SOMMAIRE

1. Installation du paquetage BIND

Pour installer le paquet BIND je tapes les commandes **apt-get update** et ensuite **apt -get intsall bind9**

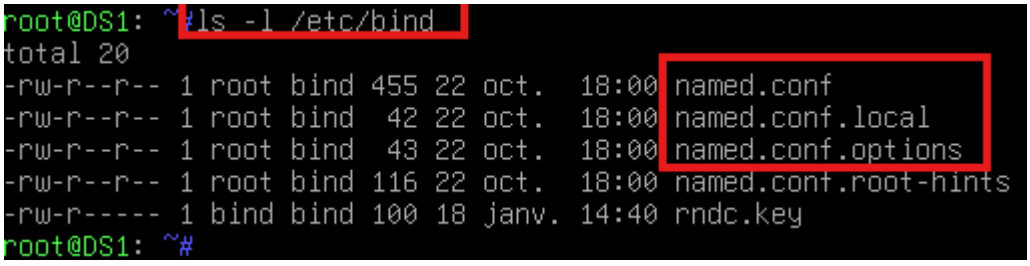
```
root@DS1: ~# apt-get update
Atteint : 1 http://deb.debian.org/debian trixie InRelease
Réception de : 2 http://security.debian.org/debian-security trixie-security InRelease [43,4 kB]
Atteint : 3 http://deb.debian.org/debian trixie-updates InRelease
43,4 ko réceptionnés en 1s (29,2 ko/s)
Lecture des listes de paquets... Fait
root@DS1: ~# apt-get install bind9
Lecture des listes de paquets... Fait
Construction de l'arbre des dépendances... Fait
Lecture des informations d'état... Fait
bind9 est déjà la version la plus récente (1:9.20.15-1~deb13u1).
0 mis à jour, 0 nouvellement installés, 0 à enlever et 45 non mis à jour.
root@DS1: ~#_
```

Je démarre le service DNS avec la commande **systemctl start bind9**

```
root@DS1: ~# systemctl start bind9
root@DS1: ~#
```

avec la commande **nano /etc/named.conf** je regarde que les fichiers sont bien inclus dedans

je liste les fichiers qui se trouvent dans le dossier bind avec la commande **ls -l /etc/bind**



avec la commande **cd** je me déplace dans le répertoire bind et avec la commande **cp** je copie les fichiers pour les sauvegarder en cas de mauvaise manipulation

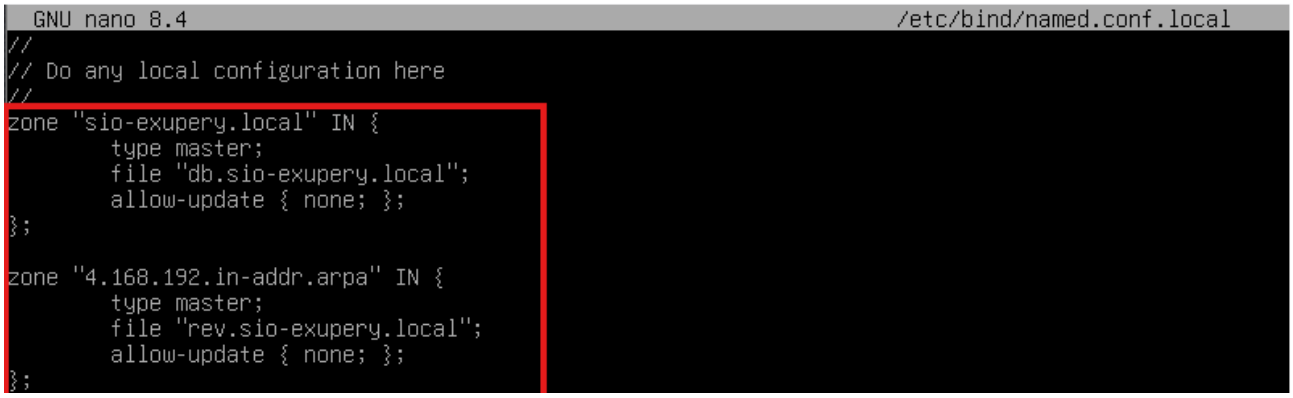
```
root@DS1: ~#cd /etc/bind
root@DS1: /etc/bind#cp named.conf named.conf.sauv
root@DS1: /etc/bind#cp named.conf.options named.conf.options.sauv
root@DS1: /etc/bind#cp named.conf.local named.conf.local.sauv
root@DS1: /etc/bind#
```

