# Chapitre 2 - Serveur Debian DS1
# Installation du service DNS

## 1. (2.8) Installation du paquetage BIND

>>> Installation du paquetage BIND et ses dépendances :

```
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
Les paquets supplémentaires suivants seront installés :
  bind9-utils dns-root-data
Paquets suggérés :
  bind-doc ufw
Les NOUVEAUX paquets suivants seront installés :
  bind9 bind9-utils dns-root-data
0 mis à jour, 3 nouvellement installés, 0 à enlever et 50 non mis à jour.
Il est nécessaire de prendre 917 ko dans les archives.
Après cette opération, 2 080 ko d'espace disque supplémentaires seront utilisés.
Souhaitez-vous continuer ? [O/n] o
Réception de :1 http://deb.debian.org/debian bookworm/main amd64 bind9-utils amd64 1:9.18.28-1~deb12u2 [413 kB]
Réception de :2 http://deb.debian.org/debian bookworm/main amd64 dns-root-data all 2024041801~deb12u1 [4 356 B]
Réception de :3 http://deb.debian.org/debian bookworm/main amd64 bind9 amd64 1:9.18.28-1~deb12u2 [500 kB]
917 ko réceptionnés en 6s (155 ko/s)
Sélection du paquet bind9-utils précédemment désélectionné.
(Lecture de la base de données... 30427 fichiers et répertoires déjà installés.)
Préparation du dépaquetage de .../bind9-utils_1%3a9.18.28-1~deb12u2_amd64.deb ...
Dépaquetage de bind9-utils (1:9.18.28-1~deb12u2) ...
Sélection du paquet dns-root-data précédemment désélectionné.
Préparation du dépaquetage de .../dns-root-data_2024041801~deb12u1_all.deb ...
Dépaquetage de dns-root-data (2024041801~deb12u1) ...
Sélection du paquet bind9 précédemment désélectionné.
Préparation du dépaquetage de .../bind9_1%3a9.18.28-1~deb12u2_amd64.deb ...
Dépaquetage de bind9 (1:9.18.28-1~deb12u2) ...
Paramétrage de dns-root-data (2024041801~deb12u1) ...
Paramétrage de bind9-utils (1:9.18.28-1~deb12u2) ...
Paramétrage de bind9 (1:9.18.28-1~deb12u2) ...
Ajout du groupe « bind » (GID 112)...
Fait.
Ajout de l'utilisateur système « bind » (UID 104) ...
Ajout du nouvel utilisateur « bind » (UID 104) avec pour groupe d'appartenance « bind » ...
Pas de création du répertoire personnel « /var/cache/bind ».
wrote key file "/etc/bind/rndc.key"
named-resolvconf.service is a disabled or a static unit, not starting it.
Created symlink /etc/systemd/system/bind9.service → /lib/systemd/system/named.service.
Created symlink /etc/systemd/system/multi-user.target.wants/named.service → /lib/systemd/system/named.service.
Traitement des actions différées (« triggers ») pour man-db (2.11.2-2) ...
root@DS1: ~#
```

>>> Démarrage du service DNS bind avec la commande systemectl start bind9 :

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

>>> Visualisation des fichiers de configuration dans le répertoire /etc/bind/ :

```
root@DS1: ~#systemctl start bind9
root@DS1: ~#ls -l /etc/bind/
total 48
-rw-r--r-- 1 root root 2403 27 juil. 05:13 bind.keys
-rw-r--r-- 1 root root  255 27 juil. 05:13 db.0
-rw-r--r-- 1 root root  271 27 juil. 05:13 db.127
-rw-r--r-- 1 root root  237 27 juil. 05:13 db.255
-rw-r--r-- 1 root root  353 27 juil. 05:13 db.empty
-rw-r--r-- 1 root root  270 27 juil. 05:13 db.local
-rw-r--r-- 1 root bind  458 27 juil. 05:13 named.conf
-rw-r--r-- 1 root bind  498 27 juil. 05:13 named.conf.default-zones
-rw-r--r-- 1 root bind  165 27 juil. 05:13 named.conf.local
-rw-r--r-- 1 root bind  846 27 juil. 05:13 named.conf.options
-rw-r----- 1 bind bind  100 22 janv. 09:19 rndc.key
-rw-r--r-- 1 root root 1317 27 juil. 05:13 zones.rfc1918
root@DS1: ~#
```

