TP2 Installation du service DNS

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1. Installation du paquetage BIND

- Installation du paquet bind9

```
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 resolvconf ufw
Les NOUVEAUX paquets suivants seront installés :
  bind9 bind9-utils dns-root-data
0 mis à jour, 3 nouvellement installés, 0 à enlever et 67 non mis à jour.
Il est nécessaire de prendre 904 ko dans les archives.
Après cette opération, 2 042 ko d'espace disque supplémentaires seront utilisés.
Souhaitez-vous continuer ? [O/n] O
```

- Démarrage du service bind9

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

- Sauvegarde des fichiers de configurations de base

```
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#
```

- Vérification de l'état du service bind

```
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 Mon 2024-02-05 17:28:35 CET; 2min 24s ago
       Docs: man:named(8)
   Main PID: 496 (named)
     Status: "running"
      Tasks: 10 (limit: 2306)
     Memory: 60.9M
        CPU: 112ms
     CGroup: /system.slice/named.service
             └─496 /usr/sbin/named -f -u bind

févr. 05 17:28:35 DS1 named[496]: network unreachable resolving './NS/IN': 2001:500:2::c#53
févr. 05 17:28:35 DS1 named[496]: network unreachable resolving './DNSKEY/IN': 2001:500:9f::42#53
févr. 05 17:28:35 DS1 named[496]: network unreachable resolving './NS/IN': 2001:500:9f::42#53
févr. 05 17:28:35 DS1 named[496]: managed-keys-zone: Key 20326 for zone . is now trusted (acceptan
févr. 05 17:28:35 DS1 named[496]: resolver priming query complete: success
févr. 05 17:28:35 DS1 named[496]: checkhints: b.root-servers.net/A (170.247.170.2) missing from hi
févr. 05 17:28:35 DS1 named[496]: checkhints: b.root-servers.net/A (199.9.14.201) extra record in
févr. 05 17:28:35 DS1 named[496]: checkhints: b.root-servers.net/AAAA (2801:1b8:10::b) missing fro
févr. 05 17:28:35 DS1 named[496]: checkhints: b.root-servers.net/AAAA (2001:500:200::b) extra reco
févr. 05 17:28:38 DS1 named[496]: listening on IPv6 interface enp0s8, fe80::a00:27ff:fe91:86cd%3#5
lines 1-22/22 (END)
```

- Installation des deux paquets recommandés

```
root@DS1: ~#apt-get install dnsutils resolvconf
Lecture des listes de paquets... Fait
Construction de l'arbre des dépendances... Fait
Lecture des informations d'état... Fait
Les NOUVEAUX paquets suivants seront installés :
  dnsutils resolvconf
0 mis à jour, 2 nouvellement installés, 0 à enlever et 67 non mis à jour.
Il est nécessaire de prendre 315 ko dans les archives.
Après cette opération, 455 ko d'espace disque supplémentaires seront utilisés.
Réception de :1 http://deb.debian.org/debian bookworm/main amd64 dnsutils all 1:9.18.19-1~deb12u1
59 kB]
Réception de :2 http://deb.debian.org/debian bookworm/main amd64 resolvconf all 1.91+nmu1 [55,6 kB
315 ko réceptionnés en 0s (646 ko/s)
Préconfiguration des paquets...
Sélection du paquet dnsutils précédemment désélectionné.
(Lecture de la base de données... 57616 fichiers et répertoires déjà installés.)
Préparation du dépaquetage de .../dnsutils_1%3a9.18.19-1~deb12u1_all.deb ...
Dépaquetage de dnsutils (1:9.18.19-1~deb12u1) ...
Sélection du paquet resolvconf précédemment désélectionné.
Préparation du dépaquetage de .../resolvconf_1.91+nmu1_all.deb ...
Dépaquetage de resolvconf (1.91+nmu1) ...
Paramétrage de resolvconf (1.91+nmu1) ...
Created symlink /etc/systemd/system/sysinit.target.wants/resolvconf.service → /lib/systemd/system/
solvconf.service.
Created symlink /etc/systemd/system/systemd-resolved.service.wants/resolvconf-pull-resolved.path →
lib/systemd/system/resolvconf-pull-resolved.path
```