je vérifie l'état du service bind avec la commande **systemctl status bind9**

```
root@DS1: ~#systemctl status bind9
● named.service - BIND Domain Name Server
     Loaded: loaded (/usr/lib/systemd/system/named.service; enabled; preset: enabled)
     Active: active (running) since Thu 2026-01-15 15:05:40 CET; 10min ago
 Invocation: 69f1d63606284628a776f7f0f49ab9ad
       Docs: man:named(8)
   Main PID: 1016 (named)
     Status: "running"
      Tasks: 8 (limit: 2303)
     Memory: 30.7M (peak: 32.7M)
        CPU: 71ms
     CGroup: /system.slice/named.service
             └─1016 /usr/sbin/named -f -u bind

janv. 15 15:05:40 DS1 named[1016]: network unreachable resolving './DNSKEY/IN': 2001:500:2d::d#53
janv. 15 15:05:40 DS1 named[1016]: network unreachable resolving './NS/IN': 2001:500:2d::d#53
janv. 15 15:05:40 DS1 named[1016]: network unreachable resolving './DNSKEY/IN': 2001:500:12::d0d#53
janv. 15 15:05:40 DS1 named[1016]: network unreachable resolving './NS/IN': 2001:500:12::d0d#53
janv. 15 15:05:40 DS1 named[1016]: network unreachable resolving './DNSKEY/IN': 2001:500:a8::e#53
janv. 15 15:05:40 DS1 named[1016]: network unreachable resolving './NS/IN': 2001:500:a8::e#53
janv. 15 15:05:40 DS1 named[1016]: network unreachable resolving './DNSKEY/IN': 2001:7fd::1#53
janv. 15 15:05:40 DS1 named[1016]: network unreachable resolving './NS/IN': 2001:7fd::1#53
janv. 15 15:05:50 DS1 named[1016]: managed-keys-zone: Unable to fetch DNSKEY set '.': timed out
janv. 15 15:05:50 DS1 named[1016]: resolver priming query complete: timed out
root@DS1: ~#_
```

2.9. Zone de recherche directe et zone de recherche inversée

Je renseigne dans le fichier named.conf.local le nom des zones ainsi que les fichiers zones avec la commande **nano /etc/bind/named.conf.local**



2.10. Construction des fichiers de zone

Je créer le fichier rev.sio-exupery.local avec la commande **touch** et ensuite je complète le fichier avec la commande **nano**

```
  GNU nano 8.4                                    /var/cache/bind/rev.sio-exupery.local *
; Fichier pour la résolution inverse
$TTL 86400
@ IN SOA DS1.sio-exupery.local. root.sio-exupery.local. (
        2026011301
        1w
        1d
        4w
        1w )
@ IN NS DS1.sio-exupery.local.
254 IN PTR DS1.sio-exupery.local.
1 IN PTR DD1.sio-exupery.local._
```

J’attribue aux 2 fichiers de zone au groupe bind

```
root@DS1: ~#chgrp bin /var/cache/bind/*
root@DS1: ~#chmod 664 /var/cache/bind/*
root@DS1: ~#_
```

Avec la commande **ls -l /var/cache/bind** je vérifie que les fichiers appartiennent bien au groupe bind

```
root@DS1: ~#ls -l /var/cache/bind
total 12
-rw-rw-r-- 1 root bind    0 15 janv. 15:27 db.sio-exupery.local
-rw-rw-r-- 1 bind bind  287 15 janv. 15:06 managed-keys.bind
-rw-rw-r-- 1 bind bind 1089 15 janv. 15:05 managed-keys.bind.jnl
-rw-rw-r-- 1 root bind  234 15 janv. 15:42 rev.sio-exupery.local
root@DS1: ~#
```

Je vérifie la même appartenance du groupe pour le répertoire

```
root@DS1: ~#ls -ld /var/cache/bind
drwxrwxr-x 2 root bind 4096 15 janv. 15:42 /var/cache/bind
root@DS1:  #_
```

