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Sommaire

1. Modification sur US3.

▪ Modifiez l’adresse du serveur DNS : Netplan est l’outil de configuration réseau utilisé par Ubuntu. Il utilise des fichiers de description YAML. Le fichier de configuration se trouve dans le répertoire /etc/netplan :

```
root@US3:~# ls /etc/netplan
00-installer-config.yaml
root@US3:~# _
```

```
  GNU nano 6.2                        /etc/netplan/00-installer-config.yaml *
# This is the network config written by 'subiquity'
network:
  ethernets:
    enp0s3:
      addresses: [192.168.1.101/24]
      dhcp4: no
      route:
        - to: default
          via: 172.17.250.3
      nameservers:
        addresses: [8.8.8.8]
    enp0s8:
      addresses: [192.168.2.254/24]
      dhcp4: no
    enp0s9:
      addresses: [192.168.3.254/24]
      dhcp4: no
  version: 2
```

▪ Appliquer la configuration avec la commande netplan apply :

```
root@US3:~# netplan apply

** (generate:1249): WARNING **: 14:39:14.559: `gateway4` has been depre
tead.
See the 'Default routes' section of the documentation for more details.
WARNING:root:Cannot call Open vSwitch: ovsdb-server.service is not runn

** (process:1247): WARNING **: 14:39:14.889: `gateway4` has been depreo
ead.
See the 'Default routes' section of the documentation for more details.

** (process:1247): WARNING **: 14:39:15.028: `gateway4` has been depreo
ead.
See the 'Default routes' section of the documentation for more details.

** (process:1247): WARNING **: 14:39:15.029: `gateway4` has been depreo
ead.
See the 'Default routes' section of the documentation for more details.
root@US3:~# _
```

ps : vous m’avez dit que c’était bon

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▪ Vérifiez la configuration IP à l'aide de la commande ip a.

```
root@US3:~# 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 ql
0
    link/ether 08:00:27:fd:c6:4b brd ff:ff:ff:ff:ff:ff
    inet 172.17.250.222/16 brd 172.17.255.255 scope global enp0s3
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fefd:c64b/64 scope link dadfailed tentative
       valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default ql
0
    link/ether 08:00:27:9e:8a:1f brd ff:ff:ff:ff:ff:ff
    inet 192.168.2.254/24 brd 192.168.2.255 scope global enp0s8
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe9e:8a1f/64 scope link
       valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default ql
0
    link/ether 08:00:27:4c:67:bf brd ff:ff:ff:ff:ff:ff
    inet 192.168.3.254/24 brd 192.168.3.255 scope global enp0s9
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe4c:67bf/64 scope link
       valid_lft forever preferred_lft forever
root@US3:~#
```

▪ Affichez le fichier /run/systemd/resolve/resolv.conf pour vérifier l'adresse du serveur DNS.

```
  GNU nano 6.2                        /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 8.8.8.8
search .
```