>>> Sauvegarde des fichiers conf, conf.options et conf.local 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
```

>>> Vérification de l'état du service bind avec systemctl status bind9 :

```
root@DS1: ~#systemctl status bind9
● named.service - BIND Domain Name Server
     Loaded: loaded (/lib/systemd/system/named.service; enabled; preset: enabled)
     Active: active (running) since Wed 2025-01-22 09:19:06 CET; 8min ago
       Docs: man:named(8)
   Main PID: 1570 (named)
     Status: "running"
      Tasks: 8 (limit: 2306)
     Memory: 34.8M
        CPU: 120ms
     CGroup: /system.slice/named.service
             └─1570 /usr/sbin/named -f -u bind

janv. 22 09:19:06 DS1 named[1570]: network unreachable resolving './NS/IN': 2001:dc3::35#53
janv. 22 09:19:06 DS1 named[1570]: network unreachable resolving './DNSKEY/IN': 2001:503:ba3e::2:30#53
janv. 22 09:19:06 DS1 named[1570]: network unreachable resolving './NS/IN': 2001:503:ba3e::2:30#53
janv. 22 09:19:06 DS1 named[1570]: network unreachable resolving './DNSKEY/IN': 2801:1b8:10::b#53
janv. 22 09:19:06 DS1 named[1570]: network unreachable resolving './NS/IN': 2801:1b8:10::b#53
janv. 22 09:19:06 DS1 named[1570]: network unreachable resolving './DNSKEY/IN': 2001:500:a8::e#53
janv. 22 09:19:06 DS1 named[1570]: network unreachable resolving './NS/IN': 2001:500:a8::e#53
janv. 22 09:19:06 DS1 named[1570]: managed-keys-zone: Initializing automatic trust anchor management for zone '.'; DNS
janv. 22 09:19:06 DS1 named[1570]: managed-keys-zone: Initializing automatic trust anchor management for zone '.'; DNS
janv. 22 09:19:06 DS1 named[1570]: resolver priming query complete: success
lines 1-22/22 (END)
```

>>> Vérification de la bonne installation du paquet resolvconf :

```
root@DS1: ~#apt-get install resolvconf
Lecture des listes de paquets... Fait
Construction de l'arbre des dépendances... Fait
Lecture des informations d'état... Fait
resolvconf est déjà la version la plus récente (1.91+nmu1).
0 mis à jour, 0 nouvellement installés, 0 à enlever et 50 non mis à jour.
root@DS1: ~#
```

## 2. (2.9) Zone de recherche directe et zone de recherche inversée

>>> Assignation de nom de zones et des fichiers de zone qui vont contenir les enregistrements dans le fichier /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";
//les zones
zone "sio-exupery.local" IN {
        type master;
        file "db.sio-exupery.local";
        allow-update { none; };
};

zone "4.168.192.in-addr.arpa" IN {
        type master;
        file "rev.sio-exupery.local";
        allow-update { none; };
};
```

## 3. (2.10) Construction des fichiers de zone

>>> Création du fichier /var/cache/bind/db.sio-exupery.local pour la zone de recherche directe dans lequel les enregistrements correspondant aux machines sont figurés :

```
  GNU nano 7.2                                  /var/cache/bind/db.sio-exupery.local
: Fichier pour la résolution directe
$TTL 86400
@ IN SOA DS1.sio-exupery.local. root.sio-exupery.local. (
        2024020401
        1w
        1d
        4w
        1w )
@ IN NS DS1.sio-exupery.local.
DS1 IN A 192.168.4.254
UD1 IN A 192.168.4.1
```

>>> Création du fichier pour la résolution inverse /var/cache/bind/rev.sio-exupery.local pour les enregistrements PTR contraires aux enregistrements A :

```
  GNU nano 7.2                                  /var/cache/bind/rev.sio-exupery.local
: Fichier pour la résolution inverse
$TTL 86400
@ IN SOA DS1.sio-exupery.local. root.sio-exupery.local. (
        2024020401
        1w
        1d
        4w
        1w )
@ IN NS DS1.sio-exupery.local.
254 IN PTR DS1.sio-exupery.local.
1 IN PTR UD1.sio-exupery.local.
```

>>> Attribution des deux fichiers de zone au groupe bind pour les rendre accessibles au daemon :