2.11. Démarrage et tests du service

Avec la commande **nano /etc/hosts** je modifie le fichier hosts

```
 GNU nano 8.4                                                    /etc/hosts *
127.0.0.1       localhost
192.168.4.254   DS1.sio-exupery.local   DS1

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

Je désactive les deux interfaces réseaux

```
root@DS1: ~#ifdown enp0s3
root@DS1: ~#ifdown enp0s8
root@DS1: ~#_
```

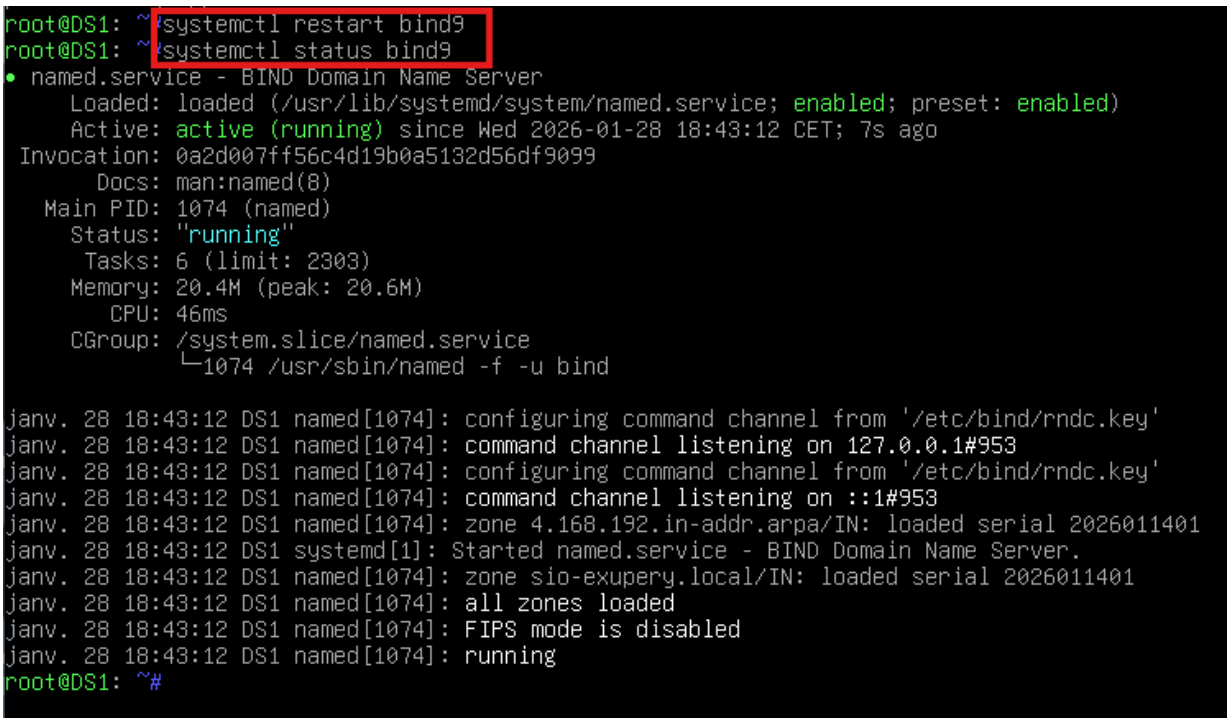
Je supprime le serveur DNS ROI

```
 GNU nano 8.4                                                    /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
auto enp0s3
iface enp0s3 inet static
address 172.17.101.218
netmask 255.255.0.0
network 172.17.0.0
gateway 172.17.250.3
broadcast 172.17.255.255
dns-nameservers 172.17.254.1

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
dns-search sio-exupery.local
dns-domain sio-exupery.local
dns-nameservers 192.168.4.254
# This is an autoconfigured IPv6 interface
#iface enp0s3 inet6 auto
```

Je réactive les deux interfaces avec la commande **ifup**

```
root@DS1: ~#ifup enp0s3
root@DS1: ~#ifup enp0s8
root@DS1: ~#_
```

Je relance le serveur



Je constate que le service est bien lancé

