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1. Rappels

- Récupération des derniers paquets disponibles

```
root@DEB12Server: ~#apt-get update
Réception de :1 http://security.debian.org/debian-security bookworm-security InRelease [48,0 kB]
Atteint :2 http://deb.debian.org/debian bookworm InRelease
Réception de :3 http://deb.debian.org/debian bookworm-updates InRelease [52,1 kB]
Réception de :4 http://security.debian.org/debian-security bookworm-security/main Sources [73,2 kB]
Réception de :5 http://security.debian.org/debian-security bookworm-security/main amd64 Packages [4 kB]
307 ko réceptionnés en 4s (68,8 ko/s)
Lecture des listes de paquets... Fait
root@DEB12Server: ~#_
```

- Vérification de la présence de la variable environnement PS1 et de l'alias grep

```
GNU nano 7.2 /root/.bashrc
# ~/.bashrc: executed by bash(1) for non-login shells.

# Note: PS1 and umask are already set in /etc/profile. You should not
# need this unless you want different defaults for root.
# PS1='${debian_chroot:+($debian_chroot)}\h:\w\$ '
# umask 022

# You may uncomment the following lines if you want `ls' to be colorized:
# export LS_OPTIONS='--color=auto'
# eval "$(dircolors)"
# alias ls='ls $LS_OPTIONS'
# alias ll='ls $LS_OPTIONS -l'
# alias l='ls $LS_OPTIONS -lA'
alias grep='grep --color=auto'
#
# Some more alias to avoid making mistakes:
# alias rm='rm -i'
# alias cp='cp -i'
# alias mv='mv -i'
PS1='\[\033[01;32m\]\u@\h\[\033[00m\]:\[\033[01;34m\] \w\$ \[\033[00m\]'
```

- Déconnexion et reconnexion pour assurer la lecture du bashrc

```
root@DEB12Server: ~#exit
```

- On renomme la machine en DS1 en modifiant les fichiers hostname et hosts

```
GNU nano 7.2 /etc/hostname
DS1
```

```
GNU nano 7.2 /etc/hosts
127.0.0.1    localhost
127.0.1.1    DS1

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

- Redémarrage de la machine afin d'appliquer les modifications

```
Debian GNU/Linux 12 DS1 tty1
DS1 login: root
Password:
```

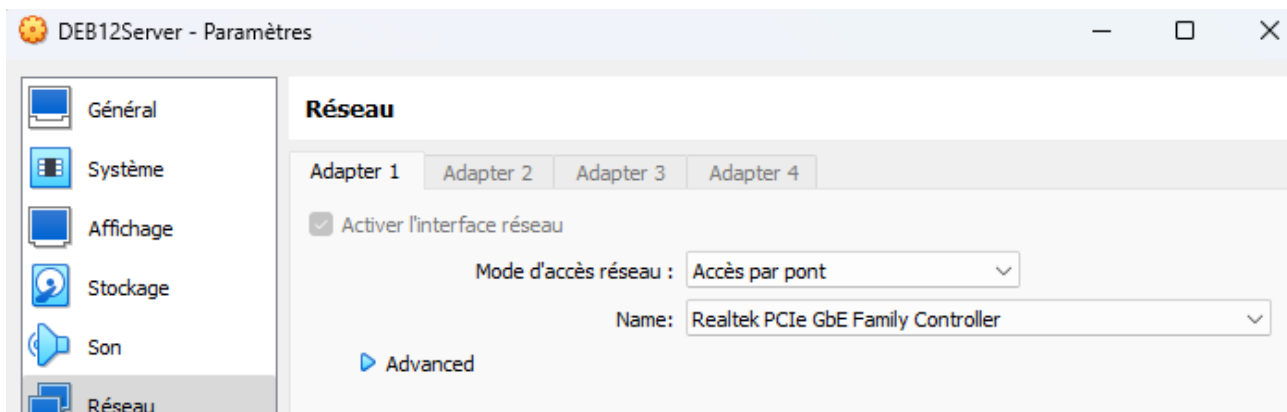
```
root@DS1: ~#_
```

2. Configuration réseau du serveur DS1

- Vérification de la configuration actuelle → NAT