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

```
root@DS1: ~#ls -l /var/cache/bind
total 16
-rw-rw-r-- 1 root bind  212 29 janv. 09:03 db.sio-exupery.local
-rw-rw-r-- 1 bind bind 1421 29 janv. 09:00 managed-keys.bind
-rw-rw-r-- 1 bind bind 3020 29 janv. 08:59 managed-keys.bind.jnl
-rw-rw-r-- 1 root bind  234 29 janv. 09:11 rev.sio-exupery.local
root@DS1: ~#_
```

```
root@DS1: ~#ls -ld /var/cache/bind
drwxrwxr-x 2 root bind 4096 29 janv. 09:11 /var/cache/bind
root@DS1: ~#_
```

## 4. (2.11) Démarrage et tests du service

>>> Modification du fichier /etc/hosts qui ne doit contenir que la référence à la boucle locale et le nom du FQDN du serveur :

```
  GNU nano 7.2                                                    /etc/hosts
127.0.0.1       localhost.localdomain   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
```

>>> Désactivation des interfaces des cartes réseaux enp0s3 et enp0s8 avec ifdown :

```
root@DS1: ~#ifdown enp0s3
ifdown: interface enp0s3 not configured
root@DS1: ~#ifdown enp0s8
root@DS1: ~#_
```

>>> Modification du fichier /etc/network/interfaces en rajoutant les lignes dns-search, domain et nameservers :

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

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
allow-hotplug enp0s3_
iface enp0s3 inet static
address 172.17.101.204
netmask 255.255.0.0
network 172.17.0.0
broadcast 172.17.255.255
gateway 172.17.250.2

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
```

>>> Réactivation des interfaces :

```
root@DS1: ~#ifup enp0s3
RTNETLINK answers: File exists
ifup: failed to bring up enp0s3
root@DS1: ~#ifup enp0s8
root@DS1: ~#
```

(Les deux interfaces sont bien configurées et réactivées, comme le montre la commande ip a :)

```
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:d0:d5:d1 brd ff:ff:ff:ff:ff:ff
    inet 172.17.101.204/16 brd 172.17.255.255 scope global enp0s3
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fed0:d5d1/64 scope link
       valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:65:ac:b4 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:fe65:acb4/64 scope link
       valid_lft forever preferred_lft forever
```

## 5. (2.12) Outils de test de résolution de noms

>>> Vérification du fichier /etc/resolv.conf qui doit indiquer l'adresse IP du serveur DNS ainsi que la zone de recherche DNS :

```
root@DS1:~# cat /etc/resolv.conf
# Dynamic resolv.conf(5) file for glibc resolver(3) generated by resolvconf(8)
#     DO NOT EDIT THIS FILE BY HAND -- YOUR CHANGES WILL BE OVERWRITTEN
# 127.0.0.53 is the systemd-resolved stub resolver.
# run "resolvectl status" to see details about the actual nameservers.

nameserver 192.168.4.254
search sio-exupery.local
root@DS1:~#
```

>>> Indication de l'instruction dnssec-validation auto sur no dans le fichier named.conf.options :

```
 GNU nano 7.2                                    /etc/bind/named.conf.options
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 no;

        listen-on-v6 { any; };
};
```

>>> Re lancement de bind9 :

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

>>> Lancement de l'utilitaire de vérification named-checkconf qui teste /etc/bind/named.conf :

```
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 2024020401
OK
root@DS1: /var/cache/bind#
```

```
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 2024020401
OK
root@DS1: /var/cache/bind#_
```

>>> Affichage du journal de base de systemd en temps réel :

```
root@DS1: ~#journalctl -f
févr. 04 12:37:21 DS1 systemd[1400]: Startup finished in 107ms.
févr. 04 12:37:21 DS1 login[1407]: ROOT LOGIN  on '/dev/tty1'
févr. 04 12:38:26 DS1 systemd[1]: Starting e2scrub_all.service - Online ext4 Metadata Check for All Filesystems...
févr. 04 12:38:26 DS1 systemd[1]: e2scrub_all.service: Deactivated successfully.
févr. 04 12:38:26 DS1 systemd[1]: Finished e2scrub_all.service - Online ext4 Metadata Check for All Filesystems.
févr. 04 12:38:50 DS1 systemd[1]: Started getty@tty2.service - Getty on tty2.
févr. 04 12:38:55 DS1 login[1411]: pam_unix(login:session): session opened for user root(uid=0) by LOGIN(uid=0)
févr. 04 12:38:55 DS1 systemd-logind[537]: New session 3 of user root.
févr. 04 12:38:55 DS1 systemd[1]: Started session-3.scope - Session 3 of User root.
févr. 04 12:38:55 DS1 login[1416]: ROOT LOGIN  on '/dev/tty2'
```

>>> Redémarrage du service bind9 sur la première console :

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

>>> Observation du journal sur la seconde console :