```
root@DS1: /etc/bind#named-checkconf
root@DS1: /etc/bind#cd /var/cache/bind
root@DS1: /var/cache/bind#named-checkzone -d sio-exupery.local db.sio-exupery.local
loading "sio-exupery.local" from "db.sio-exupery.local" class "IN"
zone sio-exupery.local/IN: loaded serial 2026011401
OK
```

```
root@DS1: /var/cache/bind#named-checkzone -d 4.168.192.in-addr.arpa rev.sio-exupery.local
loading "4.168.192.in-addr.arpa" from "rev.sio-exupery.local" class "IN"
zone 4.168.192.in-addr.arpa/IN: loaded serial 2026011401
OK
```

Je constate également avec les test supplémentaires que le service est bien démarré

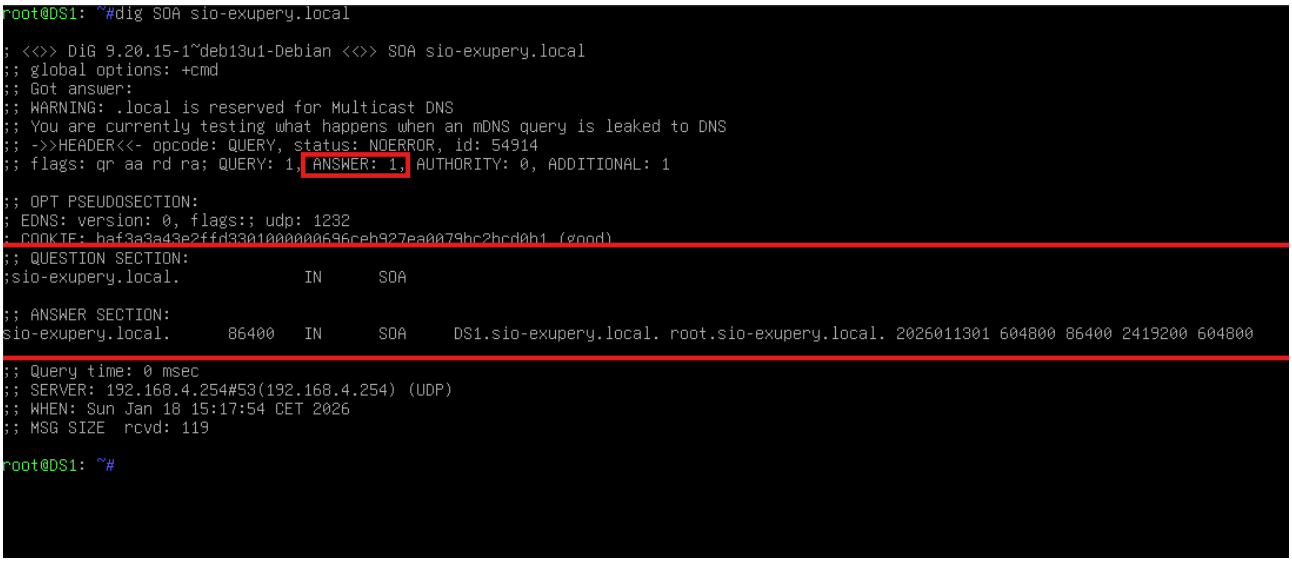
Je vérifie la présence du paquetage dnsutil à l'aide de la commande **grep**

```
root@DS1: /var/cache/bind#dpkg -l | grep -i dnsutils
ii  bind9-dnsutils                1:9.20.15-1~deb13u1              amd64        Clients provided with BIND 9
root@DS1: /var/cache/bind#
```

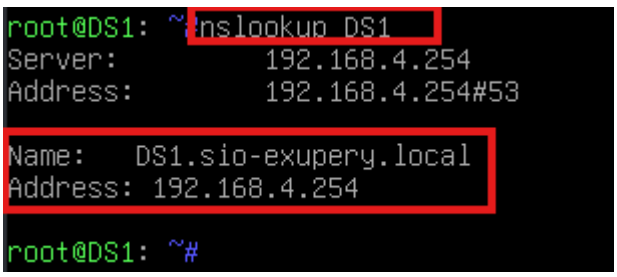
Je saisie la comande dig DD1.sio-exupery.local