2. Zone de recherche directe et zone de recherche inversée

- Modification du fichier /etc/bind/named.conf.local afin de renseigner les noms et zones qui vont contenir les enregistrements

```
  GNU nano 7.2                          /etc/bind/named.conf.local *
//
// Do any local configuration here
//

// Consider adding the 1918 zones here, if they are not used in your
// organization
//include "/etc/bind/zones.rfc1918";
zone "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. Construction des fichiers de zone

- Création du fichier /var/cache/bind/db,sio-exupery.local

```
  GNU nano 7.2                        /var/cache/bind/db.sio-exupery.local
$TTL 86400
@ IN SOA DS1.sio-exupery.local root.sio-exupery.local. (
        2024020901
        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

```
  GNU nano 7.2                        /var/cache/bind/rev.sio-exupery.local
$TTL 86400
@ IN SOA DS1.sio-exupery.local. root.sio-exupery.local. (
        2024020901
        1w
        1d
        4w
        1w )
@ IN NS DS1.sio-exupery.local.
254 IN PTR DS1.sio-exupery.local.
1 IN PTR UD1.sio-exupery.local.
```

- Accessibilité au démon

```
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  173  9 févr. 10:16 db.sio-exupery.local
-rw-rw-r-- 1 bind bind  821  9 févr. 10:09 managed-keys.bind
-rw-rw-r-- 1 bind bind 2389  9 févr. 10:08 managed-keys.bind.jnl
-rw-rw-r-- 1 root bind  196  9 févr. 10:19 rev.sio-exupery.local
root@DS1: ~#
```

- Vérification de la même appartenance du groupe pour le répertoire

```
root@DS1: ~#ls -ld /var/cache/bind
drwxrwxr-x 2 root bind 4096  9 févr. 10:21 /var/cache/bind
root@DS1: ~#_
```

4. Démarrage et tests du service

- Modification du fichier /etc/host

```
  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 cartes

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

- Modification des configurations des cartes

```
  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 enp0s3
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


# 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
dns-search sio-exupery.local
dns-domain sio-exupery.local
dns-nameservers 192.168.4.254
```

- Réactivation des cartes
- Vérification du fichier /etc/resolv.conf

```
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
```

- Premier test → Fichier db

```
root@DS1: ~#cd /etc/bind
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 2024020901
OK
root@DS1: /var/cache/bind#
```

- Fichier rev

```
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 2024020901
OK
```

- Deuxième test

```
root@DS1: ~#journalctl -f
févr. 09 10:43:38 DS1 systemd[1]: Starting apt-daily-upgrade.service - Daily apt upgrade and clean a
ctivities...
févr. 09 10:43:39 DS1 systemd[1]: apt-daily-upgrade.service: Deactivated successfully.
févr. 09 10:43:39 DS1 systemd[1]: Finished apt-daily-upgrade.service - Daily apt upgrade and clean a
ctivities.
févr. 09 10:44:19 DS1 systemd[1]: Started getty@tty2.service - Getty on tty2.
févr. 09 10:44:26 DS1 login[991]: pam_unix(login:auth): authentication failure; logname=LOGIN uid=0
euid=0 tty=/dev/tty2 ruser= rhost=  user=root
févr. 09 10:44:28 DS1 login[991]: FAILED LOGIN (1) on '/dev/tty2' FOR 'root', Authentication failure
févr. 09 10:44:32 DS1 login[991]: pam_unix(login:session): session opened for user root(uid=0) by LO
GIN(uid=0)
févr. 09 10:44:32 DS1 systemd-logind[569]: New session 4 of user root.
févr. 09 10:44:32 DS1 systemd[1]: Started session-4.scope - Session 4 of User root.
févr. 09 10:44:32 DS1 login[996]: ROOT LOGIN  on '/dev/tty2'
```