```
root@DS1: ~#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
0
    link/ether 08:00:27:4e:88:2c brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s3
        valid_lft 86320sec preferred_lft 86320sec
    inet6 fe80::a00:27ff:fe4e:882c/64 scope link
        valid_lft forever preferred_lft forever
root@DS1: ~#
```

- Passage de la carte réseau en mode accès pont



- Désactivation de la carte réseau enp0s3 pour la modifier

```
root@DS1: ~#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/enp0s3/08:00:27:4e:88:2c
Sending on   LPF/enp0s3/08:00:27:4e:88:2c
Sending on   Socket/fallback
DHCPRELEASE of 10.0.2.15 on enp0s3 to 10.0.2.2 port 67
root@DS1: ~#
```

- Modification de la configuration IP afin de passer en statique

```
# 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 172.17.101.207
netmask 255.255.0.0
network 172.17.0.0
broadcast 172.17.255.255
gateway 172.17.250.2
dns-nameservers 172.17.254.1_
```

- Réactivation de la carte réseau et vérification de l'ip actuelle

```
root@DS1: ~#ifup enp0s3
root@DS1: ~#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 08:00:27:4e:88:2c brd ff:ff:ff:ff:ff:ff
    inet 172.17.101.207/16 brd 172.17.255.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe4e:882c/64 scope link
        valid_lft forever preferred_lft forever
root@DS1: ~#
```

- Vérification de la prise en compte de la passerelle par défaut

```
root@DS1: ~#ip route
default via 172.17.250.2 dev enp0s3 onlink
172.17.0.0/16 dev enp0s3 proto kernel scope link src 172.17.101.207
root@DS1: ~#_
```

- Vérification de la bonne connectivité vers la passerelle ainsi que vers le serveur DNS

```

root@DS1: ~#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=0.830 ms
64 bytes from 172.17.250.2: icmp_seq=2 ttl=255 time=0.881 ms
64 bytes from 172.17.250.2: icmp_seq=3 ttl=255 time=0.815 ms
^C
--- 172.17.250.2 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 0.815/0.842/0.881/0.028 ms
root@DS1: ~#ping 172.17.254.1
PING 172.17.254.1 (172.17.254.1) 56(84) bytes of data.
64 bytes from 172.17.254.1: icmp_seq=1 ttl=128 time=1.41 ms
64 bytes from 172.17.254.1: icmp_seq=2 ttl=128 time=0.555 ms
64 bytes from 172.17.254.1: icmp_seq=3 ttl=128 time=0.565 ms
^C
--- 172.17.254.1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2012ms
rtt min/avg/max/mdev = 0.555/0.843/1.410/0.400 ms
root@DS1: ~#_

```

- Vérification de l'accès à internet ainsi que de la résolution DNS