```
root@DS1: /var/cache/bind#dig DD1.sio-exupery.local

; <<>> DiG 9.20.15-1~deb13u1-Debian <<>> DD1.sio-exupery.local
;; global options: +cmd
;; Got answer:
;; WARNING: .local is reserved for Multicast DNS
;; You are currently testing what happens when an mDNS query is leaked to DNS
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 47840
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 78ec0cb0b5fb3af001000000696ceb51f002241e3040231b (good)
;; QUESTION SECTION:
;DD1.sio-exupery.local.         IN      A

;; ANSWER SECTION:
DD1.sio-exupery.local.  86400   IN      A       192.168.4.1

;; Query time: 0 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Sun Jan 18 15:16:49 CET 2026
;; MSG SIZE  rcvd: 94

root@DS1: /var/cache/bind#
```

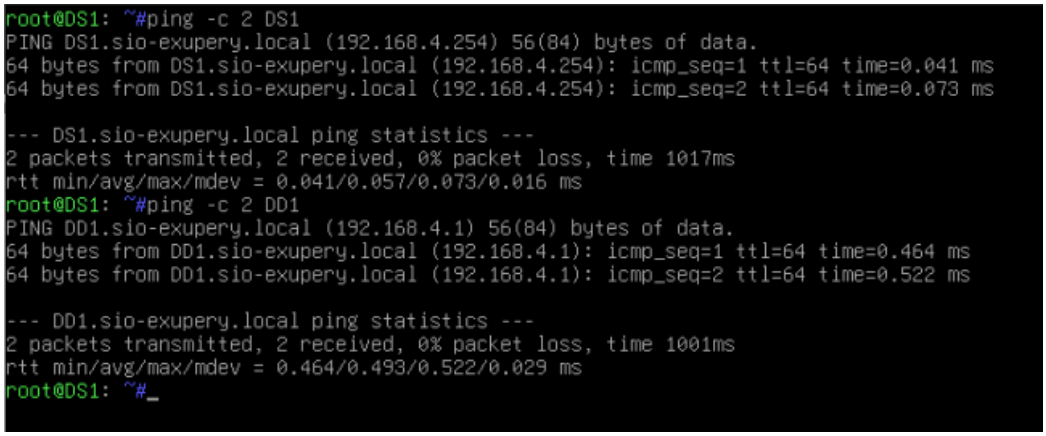
Je saisie la commande dig SOA sio.exupery.local



Je ssaisie la commande nslookup DS1



Je vérifie la résolution DNS interne en faisant un ping sur DS1 et DD1



2.12. Outils de test de résolution de noms

Je vérifie la présence du paquetage dnsutils

```
root@DS1: /var/cache/bind#dpkg -l | grep -i dnsutils
ii  bind9-dnsutils                1:9.20.15-1~deb13u1                amd64        Clients provided with BIND 9
root@DS1: /var/cache/bind#dig DD1.sio-exupery.local
```

```
root@DS1: ~#dig DD1.sio-exupery.local

; <<>> DiG 9.20.15-1~deb13u1-Debian <<>> DD1.sio-exupery.local
;; global options: +cmd
;; Got answer:
;; WARNING: .local is reserved for Multicast DNS
;; You are currently testing what happens when an mDNS query is leaked to DNS
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 55854
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 71d352da8e047d0c010000006974b669480bfe774a35cfe3 (good)
;; QUESTION SECTION:
;DD1.sio-exupery.local.         IN      A

;; AUTHORITY SECTION:
sio-exupery.local.      86400   IN      SOA     DS1.sio-exupery.local. root.sio-exupery.local. 20260114

;; Query time: 0 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Sat Jan 24 13:09:13 CET 2026
;; MSG SIZE  rcvd: 123
```

Je saisie la commande dig SOA sio.exupery.local

```
root@DS1: ~#dig SOA sio-exupery.local

; <<>> DiG 9.20.15-1~deb13u1-Debian <<>> SOA sio-exupery.local
;; global options: +cmd
;; Got answer:
;; WARNING: .local is reserved for Multicast DNS
;; You are currently testing what happens when an mDNS query is leaked to DNS
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 50590
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 290b8c8eee82c522010000006974b742cba2638d65f72b1e (good)
;; QUESTION SECTION:
;sio-exupery.local.             IN      SOA