```
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 124.100.IN-ADDR.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 125.100.IN-ADDR.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 126.100.IN-ADDR.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 127.100.IN-ADDR.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 254.169.IN-ADDR.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 2.0.192.IN-ADDR.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 100.51.198.IN-ADDR.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 113.0.203.IN-ADDR.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 255.255.255.255.IN-ADDR.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0
.0.0.0.0.0.0.0.0.0.0.IP6.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0
.0.0.0.0.0.0.0.0.0.0.IP6.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: D.F.IP6.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 8.E.F.IP6.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 9.E.F.IP6.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: A.E.F.IP6.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: B.E.F.IP6.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: 8.B.D.0.1.0.0.2.IP6.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: EMPTY.AS112.ARPA
févr. 09 10:54:23 DS1 named[1023]: automatic empty zone: HOME.ARPA
févr. 09 10:54:23 DS1 named[1023]: configuring command channel from '/etc/bind/rndc.key'
févr. 09 10:54:23 DS1 named[1023]: command channel listening on 127.0.0.1#953
févr. 09 10:54:23 DS1 named[1023]: configuring command channel from '/etc/bind/rndc.key'
févr. 09 10:54:23 DS1 named[1023]: command channel listening on ::1#953
févr. 09 10:54:23 DS1 named[1023]: managed-keys-zone: loaded serial 9
févr. 09 10:54:23 DS1 named[1023]: zone 0.in-addr.arpa/IN: loaded serial 1
févr. 09 10:54:23 DS1 named[1023]: zone 4.168.192.in-addr.arpa/IN: loaded serial 2024020901
févr. 09 10:54:23 DS1 named[1023]: zone 255.in-addr.arpa/IN: loaded serial 1
févr. 09 10:54:23 DS1 named[1023]: zone sio-exupery.local/IN: loaded serial 2024020901
févr. 09 10:54:23 DS1 named[1023]: zone sio-exupery.local/IN: sending notifies (serial 2024020901)
févr. 09 10:54:23 DS1 named[1023]: zone localhost/IN: loaded serial 2
févr. 09 10:54:23 DS1 named[1023]: zone 127.in-addr.arpa/IN: loaded serial 1
févr. 09 10:54:23 DS1 named[1023]: all zones loaded
févr. 09 10:54:23 DS1 named[1023]: running
févr. 09 10:54:23 DS1 systemd[1]: Started named.service - BIND Domain Name Server.
```

- Vérification de la présence du paquetage dnsutils

```
root@DS1: ~#dpkg -l | grep -i dnsutils
ii  bind9-dnsutils                1:9.18.19-1~deb12u1           amd64        Clients provided wit
h BIND 9
ii  dnsutils                      1:9.18.19-1~deb12u1           all          Transitional package
 for bind9-dnsutils
root@DS1: ~#_
```

- commande dig

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

; <<>> DiG 9.18.19-1~deb12u1-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: 48904
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 74eee5787315ef1a0100000065c5f773d5767e1082da8b71 (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: Fri Feb 09 10:59:15 CET 2024
;; MSG SIZE  rcvd: 94
```

- dig sur le SOA

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

; <<>> DiG 9.18.19-1~deb12u1-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: 42726
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 895c63abd3fe02e40100000065c5f99495fc71cedadb1109 (good)
;; QUESTION SECTION:
;sio-exupery.local.             IN      SOA

;; ANSWER SECTION:
sio-exupery.local.      86400   IN      SOA     DS1.sio-exupery.local.sio-exupery.local. root.sio-ex
upery.local. 2024020901 604800 86400 2419200 604800

;; Query time: 0 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Fri Feb 09 11:08:20 CET 2024
;; MSG SIZE  rcvd: 154
```

- nslookup