```
root@DS1: ~#journalctl -f
févr. 04 12:42:00 DS1 named[1440]: zone 0.in-addr.arpa/IN: loaded serial 1
févr. 04 12:42:00 DS1 named[1440]: zone 255.in-addr.arpa/IN: loaded serial 1
févr. 04 12:42:00 DS1 named[1440]: zone 4.168.192.in-addr.arpa/IN: loaded serial 2024020401
févr. 04 12:42:00 DS1 named[1440]: zone sio-exupery.local/IN: loaded serial 2024020401
févr. 04 12:42:00 DS1 named[1440]: all zones loaded
févr. 04 12:42:00 DS1 named[1440]: running
févr. 04 12:42:00 DS1 systemd[1]: Started named.service - BIND Domain Name Server.
févr. 04 12:42:10 DS1 anacron[491]: Job `cron.daily' started
févr. 04 12:42:10 DS1 anacron[1451]: Updated timestamp for job `cron.daily' to 2025-02-04
févr. 04 12:42:10 DS1 anacron[491]: Job `cron.daily' terminated
```

>>> Vérification de la présence du paquetage dnsutils :

```
root@DS1: ~#dpkg -l | grep -i dnsutils
ii  bind9-dnsutils              1:9.18.28-1~deb12u2                amd64        Clients provided with BIND 9
root@DS1: ~#
```

>>> Commande dig UD1.sio-exupery.local :

```
root@DS1: ~#dig UD1.sio-exupery.local

; <<>> DiG 9.18.28-1~deb12u2-Debian <<>> UD1.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: 27339
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 5d829d42863a63240100000067a1fe7f5920c0a41ef175d1 (good)
;; QUESTION SECTION:
;UD1.sio-exupery.local.         IN      A

;; ANSWER SECTION:
UD1.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: Tue Feb 04 12:48:15 CET 2025
;; MSG SIZE  rcvd: 94

root@DS1: ~#
```

>>> Commande dig SOA sio-exupery.local :

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

; <<>> DiG 9.18.28-1~deb12u2-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: 36142
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: a753efabc27453270100000067a1fe0b6f09b05a27d060f7 (good)
;; QUESTION SECTION:
;sio-exupery.local.             IN      SOA

;; ANSWER SECTION:
sio-exupery.local.      86400   IN      SOA     DS1.sio-exupery.local. root.sio-exupery.local. 2024020401 604800 864

;; Query time: 0 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Tue Feb 04 12:46:19 CET 2025
;; MSG SIZE  rcvd: 119

root@DS1: ~#
```

>>> Commande nslookup 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: ~#
```

>>> Commande dig www.dunod.com :

```
root@DS1: ~#dig www.dunod.com

; <<>> DiG 9.18.28-1~deb12u2-Debian <<>> www.dunod.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 58956
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: ec05a09187153698010000067a1ff1b4055e1652a9c7f5d (good)
;; QUESTION SECTION:
;www.dunod.com.                 IN      A

;; ANSWER SECTION:
www.dunod.com.          10800   IN      A       51.144.190.143

;; Query time: 2054 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Tue Feb 04 12:50:51 CET 2025
;; MSG SIZE  rcvd: 86

root@DS1: ~#
```

>>> Commande nslookup www.eni.fr :

```
root@DS1: ~#nslookup www.eni.fr
Server:         192.168.4.254
Address:        192.168.4.254#53

Non-authoritative answer:
www.eni.fr      canonical name = ip200.eni.fr.
Name:   ip200.eni.fr
Address: 185.42.28.200