```

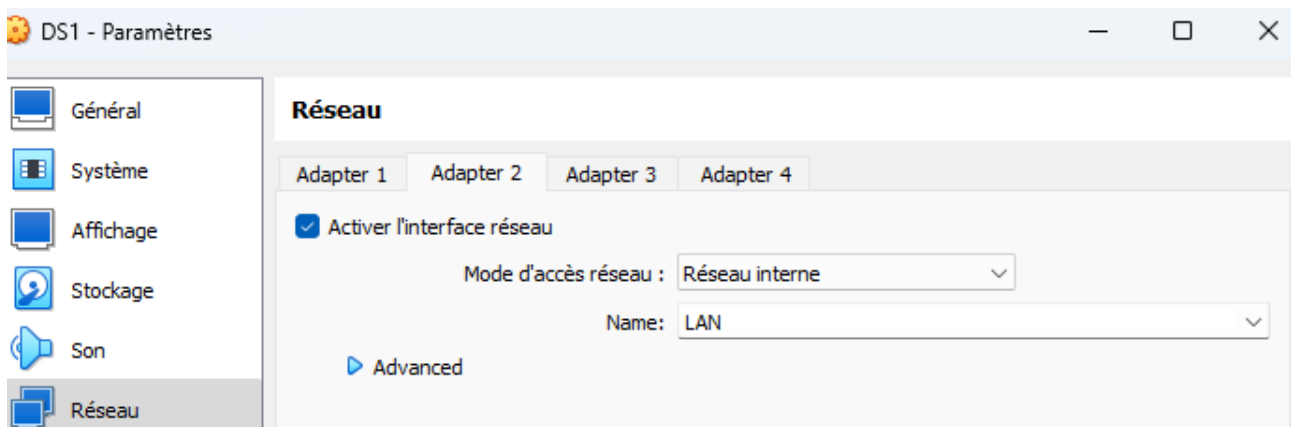
root@DS1: ~#ping -c 4 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=117 time=32.3 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=117 time=33.2 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=117 time=33.5 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=117 time=76.8 ms

--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3006ms
rtt min/avg/max/mdev = 32.317/43.932/76.780/18.969 ms
root@DS1: ~#ping www.ac-nice.fr
PING cs234.wpc.alphacdn.net (93.184.221.161) 56(84) bytes of data.
64 bytes from 93.184.221.161 (93.184.221.161): icmp_seq=1 ttl=56 time=32.6 ms
64 bytes from 93.184.221.161 (93.184.221.161): icmp_seq=2 ttl=56 time=33.4 ms
64 bytes from 93.184.221.161 (93.184.221.161): icmp_seq=3 ttl=56 time=33.1 ms
^C
--- cs234.wpc.alphacdn.net ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2006ms
rtt min/avg/max/mdev = 32.597/33.012/33.382/0.322 ms
root@DS1: ~#_

```

3. Ajout de l'interface enp0s8

- Extinction de la machine
- Création de la seconde carte virtuelle depuis le gestionnaire de machines



- Vérification de la prise en compte de l'interface enp0s8

```
root@DS1: ~#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 08:00:27:57:42:18 brd ff:ff:ff:ff:ff:ff
    inet 172.17.101.207/16 brd 172.17.255.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe57:4218/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 08:00:27:f1:94:09 brd ff:ff:ff:ff:ff:ff
root@DS1: ~#
```

- Modification de la configuration ip

```
# The secondary network interface enp0s8
allow-hotplug enp0s8
iface enp0s8 inet static
address 192.168.4.254
netmask 255.255.255.0
network 192.168.4.0
broadcast 192.168.4.255
```

- On lance la carte enp0s8 et on vérifie sa configuration IP

```
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:f1:94:09 brd ff:ff:ff:ff:ff:ff
    inet 192.168.4.254/24 brd 192.168.4.255 scope global enp0s8
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fef1:9409/64 scope link
        valid_lft forever preferred_lft forever
root@DS1: ~#
```

- Vérification de la bonne configuration réseau de la machine DS1 en pingant les deux interfaces

```

root@DS1: ~#ping 192.168.4.254
PING 192.168.4.254 (192.168.4.254) 56(84) bytes of data.
64 bytes from 192.168.4.254: icmp_seq=1 ttl=64 time=0.024 ms
64 bytes from 192.168.4.254: icmp_seq=2 ttl=64 time=0.035 ms
64 bytes from 192.168.4.254: icmp_seq=3 ttl=64 time=0.036 ms
^C
--- 192.168.4.254 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2031ms
rtt min/avg/max/mdev = 0.024/0.031/0.036/0.005 ms
root@DS1: ~#ping 172.17.101.207
PING 172.17.101.207 (172.17.101.207) 56(84) bytes of data.
64 bytes from 172.17.101.207: icmp_seq=1 ttl=64 time=0.022 ms
64 bytes from 172.17.101.207: icmp_seq=2 ttl=64 time=0.030 ms
64 bytes from 172.17.101.207: icmp_seq=3 ttl=64 time=0.035 ms
^C
--- 172.17.101.207 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2039ms
rtt min/avg/max/mdev = 0.022/0.029/0.035/0.005 ms
root@DS1: ~#

```

- Table de routage de DS1