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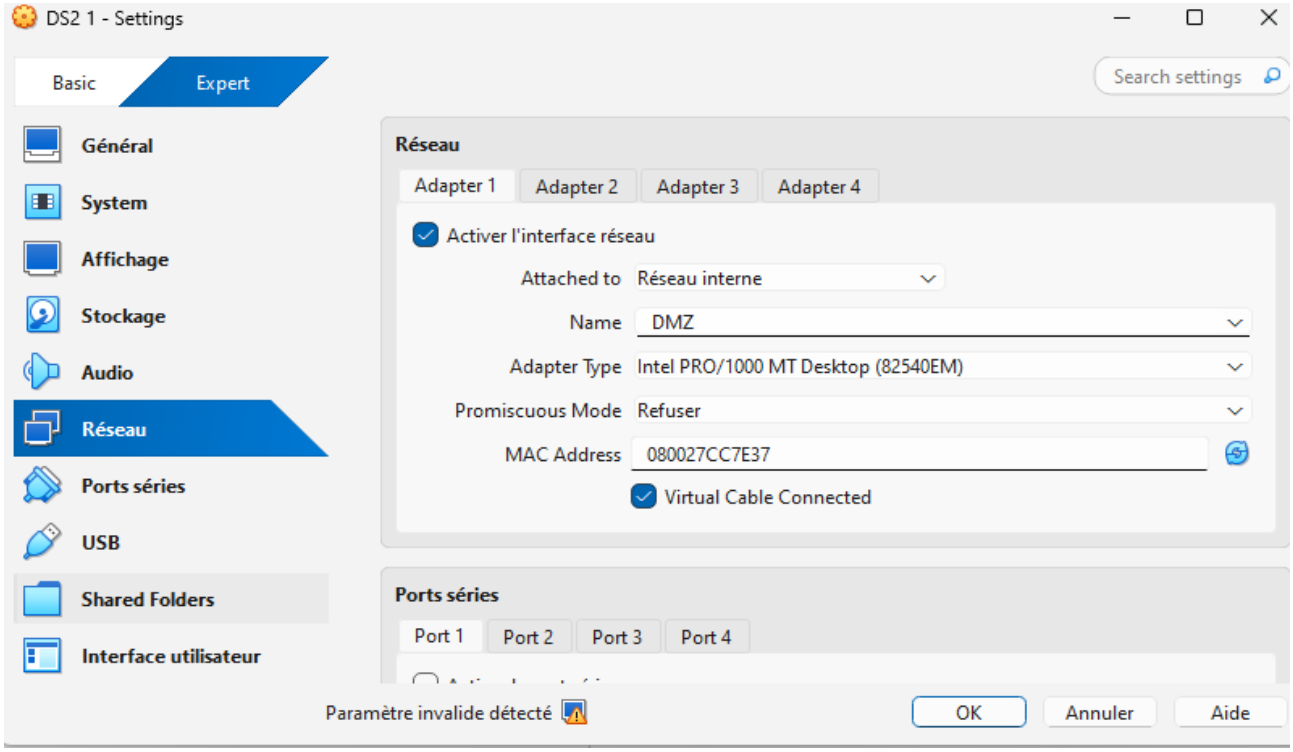
2. Modifications sur DS2.

▪ Modifiez le mode d'accès réseau pour la carte 1 (enp0s3) : Réseau interne (DMZ).



▪ Désactivez l'interface réseau enp0s3 et modifiez sa configuration IP ainsi que celle de l'alias IP :

```
  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
iface enp0s3 inet static
address 192.168.2.1
netmask 255.255.255.0
network 192.168.2.0
broadcast 192.168.2.255
gateway 192.168.2.254
dns-search sio-exupery.fr
dns-domain sio-exupery.fr
dns-nameservers 192.168.2.1

auto enp0s3:0
iface enp0s3:0 inet static
address 192.168.4.9
netmask 255.255.255.0
network 192.168.4.0
broadcast 192.168.4.255
# This is an autoconfigured IPv6 interface
iface enp0s3 inet6 auto
```

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▪ Réactivez la carte et vérifiez la prise en compte des modifications à l'aide de la commande ip a :

```
root@DS2: ~#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 100
0
    link/ether 08:00:27:cc:7e:37 brd ff:ff:ff:ff:ff:ff
    altname enx080027cc7e37
    inet 192.168.4.10/24 brd 192.168.4.255 scope global enp0s3
       valid_lft forever preferred_lft forever
    inet 192.168.4.9/24 brd 192.168.4.255 scope global secondary enp0s3:0
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fecc:7e37/64 scope link proto kernel_ll
       valid_lft forever preferred_lft forever
```