root@DS1: ~#
```

>>> Vérification de la résolution DNS interne et externe avec ping DS1, UD1 et www.ac-nice.fr :

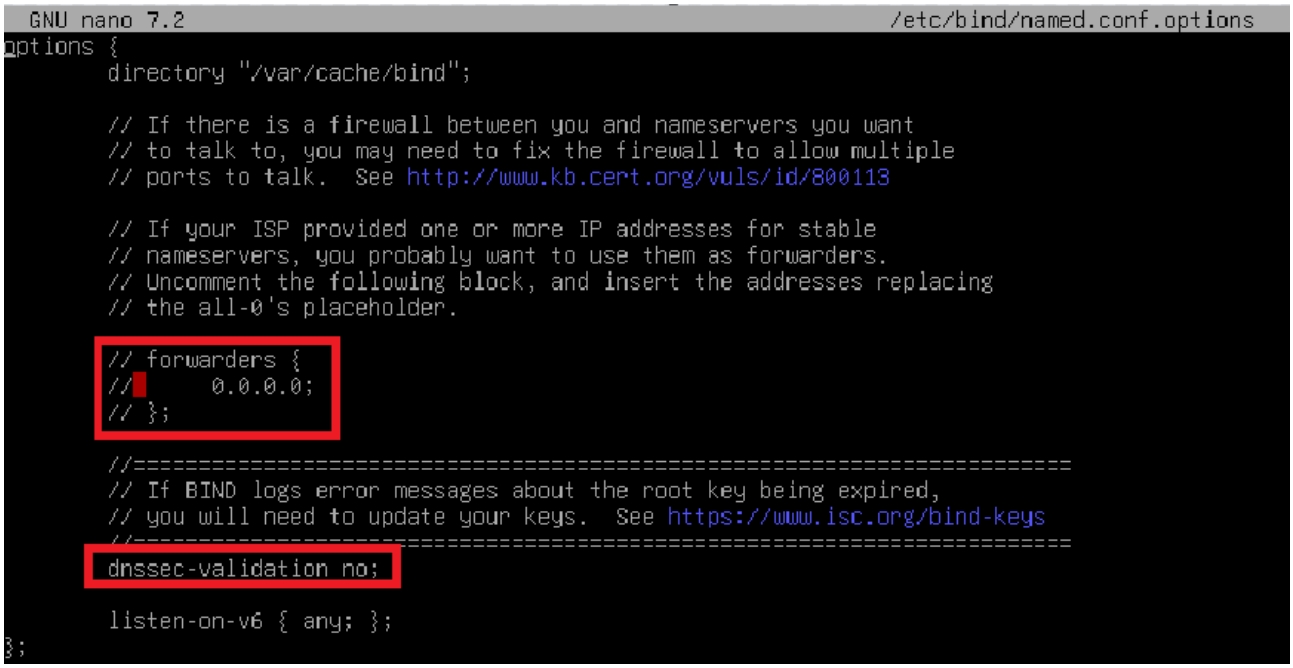
```
root@DS1: ~#ping -c 2 DS1
PING DS1.sio-exupery.local (192.168.4.254) 56(84) bytes of data.
64 bytes from DS1.sio-exupery.local (192.168.4.254): icmp_seq=1 ttl=64 time=0.037 ms
64 bytes from DS1.sio-exupery.local (192.168.4.254): icmp_seq=2 ttl=64 time=0.044 ms

--- DS1.sio-exupery.local ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1015ms
rtt min/avg/max/mdev = 0.037/0.040/0.044/0.003 ms
root@DS1: ~#ping -c 2 UD1
PING UD1.sio-exupery.local (192.168.4.1) 56(84) bytes of data.
64 bytes from UD1.sio-exupery.local (192.168.4.1): icmp_seq=1 ttl=64 time=34.2 ms
64 bytes from UD1.sio-exupery.local (192.168.4.1): icmp_seq=2 ttl=64 time=0.729 ms

--- UD1.sio-exupery.local ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1003ms
rtt min/avg/max/mdev = 0.729/17.471/34.214/16.742 ms
root@DS1: ~#ping -c 2 www.ac-nice.fr
PING www.ac-nice.fr.cdn.cloudflare.net (141.101.90.107) 56(84) bytes of data.
64 bytes from 141.101.90.107: icmp_seq=1 ttl=56 time=294 ms
64 bytes from 141.101.90.107: icmp_seq=2 ttl=56 time=480 ms