;; ANSWER SECTION:
sio-exupery.local.      86400   IN      SOA     DS1.sio-exupery.local. root.sio-exupery.local

;; Query time: 0 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Sat Jan 24 13:12:50 CET 2026
;; MSG SIZE  rcvd: 119

root@DS1: ~#
```

```
root@DS1: ~#nslookup DS1
Server:         192.168.4.254
Address:        192.168.4.254#53

Name:   DS1.sio-exupery.local
Address: 192.168.4.254

root@DS1: ~#
```

Je ping DS1

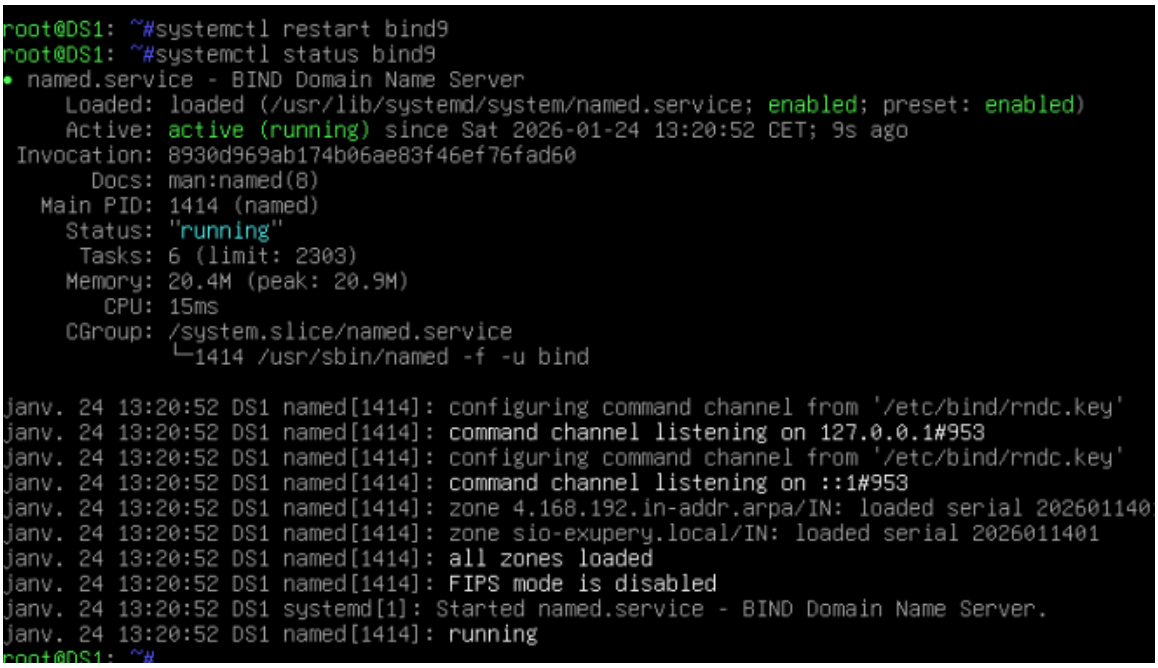
```
root@DS1: ~#ping -c 2 DS1
PING DS1.sio-exupery.local (192.168.4.254) 56(84) bytes of data.
64 bytes from DS1.sio-exupery.local (192.168.4.254): icmp_seq=1 ttl=64 time=0.076 ms
64 bytes from DS1.sio-exupery.local (192.168.4.254): icmp_seq=2 ttl=64 time=0.083 ms

--- DS1.sio-exupery.local ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1019ms
rtt min/avg/max/mdev = 0.076/0.079/0.083/0.003 ms
```

2.13. S’appuyer sur un DNS externe : la redirection

```
options {
        directory "/var/cache/bind";
        forward only;
        forwarders { 192.168.1.254; };
        allow-recursion { localnets; };
        allow-query { any; };
        dnssec-validation no;
};
```

```
  GNU nano 8.4
// prime the server with knowledge of the root servers
//zone "." {
//      type hint;
//      file "/usr/share/dns/root.hints";
//};
```

Aprés avoir modifié je relance serveur et je regarde son status



je ping ac-nice.fr ainsi que dunod.com