```

root@DS1: ~#ip route
default via 172.17.250.2 dev enp0s3 onlink
172.17.0.0/16 dev enp0s3 proto kernel scope link src 172.17.101.207
192.168.4.0/24 dev enp0s8 proto kernel scope link src 192.168.4.254
root@DS1: ~#_

```

4. Transformation du serveur en routeur

- On met 1 comme valeur à ip_forward afin d'activer le routage

```

root@DS1: ~#echo 1 > /proc/sys/net/ipv4/ip_forward
root@DS1: ~#cat /proc/sys/net/ipv4/ip_forward
1
root@DS1: ~#_

```

- On décommente la ligne net,ipv4,ip_forward = 1 afin que la valeur modifiée reste à chaque redémarrage

```
#####
# 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

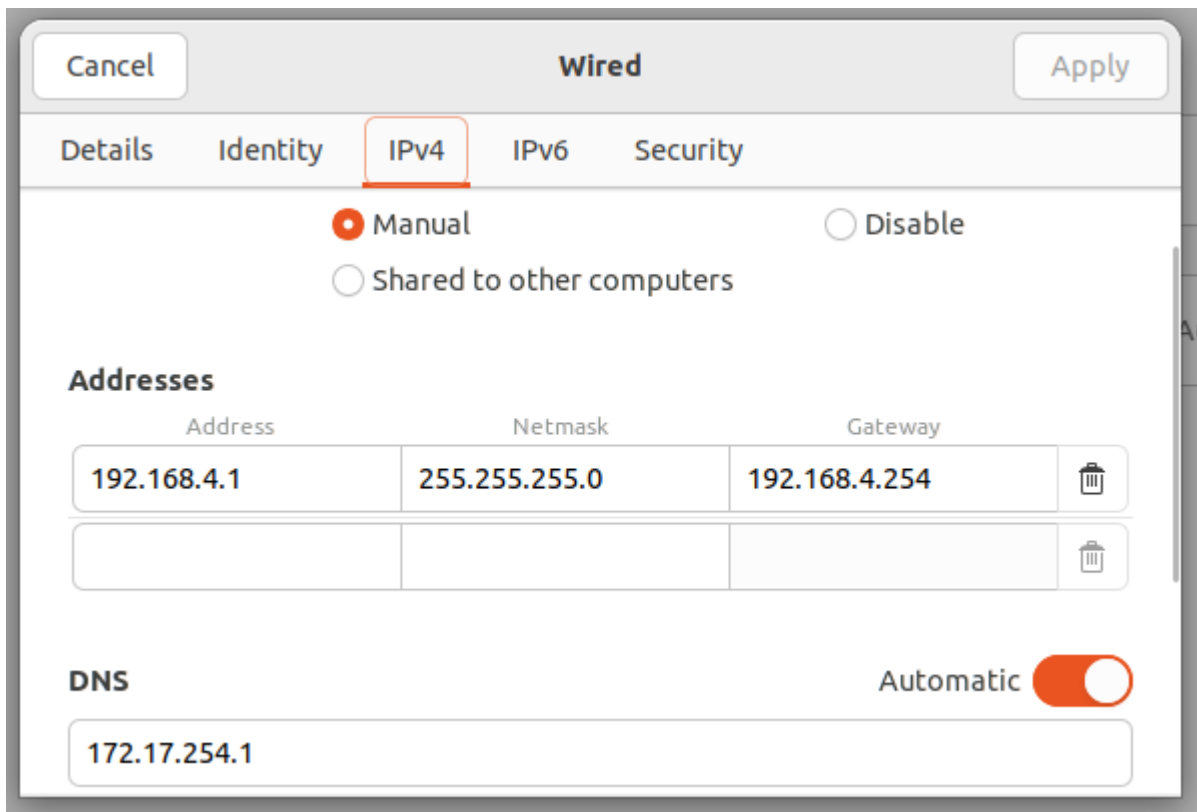
root@DS1: ~#_
```

- Redémarrage de la machine afin de constater que la valeur 1 se soit bien remise en place