--- www.ac-nice.fr.cdn.cloudflare.net ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 3114ms
rtt min/avg/max/mdev = 293.845/387.152/480.460/93.307 ms
root@DS1: ~#
```

## 6. (2.13) S’appuyer sur un DNS externe : la redirection

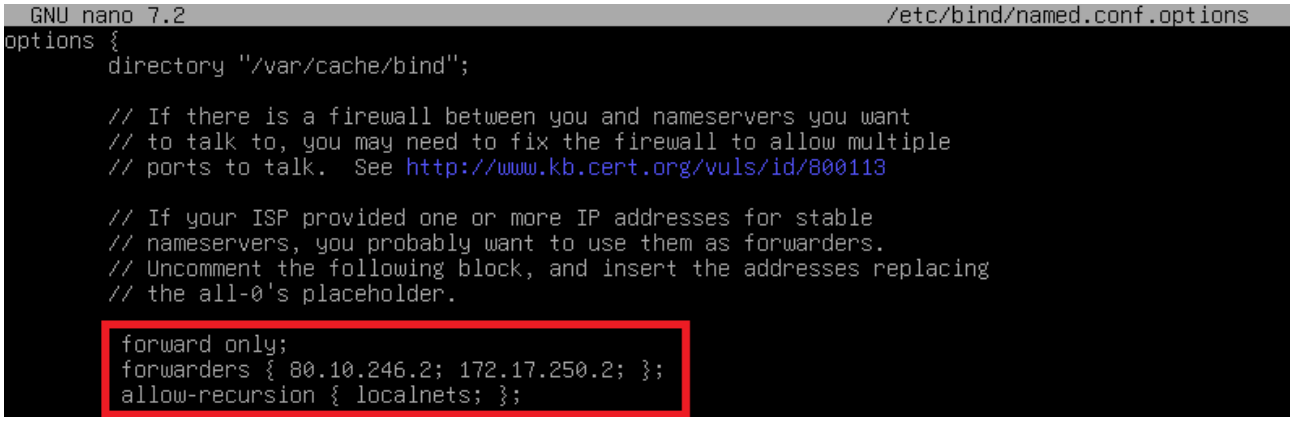
>>> Commentaire sur le fichier /etc/bind/named.conf.default-zones :

```
  GNU nano 7.2                                        /etc/bind/named.conf.default-zones
// prime the server with knowledge of the root servers
//zone "." {
//      type hint;
//      file "/usr/share/dns/root.hints";
//};
```

>>> Affichage du fichier /etc/bind/named.conf.options avec nano :




>>> Décommenter la ligne d'instruction forwarders et modification avec l'ajout du FAI d'Orange et le serveur DNS ROI :



>>> Redémarrage du service DNS et vérification de l'état du service bind9 :

```
root@DS1: ~#systemctl restart bind9
root@DS1: ~#systemctl status named.service
• named.service - BIND Domain Name Server
     Loaded: loaded (/lib/systemd/system/named.service; enabled; preset: enabled)
     Active: active (running) since Tue 2025-02-04 13:16:40 CET; 1s ago
       Docs: man:named(8)
   Main PID: 1641 (named)
     Status: "running"
      Tasks: 6 (limit: 2306)
     Memory: 26.5M
        CPU: 20ms
     CGroup: /system.slice/named.service
             └─1641 /usr/sbin/named -f -u bind

févr. 04 13:16:40 DS1 named[1641]: managed-keys-zone: loaded serial 14
févr. 04 13:16:40 DS1 named[1641]: zone 0.in-addr.arpa/IN: loaded serial 1
févr. 04 13:16:40 DS1 named[1641]: zone localhost/IN: loaded serial 2
févr. 04 13:16:40 DS1 named[1641]: zone 4.168.192.in-addr.arpa/IN: loaded serial 2024020401
févr. 04 13:16:40 DS1 named[1641]: zone 127.in-addr.arpa/IN: loaded serial 1
févr. 04 13:16:40 DS1 named[1641]: zone 255.in-addr.arpa/IN: loaded serial 1
févr. 04 13:16:40 DS1 named[1641]: zone sio-exupery.local/IN: loaded serial 2024020401
févr. 04 13:16:40 DS1 named[1641]: all zones loaded
févr. 04 13:16:40 DS1 systemd[1]: Started named.service - BIND Domain Name Server.
févr. 04 13:16:40 DS1 named[1641]: running
root@DS1: ~#
```

>>> Test de la résolution externe à partir du serveur DS1 :

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

; <<>> DiG 9.18.28-1~deb12u2-Debian <<>> www.ac-nice.fr
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 48368
;; flags: qr rd ra; QUERY: 1, ANSWER: 5, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: bb396b09b790e101010000067a2057719b21bea340d403d (good)
;; QUESTION SECTION:
;www.ac-nice.fr.                        IN      A

;; ANSWER SECTION:
www.ac-nice.fr.         21600   IN      CNAME   www.ac-nice.fr.cdn.cloudflare.net.
www.ac-nice.fr.cdn.cloudflare.net. 300 IN A     141.101.90.107
www.ac-nice.fr.cdn.cloudflare.net. 300 IN A     141.101.90.106
www.ac-nice.fr.cdn.cloudflare.net. 300 IN A     141.101.90.104
www.ac-nice.fr.cdn.cloudflare.net. 300 IN A     141.101.90.105

;; Query time: 1599 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Tue Feb 04 13:17:59 CET 2025
;; MSG SIZE  rcvd: 182

root@DS1: ~#
```