▪ Modifiez en conséquence le fichier des hôtes virtuels /etc/apache2/sites-available/sites-sio.conf (cf. page 6 Chapitre 7) :

```
 GNU nano 8.4                 /etc/apache2/sites-available/sites-sio.conf
        ServerAdmin webmaster@localhost
        DocumentRoot /var/www/html/web
        ErrorLog /var/www/html/web/logs/error.log
        CustomLog /var/www/html/web/logs/access.log combined
</VirtualHost>

<VirtualHost 192.168.2.10:80>
        ServerName projet1.sio-exupery.fr
        ServerAdmin webmaster@localhost
        DocumentRoot /var/www/html/projet1/repweb
        ErrorLog /var/www/html/projet1/repweb/logs/error.log
        CustomLog /var/www/html/projet1/repweb/logs/access.log combined
</VirtualHost>

<VirtualHost 192.168.2.10:80>
        ServerName projet2.sio-exupery.fr
        ServerAdmin webmaster@localhost
        DocumentRoot /var/www/html/projet2/repweb
        ErrorLog /var/www/html/projet2/repweb/logs/error.log
        CustomLog /var/www/html/projet2/repweb/logs/error.log combined
</VirtualHost>

<VirtualHost 192.168.2.10:80>
        ServerName blog.sio-exupery.fr
        ServerAdmin webmaster@localhost
        DocumentRoot /var/www/html/sitewordpress/wordpress
        ErrorLog /var/www/html/sitewordpress/wordpress/logs/error.log
        CustomLog /var/www/html/sitewordpress/wordpress/logs/access.log combined
</VirtualHost>
```

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▪ Rechargez la configuration d'apache2 :

```
root@DS2:   #systemctl reload apache2
root@DS2:  ~#_
```

▪ Modifiez le fichier /etc/bind/named.conf.local contenant les noms des zones de recherche DNS :

```
 GNU nano 8.4                        /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.fr" IN {
        type  master;
        file "db.sio-exupery.fr";
        allow-update { none; };
};

zone "2.168.192.in-addr.arpa" IN {
        type master;
        file "rev.sio-exupery.fr";
        allow-update { none; };
};

^G Aide       ^O Écrire     ^F Chercher   ^K Couper     ^T Exécuter   ^C Emplacement M-U Annuler
^X Quitter    ^R Lire fich. ^\ Remplacer  ^U Coller     ^J Justifier  ^- Aller ligne M-E Refaire
```

▪ Modifiez le fichier pour la zone de recherche directe /var/cache/bind/db.sio-exupery.fr :

```
 GNU nano 8.4                        /var/cache/bind/db.sio-exupery.fr *

; Fichier pour la résolution directe
$TTL 86400
@       IN SOA  DS2.sio-exupery.fr. root.sio-exupery.fr. (
                2019020701
                1w
                1d
                4w
                1w )
@                               IN NS   DS2.sio-exupery.fr.
intra.sio-exupery.fr            IN NS   DS1.intra.sio-exupery.fr.
DS2.sio-exupery.fr.             IN A    192.168.2.10
DS1.intra.sio-exupery.fr.       IN A    192.168.3.254
ftp                             IN      CNAME DS2
www                             IN      CNAME DS2
secu                            IN A    192.168.2.9
projet1                         IN      CNAME DS2
projet2                         IN      CNAME DS2
blog                            IN      CNAME DS2

^G Aide       ^O Écrire     ^F Chercher   ^K Couper     ^T Exécuter   ^C Emplacement M-U Annuler
^X Quitter    ^R Lire fich. ^\ Remplacer  ^U Coller     ^J Justifier  ^- Aller ligne M-E Refaire
```

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▪ Modifiez le fichier pour la zone de recherche inverse /var/cache/bind/rev.sio-exupery.fr :

```
  GNU nano 8.4                          /var/cache/bind/rev.sio-exupery.fr *

; Fichier pour la résolution inverse
$TTL 86400
@       IN SOA  DS2.sio-exupery.fr. root.sio-exupery.fr. (
                2019020201
                1w
                1d
                4w
                1w )
@                       IN NS   DS2.sio-exupery.fr.
1_                      IN PTR  DS2.sio-exupery.fr.
```