```
root@DS1: ~#dig www.ac-nice.fr

; <<>> DiG 9.20.15-1~deb13u1-Debian <<>> www.ac-nice.fr
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 25615
;; flags: qr rd ra; QUERY: 1, ANSWER: 5, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: e0f5df98cbcd34d3010000006974b9560247a783c91bb4b9 (good)
;; QUESTION SECTION:
;www.ac-nice.fr.                        IN      A

;; ANSWER SECTION:
www.ac-nice.fr.         1162    IN      CNAME   www.ac-nice.fr.cdn.cloudflare.net.
www.ac-nice.fr.cdn.cloudflare.net. 123 IN A     141.101.90.106
www.ac-nice.fr.cdn.cloudflare.net. 123 IN A     141.101.90.105
www.ac-nice.fr.cdn.cloudflare.net. 123 IN A     141.101.90.104
www.ac-nice.fr.cdn.cloudflare.net. 123 IN A     141.101.90.107

;; Query time: 28 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Sat Jan 24 13:21:42 CET 2026
;; MSG SIZE  rcvd: 182

root@DS1: ~#_
```

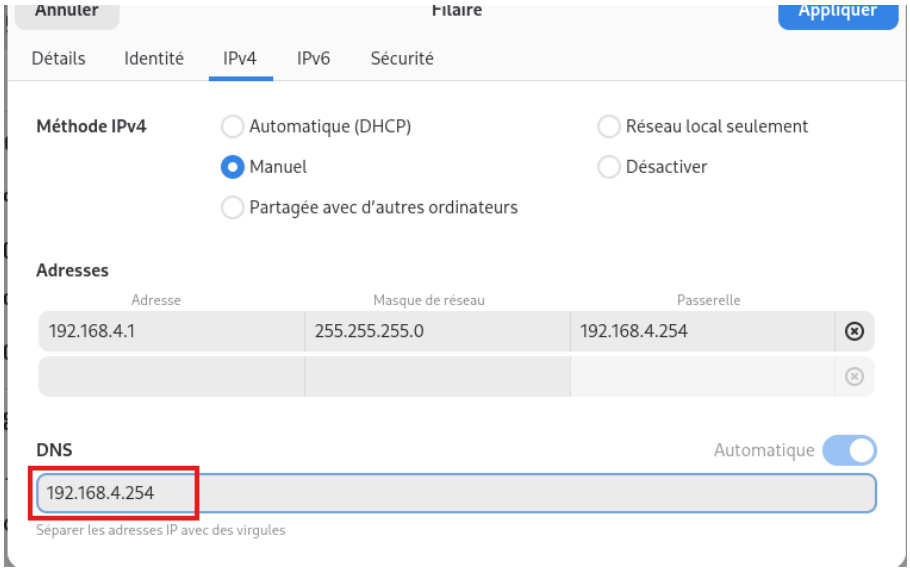
```
root@DS1: ~#ping -c 3 www.dunod.com
PING www.dunod.com (51.144.190.143) 56(84) bytes of data.
64 bytes from 51.144.190.143: icmp_seq=1 ttl=108 time=31.0 ms
64 bytes from 51.144.190.143: icmp_seq=2 ttl=108 time=29.2 ms
64 bytes from 51.144.190.143: icmp_seq=3 ttl=108 time=28.7 ms

--- www.dunod.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 28.733/29.639/31.011/0.986 ms
root@DS1: ~#
```

2.14. Test à partir du client Debian Desktop

```
  GNU nano 8.4                          /etc/hostname
DD1
```

```
  GNU nano 8.4                          /etc/hosts *
127.0.0.1       localhost
127.0.1.1       DD1.sio-exupery.local   DD1