```
root@DS1: ~#cat /proc/sys/net/ipv4/ip_forward
1
root@DS1: ~#_
```

5. Configuration du poste client Ubuntu

- Création de la machine Ubuntu
- Mise en place de la configuration ip de UD1



Vérification de la présence de la nouvelle ip

```
ud1@UD1-User:~$ 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
        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 08:00:27:7c:24:17 brd ff:ff:ff:ff:ff:ff
    inet 192.168.4.1/24 brd 192.168.4.255 scope global noprefixroute enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a2bd:4625:3156:b2ff/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
ud1@UD1-User:~$
```

- Vérification de la table de routage de UD1 pour vérifier la présence de la bonne passerelle

```
ud1@UD1-User:~$ ip route
default via 192.168.4.254 dev enp0s3 proto static metric 20100
169.254.0.0/16 dev enp0s3 scope link metric 1000
192.168.4.0/24 dev enp0s3 proto kernel scope link src 192.168.4.1 metric 100
ud1@UD1-User:~$
```

- Ping depuis UD1 des deux interfaces du serveur DS1

```
ud1@UD1-User:~$ ping 172.17.101.207
PING 172.17.101.207 (172.17.101.207) 56(84) bytes of data.
64 bytes from 172.17.101.207: icmp_seq=1 ttl=64 time=0.498 ms
64 bytes from 172.17.101.207: icmp_seq=2 ttl=64 time=0.704 ms
64 bytes from 172.17.101.207: icmp_seq=3 ttl=64 time=0.669 ms
64 bytes from 172.17.101.207: icmp_seq=4 ttl=64 time=0.518 ms
64 bytes from 172.17.101.207: icmp_seq=5 ttl=64 time=0.584 ms
^C
--- 172.17.101.207 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4245ms
rtt min/avg/max/mdev = 0.498/0.594/0.704/0.081 ms
ud1@UD1-User:~$ ping 192.168.4.254
PING 192.168.4.254 (192.168.4.254) 56(84) bytes of data.
64 bytes from 192.168.4.254: icmp_seq=1 ttl=64 time=0.718 ms
64 bytes from 192.168.4.254: icmp_seq=2 ttl=64 time=0.746 ms
64 bytes from 192.168.4.254: icmp_seq=3 ttl=64 time=0.790 ms
^C
--- 192.168.4.254 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2041ms
rtt min/avg/max/mdev = 0.718/0.751/0.790/0.029 ms
ud1@UD1-User:~$
```

- Tentative de ping sur le routeur Cisco

```
ud1@UD1-User:~$ ping 172.17.250.2
PING 172.17.250.2 (172.17.250.2) 56(84) bytes of data.
^C
--- 172.17.250.2 ping statistics ---
9 packets transmitted, 0 received, 100% packet loss, time 8212ms
ud1@UD1-User:~$
```

On constate que le ping n'a pas fonctionné.

Cela est dû au fait qu'il n'y a pas eu de translation d'ip lorsque UD1 est sorti de son réseau pour aller dans le réseau 172.17.0.0, UD1 n'a donc pas pu recevoir la réponse vu qu'il n'y a pas eu de changement dans l'ip source.

- Installation du packet iptables

```

root@DS1: ~#apt-get install iptables
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 :
  libip6tc2 libnetfilter-conntrack3 libnfnetlink0
Paquets suggérés :
  firewallld
Les NOUVEAUX paquets suivants seront installés :
  iptables libip6tc2 libnetfilter-conntrack3 libnfnetlink0
0 mis à jour, 4 nouvellement installés, 0 à enlever et 67 non mis à jour.
Il est nécessaire de prendre 435 ko dans les archives.
Après cette opération, 2 728 ko d'espace disque supplémentaires seront utilisés.
Souhaitez-vous continuer ? [O/n] O
0% [En cours]_

```

■ Mise en place du masquerade