```
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
```

- dig www.dunod.com

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

; <<>> DiG 9.18.19-1~deb12u1-Debian <<>> www.dunod.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 21509
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 8eb20b03191b7e940100000065c5f9fd66310b63f08be1d6 (good)
;; QUESTION SECTION:
;www.dunod.com.                 IN      A

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

;; Query time: 700 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Fri Feb 09 11:10:05 CET 2024
;; MSG SIZE  rcvd: 86
```

- 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
```

- Ping sur DS1, UD1, 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=0.034 ms
64 bytes from DS1.sio-exupery.local (192.168.4.254): icmp_seq=2 ttl=64 time=0.038 ms

--- DS1.sio-exupery.local ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1030ms
rtt min/avg/max/mdev = 0.034/0.036/0.038/0.002 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=0.978 ms
64 bytes from UD1.sio-exupery.local (192.168.4.1): icmp_seq=2 ttl=64 time=0.932 ms

--- UD1.sio-exupery.local ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1005ms
rtt min/avg/max/mdev = 0.932/0.955/0.978/0.023 ms
root@DS1: ~#ping -c 2 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: icmp_seq=1 ttl=56 time=33.9 ms
64 bytes from 93.184.221.161: icmp_seq=2 ttl=56 time=45.4 ms

--- cs234.wpc.alphacdn.net ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1416ms
rtt min/avg/max/mdev = 33.940/39.646/45.353/5.706 ms
```

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

- Commentage des lignes faisant appel aux serveurs racines

```
  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";
//};
```

- Mise en place de la redirection

```
ptions {
        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.

         forward only;
         forwarders { 80.10.246.2; };
         allow-recursion { localnets; };

        //========================================================================
        // 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; };
;
```

- Redémarrage du service

```
root@DS1: /etc/bind#systemctl restart bind9
root@DS1: /etc/bind#systemctl status bind9
• named.service - BIND Domain Name Server
     Loaded: loaded (/lib/systemd/system/named.service; enabled; preset: enabled)
     Active: active (running) since Thu 2024-02-15 17:25:22 CET; 1s ago
       Docs: man:named(8)
   Main PID: 1001 (named)
     Status: "running"
      Tasks: 6 (limit: 2306)
     Memory: 53.0M
        CPU: 37ms
     CGroup: /system.slice/named.service
             └─1001 /usr/sbin/named -f -u bind

févr. 15 17:25:22 DS1 named[1001]: zone 127.in-addr.arpa/IN: loaded serial 1
févr. 15 17:25:22 DS1 named[1001]: zone 4.168.192.in-addr.arpa/IN: loaded serial 2024020901
févr. 15 17:25:22 DS1 named[1001]: zone 255.in-addr.arpa/IN: loaded serial 1
févr. 15 17:25:22 DS1 named[1001]: zone localhost/IN: loaded serial 2
févr. 15 17:25:22 DS1 named[1001]: zone 0.in-addr.arpa/IN: loaded serial 1
févr. 15 17:25:22 DS1 named[1001]: zone sio-exupery.local/IN: loaded serial 2024020901
févr. 15 17:25:22 DS1 named[1001]: all zones loaded
févr. 15 17:25:22 DS1 named[1001]: running
févr. 15 17:25:22 DS1 systemd[1]: Started named.service - BIND Domain Name Server.
févr. 15 17:25:22 DS1 named[1001]: zone sio-exupery.local/IN: sending notifies (serial 2024020901)
root@DS1: /etc/bind#
```

- Test de résolution externe

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

; <<>> DiG 9.18.19-1~deb12u1-Debian <<>> www.ac-nice.fr
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 63683
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 2f057adbd07f959f0100000065ce3eac9764109ca7e275e3 (good)
;; QUESTION SECTION:
;www.ac-nice.fr.                        IN      A