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

Je mets le serveur DNS de DS1



Je vérifie la configuration réseau

```
sio@DD1:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defaul
t 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 gr
oup default qlen 1000
    link/ether 08:00:27:97:81:68 brd ff:ff:ff:ff:ff:ff
    altname enx080027978168
    inet 192.168.4.1/24 brd 192.168.4.255 scope global noprefixroute enp0s3
       valid_lft forever preferred_lft forever
    inet6 fd17:625c:f037:2:5a17:5568:ab39:5c75/64 scope global temporary dynamic

       valid_lft 86391sec preferred_lft 14391sec
    inet6 fd17:625c:f037:2:a00:27ff:fe97:8168/64 scope global dynamic mngtmpaddr
 noprefixroute
       valid_lft 86391sec preferred_lft 14391sec
    inet6 fe80::a00:27ff:fe97:8168/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
sio@DD1:~$
```

```
sio@DD1:~$ ip r
default via 192.168.4.254 dev enp0s3 proto static metric 100
192.168.4.0/24 dev enp0s3 proto kernel scope link src 192.168.4.1 metric 100
sio@DD1:~$
```

Je vérifie que dans le fichier resolv,conf l’adresse du serveur DNS DS1 est mentionné

```
sio@DD1:~$ cat /etc/resolv.conf
# Generated by NetworkManager
nameserver 192.168.4.254
sio@DD1:~$
```

Je saisie successivement les commandes dig SOA sio-exupery.local, dig DS1.sio-exupery.local puis dig www.dunod.com

```
; <<>> DiG 9.20.11-4-Debian <<>> SOA sio-exupery.local
;; global options: +cmd
;; Got answer:
;; WARNING: .local is reserved for Multicast DNS
;; You are currently testing what happens when an mDNS query is leaked to DNS
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 53616
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 648c7e8b48fe7f28010000006974c21cc7ab69ef18e63565 (good)
;; QUESTION SECTION:
;sio-exupery.local.             IN      SOA

;; ANSWER SECTION:
sio-exupery.local.      86400   IN      SOA     DS1.sio-exupery.local. root.sio-
exupery.local. 2026011401 604800 86400 2419200 604800

;; Query time: 0 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Sat Jan 24 13:59:09 CET 2026
;; MSG SIZE  rcvd: 119

sio@DD1:~$
```

```
; <<>> DiG 9.20.11-4-Debian <<>> DS1.sio-exupery.local
;; global options: +cmd
;; Got answer:
;; WARNING: .local is reserved for Multicast DNS
;; You are currently testing what happens when an mDNS query is leaked to DNS
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 33651
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: de724bbe33cb46ac010000006974c257bc47cd7d7b4f02bc (good)
;; QUESTION SECTION:
;DS1.sio-exupery.local.         IN      A

;; ANSWER SECTION:
DS1.sio-exupery.local.  86400   IN      A       192.168.4.254

;; Query time: 0 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Sat Jan 24 14:00:08 CET 2026
;; MSG SIZE  rcvd: 94

sio@DD1:~$
```

```
sio@DD1:~$ dig www.dunod.com

; <<>> DiG 9.20.11-4-Debian <<>> www.dunod.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 40152
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: e39847933de49b80010000006974c282b5653df70dfe5713 (good)
;; QUESTION SECTION:
;www.dunod.com.                 IN      A

;; ANSWER SECTION:
www.dunod.com.          8499    IN      A       51.144.190.143

;; Query time: 0 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Sat Jan 24 14:00:51 CET 2026
;; MSG SIZE  rcvd: 86

sio@DD1:~$
```

Je saisie la commande nslookup www.google.com

```
sio@DD1:~$ nslookup www.google.com
Server:         192.168.4.254
Address:        192.168.4.254#53

Non-authoritative answer:
Name:   www.google.com
Address: 172.217.18.228
Name:   www.google.com
Address: 2a00:1450:4006:802::2004

sio@DD1:~$
```

Je ping DS1

```
sio@DD1:~$ ping -c 2 DS1.sio-exupery.local
PING DS1.sio-exupery.local (192.168.4.254) 56(84) bytes of data.
64 bytes from _gateway (192.168.4.254): icmp_seq=1 ttl=64 time=0.520 ms
64 bytes from _gateway (192.168.4.254): icmp_seq=2 ttl=64 time=0.381 ms

--- DS1.sio-exupery.local ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1021ms
rtt min/avg/max/mdev = 0.381/0.450/0.520/0.069 ms
sio@DD1:~$
```

Je lance depuis firefox le site internet de l'Académie de Nice