```

root@DS1: ~#iptables -t nat -A POSTROUTING -o enp0s3 -s 192.168.4.0/24 -j MASQUERADE
root@DS1: ~#_

```

■ Vérification de la prise en compte de la règle :

```

Chain POSTROUTING (policy ACCEPT 0 packets, 0 bytes)
  pkts bytes target     prot opt in     out     source               destination
    2   120 MASQUERADE  all  --  any    enp0s3  192.168.4.0/24      anywhere
root@DS1: ~#_

```

■ Installation du packet iptables-persistent afin de garder la configuration

Configuration de iptables-persistent	
Les règles actuelles peuvent être enregistrées dans le fichier de configuration « /etc/iptables/rules.v4 ». Ces règles seront chargées au prochain redémarrage de la machine. Les règles ne sont enregistrées automatiquement que lors de l'installation du paquet. Veuillez consulter la page de manuel de iptables-save(8) pour connaître la manière de garder à jour le fichier des règles. Faut-il enregistrer les règles IPv4 actuelles ?	
☒ Oui	☐ Non

■ Redémarrage du système (Reboot)

■ Vérification de la présence de la règle NAT

```

root@DS1: ~#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  --  192.168.4.0/24          anywhere
root@DS1: ~#_

```

■ Vérification du bon fonctionnement

```

ud1@UD1-User:~$ 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=254 time=1.55 ms
64 bytes from 172.17.250.2: icmp_seq=2 ttl=254 time=1.40 ms
64 bytes from 172.17.250.2: icmp_seq=3 ttl=254 time=1.20 ms
^C
--- 172.17.250.2 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2054ms
rtt min/avg/max/mdev = 1.196/1.384/1.554/0.146 ms
ud1@UD1-User:~$

```

■ Installation du packet tcpdump

```

root@DS1: ~#apt-get install tcpdump
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 :
  libpcap0.8
Les NOUVEAUX paquets suivants seront installés :
  libpcap0.8 tcpdump
0 mis à jour, 2 nouvellement installés, 0 à enlever et 67 non mis à jour.
Il est nécessaire de prendre 624 ko dans les archives.
Après cette opération, 1 741 ko d'espace disque supplémentaires seront utilisés.
Souhaitez-vous continuer ? [0/n]

```

■ Capture des trames ICMP passant par enp0s8 et enp0s3

```
ud1@UD1-User:~$ ping 172.17.101.207
PING 172.17.101.207 (172.17.101.207) 56(84) bytes of data.
64 bytes from 172.17.101.207: icmp_seq=1 ttl=64 time=0.781 ms
64 bytes from 172.17.101.207: icmp_seq=2 ttl=64 time=0.664 ms
64 bytes from 172.17.101.207: icmp_seq=3 ttl=64 time=0.930 ms
64 bytes from 172.17.101.207: icmp_seq=4 ttl=64 time=0.720 ms
64 bytes from 172.17.101.207: icmp_seq=5 ttl=64 time=0.689 ms
64 bytes from 172.17.101.207: icmp_seq=6 ttl=64 time=0.594 ms
64 bytes from 172.17.101.207: icmp_seq=7 ttl=64 time=0.580 ms
64 bytes from 172.17.101.207: icmp_seq=8 ttl=64 time=0.750 ms
64 bytes from 172.17.101.207: icmp_seq=9 ttl=64 time=0.938 ms
64 bytes from 172.17.101.207: icmp_seq=10 ttl=64 time=0.778 ms
64 bytes from 172.17.101.207: icmp_seq=11 ttl=64 time=0.813 ms
64 bytes from 172.17.101.207: icmp_seq=12 ttl=64 time=0.851 ms
64 bytes from 172.17.101.207: icmp_seq=13 ttl=64 time=0.616 ms
^C
--- 172.17.101.207 ping statistics ---
13 packets transmitted, 13 received, 0% packet loss, time 12417ms
rtt min/avg/max/mdev = 0.580/0.746/0.938/0.113 ms
ud1@UD1-User:~$ ping 172.17.254.2
PING 172.17.254.2 (172.17.254.2) 56(84) bytes of data.
64 bytes from 172.17.254.2: icmp_seq=1 ttl=127 time=1.42 ms