;; ANSWER SECTION:
www.ac-nice.fr.         19650   IN      CNAME   cs234.wpc.alphacdn.net.
cs234.wpc.alphacdn.net. 3572    IN      A       93.184.221.161

;; Query time: 0 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Thu Feb 15 17:41:16 CET 2024
;; MSG SIZE  rcvd: 123

root@DS1: ~#
```

6. Test à partir du client Ubuntu

- Vérification du nom de l’ordinateur

```
  GNU nano 6.2                          /etc/hostname *
UD1
```

- Modification des paramètres IP à la main

```
  GNU nano 6.2          /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]
```

- Vérification de la configuration réseau après l'avoir appliquée

```
ud1@UD1:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNO
WN 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_co
del 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 enp0s3
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe7c:2417/64 scope link
       valid_lft forever preferred_lft forever
ud1@UD1:~$
```

```
ud1@UD1:~$ ip r
default via 192.168.4.254 dev enp0s3 proto static
192.168.4.0/24 dev enp0s3 proto kernel scope link src 192.168.4.1
```

```
nameserver 127.0.0.53
options edns0 trust-ad
search sio-exupery.local
ud1@UD1:~$ S
```

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

```
ud1@UD1:~$ ls -l /etc/resolv.conf
lrwxrwxrwx 1 root root 39 févr.  1 16:53 /etc/resolv.conf -> ../run/systemd/resolve/stub-res
olv.conf
ud1@UD1:~$
```

```
ud1@UD1:~$ cd /run/systemd/resolve
ud1@UD1:/run/systemd/resolve$ ls -l
total 8
srw-rw-rw- 1 systemd-resolve systemd-resolve   0 févr. 16 09:43 io.systemd.Resolve
-rw-r--r-- 1 systemd-resolve systemd-resolve 804 févr. 16 09:43 resolv.conf
-rw-r--r-- 1 systemd-resolve systemd-resolve 936 févr. 16 09:43 stub-resolv.conf
ud1@UD1:/run/systemd/resolve$
```

- Vérification de l'adresse du serveur dns

```
nameserver 192.168.4.254
search sio-exupery.local
```

- Vérification des résolutions dns

```
ud1@UD1:~$ dig SOA sio-exupery.local

; <<>> DiG 9.18.18-0ubuntu0.22.04.2-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: 3440
;; 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.sio-exupery.local. roo
t.sio-exupery.local. 2024020901 604800 86400 2419200 604800

