAB      0       0       172.17.2.36:50070  34.120.237.76:443
SYN-SENT   0       1       172.17.2.36:45586  172.217.18.195:80
Vc ESTAB    0       0       172.17.2.36:34690  2.18.177.99:80
ESTAB      0       0       172.17.2.36:49894  3.165.136.99:443
ESTAB      0       0       172.17.2.36:53116  96.17.206.28:80
Histc ESTAB    0       0       172.17.2.36:42304  34.160.144.191:443
ESTAB      0       0       172.17.2.36:55252  34.110.207.168:443
ESTAB      0       0       172.17.2.36:42314  34.160.144.191:443
ESTAB      0       0       172.17.2.36:51458  192.229.221.95:80
ESTAB      0       0       172.17.2.36:47396  34.149.97.1:443
ESTAB      0       0       172.17.2.36:47426  23.210.249.90:80
ESTAB      0       0       172.17.2.36:53948  34.107.221.82:80
ESTAB      0       648    172.17.2.36:55966  34.117.121.53:443
```