## 7. (2.14) Test à partir du client Ubuntu :

>>> Vérification du nom de l'ordinateur dans le fichier /etc/hostname :

```
  GNU nano 7.2                          /etc/hostname
UD1
```

>>> Modification de l'association IP-nom FQDN dans le fichier /etc/hosts et redémarrage de la machine Ubuntu :

```
  GNU nano 7.2                          /etc/hosts *
127.0.0.1 localhost
192.168.4.1 UD1.sio-exupery.local UD1
```

>>> Configuration des paramètres IP ainsi que l'adresse du serveur DNS dans la console, en modifiant le fichier /etc/netplan/01-network-manager-all.yaml :

```
  GNU nano 7.2        /etc/netplan/01-network-manager-all.yaml
# Let NetworkManager manage all devices on this system
network:
  version: 2
  renderer: networkd
  ethernets:
    enp0s3:
      dhcp4: no
      dhcp6: no
      addresses: [192.168.4.1/24]
      routes:
        - to: default
          via: 192.168.4.254
      nameservers:
        search: [sio-exupery.local]
        addresses: [192.168.4.254]
```

>>> Génération du fichier .network dans /run/systemd/network et redémarrage du service systemd-networkd avec la command netplan apply :

```
UD1@UD1:/etc/netplan$ sudo netplan apply

** (generate:4758): WARNING **: 12:33:27.538: Permissions for /etc/netplan/01-n
twork-manager-all.yaml are too open. Netplan configuration should NOT be access
ble by others.

** (process:4757): WARNING **: 12:33:27.966: Permissions for /etc/netplan/01-ne
work-manager-all.yaml are too open. Netplan configuration should NOT be accessi
le by others.

** (process:4757): WARNING **: 12:33:28.101: Permissions for /etc/netplan/01-ne
work-manager-all.yaml are too open. Netplan configuration should NOT be accessi
le by others.
UD1@UD1:/etc/netplan$
```

>>> Vérification de la configuration réseau :

```
UD1@UD1:/etc/netplan$ 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 pfifo_fast state UP
group default qlen 1000
    link/ether 08:00:27:9c:99:3d 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
UD1@UD1:/etc/netplan$ 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
UD1@UD1:/etc/netplan$
```

>>> Le fichier /etc/resolv.conf ne mentionne pas l'adresse sur serveur DNS DS1 :

```
8).
# Do not edit.
#
# This file might be symlinked as /etc/resolv.conf. If you're looking at
# /etc/resolv.conf and seeing this text, you have followed the symlink.
#
# This is a dynamic resolv.conf file for connecting local clients to the
# internal DNS stub resolver of systemd-resolved. This file lists all
# configured search domains.
#
# Run "resolvectl status" to see details about the uplink DNS servers
# currently in use.
#
# Third party programs should typically not access this file directly, but only
# through the symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a
# different way, replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.

nameserver 127.0.0.53
options edns0 trust-ad
search sio-exupery.local
UD1@UD1:/etc/netplan$
```

>>> Le fichier /etc/resolv.conf est un lien symbolique pointant sur le fichier /run/systemd/resolve/stub-resolv.conf :

```
UD1@UD1:/etc/netplan$ ls -l /etc/resolv.conf
lrwxrwxrwx 1 root root 39 Aug 27 15:37 /etc/resolv.conf -> ../run/systemd/resolv
e/stub-resolv.conf
UD1@UD1:/etc/netplan$ cd /run/systemd/resolve/
UD1@UD1:/run/systemd/resolve$ ls -l
total 8
srw-rw-rw- 1 systemd-resolve systemd-resolve   0 Feb  4 11:59 io.systemd.Resolve
srw------- 1 systemd-resolve systemd-resolve   0 Feb  4 11:59 io.systemd.Resolve
.Monitor
drwx------ 2 systemd-resolve systemd-resolve  60 Feb  4 12:33 netif
-rw-r--r-- 1 systemd-resolve systemd-resolve 828 Feb  4 12:33 resolv.conf
-rw-r--r-- 1 systemd-resolve systemd-resolve 936 Feb  4 12:33 stub-resolv.conf
UD1@UD1:/run/systemd/resolve$
```