;; Query time: 0 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Fri Feb 16 09:54:32 CET 2024
;; MSG SIZE  rcvd: 109
```

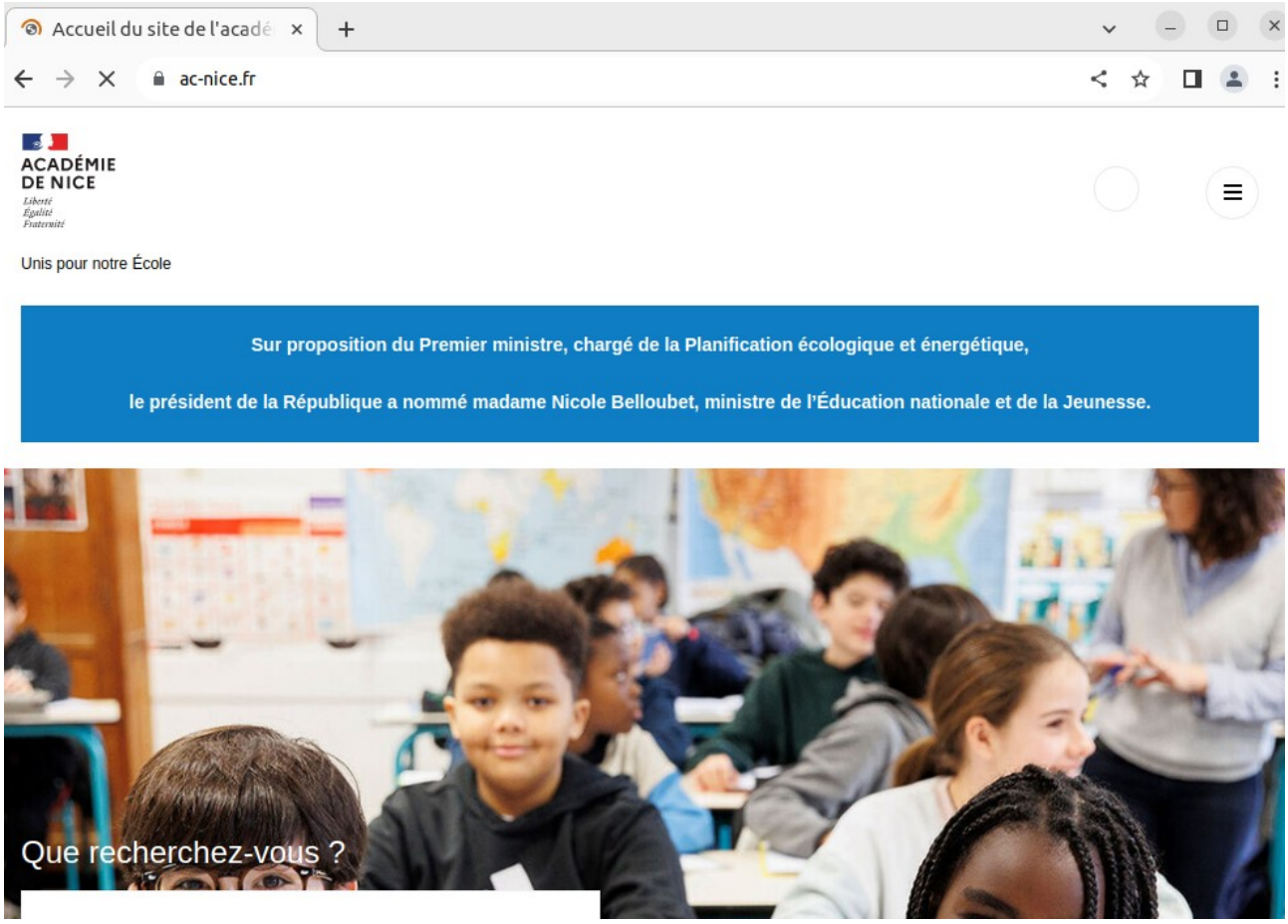
```
ud1@UD1:~$ dig DS1.sio-exupery.local

; <<>> DiG 9.18.18-0ubuntu0.22.04.2-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: 6259
;; 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: 0 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Fri Feb 16 09:55:11 CET 2024
;; MSG SIZE  rcvd: 66
```

```
ud1@UD1:~$ dig www.eni.fr

; <<>> DiG 9.18.18-0ubuntu0.22.04.2-Ubuntu <<>> www.eni.fr
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 12701
;; 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: 511 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Fri Feb 16 09:55:41 CET 2024
;; MSG SIZE  rcvd: 75
```

- a

```
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 = editions-eyrolles.com.
Name:   editions-eyrolles.com
Address: 89.225.129.16
```

- Ping sur DS1

```
ud1@UD1:~$ ping 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=0.404 ms
64 bytes from DS1.sio-exupery.local (192.168.4.254): icmp_seq=2 ttl=64 time=0.757 ms
64 bytes from DS1.sio-exupery.local (192.168.4.254): icmp_seq=3 ttl=64 time=0.841 ms
64 bytes from DS1.sio-exupery.local (192.168.4.254): icmp_seq=4 ttl=64 time=2.18 ms
^C
--- DS1.sio-exupery.local ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3006ms
rtt min/avg/max/mdev = 0.404/1.044/2.177/0.673 ms
ud1@UD1:~$
```

- Vérification de l'accès à internet