Server [En fonction] - Oracle VM VirtualBox
Machine Écran Entrée Périphériques Aide
17:48:52.078372 IP 192.168.4.1 > 172.17.101.207: ICMP echo request, id 12, seq 2, length 64
17:48:52.078402 IP 172.17.101.207 > 192.168.4.1: ICMP echo reply, id 12, seq 2, length 64
17:48:53.079967 IP 192.168.4.1 > 172.17.101.207: ICMP echo request, id 12, seq 3, length 64
17:48:53.080009 IP 172.17.101.207 > 192.168.4.1: ICMP echo reply, id 12, seq 3, length 64
17:48:54.099807 IP 192.168.4.1 > 172.17.101.207: ICMP echo request, id 12, seq 4, length 64
17:48:54.099841 IP 172.17.101.207 > 192.168.4.1: ICMP echo reply, id 12, seq 4, length 64
17:48:55.117024 IP 192.168.4.1 > 172.17.101.207: ICMP echo request, id 12, seq 5, length 64
17:48:55.117051 IP 172.17.101.207 > 192.168.4.1: ICMP echo reply, id 12, seq 5, length 64
^C
10 packets captured
10 packets received by filter
0 packets dropped by kernel
root@DS1: ~#tcpdump -i enp0s3 icmp -n
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode
listening on enp0s3, link-type EN10MB (Ethernet), snapshot length 262144 bytes
17:50:08.542535 IP 172.17.101.207 > 172.17.254.2: ICMP echo request, id 14, seq 1, length 64
17:50:08.542988 IP 172.17.254.2 > 172.17.101.207: ICMP echo reply, id 14, seq 1, length 64
17:50:09.556506 IP 172.17.101.207 > 172.17.254.2: ICMP echo request, id 14, seq 2, length 64
17:50:09.557073 IP 172.17.254.2 > 172.17.101.207: ICMP echo reply, id 14, seq 2, length 64
17:50:10.558184 IP 172.17.101.207 > 172.17.254.2: ICMP echo request, id 14, seq 3, length 64
17:50:10.558764 IP 172.17.254.2 > 172.17.101.207: ICMP echo reply, id 14, seq 3, length 64
17:50:11.824024 IP 172.17.101.207 > 172.17.254.2: ICMP echo request, id 14, seq 4, length 64
17:50:11.825373 IP 172.17.254.2 > 172.17.101.207: ICMP echo reply, id 14, seq 4, length 64
17:50:13.197404 IP 172.17.101.207 > 172.17.254.2: ICMP echo request, id 14, seq 5, length 64
17:50:13.197889 IP 172.17.254.2 > 172.17.101.207: ICMP echo reply, id 14, seq 5, length 64
```

- Ping de ac-nice pour vérifier la bonne translation et la résolution DNS

```
ud1@UD1-User:~$ ping www.ac-nice.fr
PING cs234.wpc.alphacdn.net (93.184.221.161) 56(84) bytes of data.
64 bytes from 93.184.221.161 (93.184.221.161): icmp_seq=1 ttl=55 time=33.2 ms
64 bytes from 93.184.221.161 (93.184.221.161): icmp_seq=2 ttl=55 time=33.1 ms
^C
--- cs234.wpc.alphacdn.net ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1631ms
rtt min/avg/max/mdev = 33.121/33.153/33.185/0.032 ms
ud1@UD1-User:~$
```

- Vérification de la possibilité d'aller sur internet