>>> Affichage du fichier /run/systemd/resolve/resolv.conf pour vérifier l'adresse du serveur DNS :

```
UD1@UD1:/run/systemd/resolve$ cat /run/systemd/resolve/resolv.conf
# This is /run/systemd/resolve/resolv.conf managed by man:systemd-resolved(8).
# Do not edit.
#
# This file might be symlinked as /etc/resolv.conf. If you're looking at
# /etc/resolv.conf and seeing this text, you have followed the symlink.
#
# This is a dynamic resolv.conf file for connecting local clients directly to
# all known uplink DNS servers. This file lists all configured search domains.
#
# Third party programs should typically not access this file directly, but only
# through the symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a
# different way, replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.

nameserver 192.168.4.254
nameserver 172.17.254.1
search sio-exupery.local
UD1@UD1:/run/systemd/resolve$
```

>>> Saisie successive des commandes dig SOA sio-exupery.local, dig DSI.sio.exupery-local et dig www.eni.fr :

> dig SOA sio-exupery.local :

```
UD1@UD1:/run/systemd/resolve$ dig SOA sio-exupery.local

; <<>> DiG 9.18.28-0ubuntu0.24.04.1-Ubuntu <<>> 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: 6277
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;sio-exupery.local.             IN      SOA

;; ANSWER SECTION:
sio-exupery.local.      86400   IN      SOA     DS1.sio-exupery.local. root.sio-
xupery.local. 2024020401 604800 86400 2419200 604800

;; Query time: 2 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Tue Feb 04 12:44:36 UTC 2025
;; MSG SIZE  rcvd: 91
```

> dig DS1.sio-exupery.local :

```
UD1@UD1:/run/systemd/resolve$ dig DS1.sio-exupery.local

; <<>> DiG 9.18.28-0ubuntu0.24.04.1-Ubuntu <<>> 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: 56087
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;DS1.sio-exupery.local.         IN      A

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

;; Query time: 1 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Tue Feb 04 12:46:14 UTC 2025
;; MSG SIZE  rcvd: 66

UD1@UD1:/run/systemd/resolve$
```

> dig www.eni.fr :

```
UD1@UD1:/run/systemd/resolve$ dig www.eni.fr

; <<>> DiG 9.18.28-0ubuntu0.24.04.1-Ubuntu <<>> www.eni.fr
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 46753
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;www.eni.fr.                    IN      A

;; ANSWER SECTION:
www.eni.fr.             600     IN      CNAME   ip200.eni.fr.
ip200.eni.fr.           600     IN      A       185.42.28.200

;; Query time: 1734 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Tue Feb 04 12:47:15 UTC 2025
;; MSG SIZE  rcvd: 75

UD1@UD1:/run/systemd/resolve$
```

>>> Saisie de la commande nslookup www.editions-eyrolles.com :

```
UD1@UD1:/$ nslookup www.editions-eyrolles.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
www.editions-eyrolles.com       canonical name = app943253.prod.cudawaas.com.
app943253.prod.cudawaas.com     canonical name = waas-prod-app-a978c6906656d1f694
47ac81ef5f29ee.trafficmanager.net.
waas-prod-app-a978c6906656d1f69447ac81ef5f29ee.trafficmanager.net       canonical
 name = waasprod-app-53c57dcd5270778795e5d53a512d0297.francecentral.cloudapp.azur
e.com.
Name:   waasprod-app-53c57dcd5270778795e5d53a512d0297.francecentral.cloudapp.azur
e.com
Address: 4.176.6.76

UD1@UD1:/$
```

>>> Ping sur DS1 :

```
UD1@UD1:/$ 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=0.369
 ms
64 bytes from DS1.sio-exupery.local (192.168.4.254): icmp_seq=2 ttl=64 time=0.594
 ms

--- DS1.sio-exupery.local ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1426ms
rtt min/avg/max/mdev = 0.369/0.481/0.594/0.112 ms
UD1@UD1:/$
```

>>> Connexion à Atrium :