▪ Modifiez le fichier /etc/bind/named.conf.options (directives allow-query et allow-recursion) :

```
  GNU nano 8.4                                /etc/bind/named.conf.options
options {
        directory "/var/cache/bind";
        forward only;
        forwarders { 8.8.8.8; };
        dnssec-validation no;
        listen-on-v6 { any; };
        allaow-query { any; };
        allaow-recursion { 192.168.2.0/24;192.168.3.0/24; };
};
```

▪ Relancez le service DNS :

```
root@DS2: ~#systemctl restart bind9
root@DS2: ~#
```

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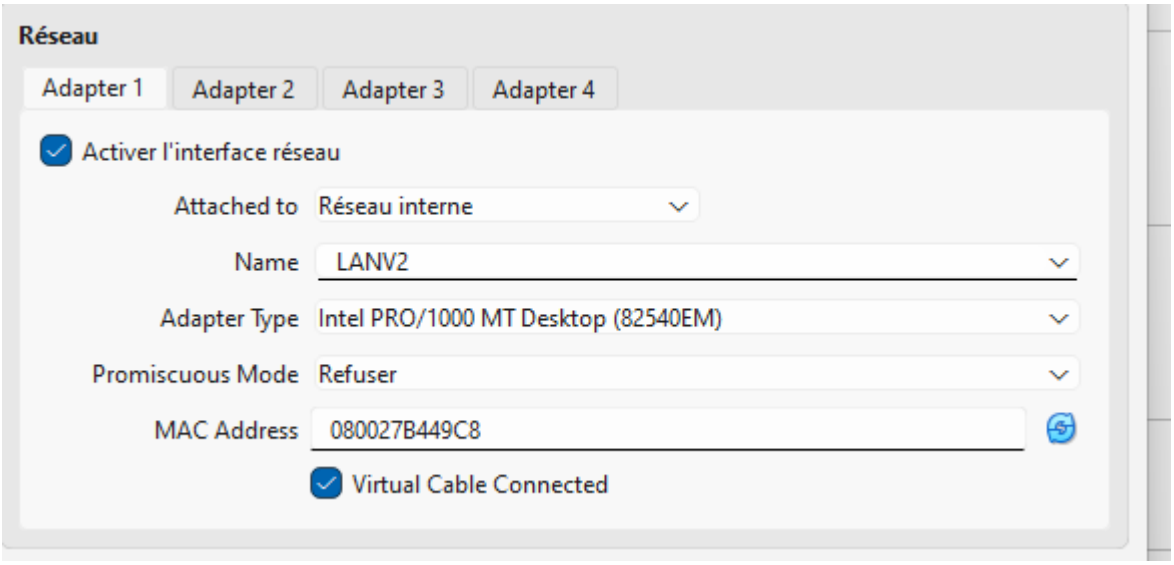
3. Modifications sur DS1.

▪ Modifiez le mode d'accès réseau pour la carte 1 (enp0s3) : Réseau interne (LAN2).



▪ Modifiez la configuration IP de l'interface réseau enp0s3 :

```
# The primary network interface
allow-hotplug enp0s3
#iface enp0s3 inet dhcp
iface enp0s3 inet static
address 192.168.3.1
netmask 255.255.255.0
network 192.168.3.0
broadcast 192.168.3.255
gateway 192.168.3.254
```

▪ Vérifiez la connectivité avec le serveur ROI 172.17.254.1 (routage et translation opérés par US3). A la maison, vous pouvez pinguer votre box comme ci-dessous (ou le DNS Google 8.8.8.8).

```
root@DS1:~# ping -c2 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
```

▪ Modifiez le fichier /etc/bind/named.conf.options. La directive forwarders doit renvoyer vers la nouvelle adresse IP de DS2 pour les résolutions hors zone intra.sio-exupery.fr :

```
 GNU nano 8.4                                    /etc/bind/named.conf.options *
options {
        directory "/var/cache/bind";
        forward only;
        forwarders { 192.168.2.1; };
        allow-recursion { localnets; };
        allow-query { any; };
        dnssec-validation no;
        listen-on-v6 { any; };
};
```

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▪ Relancez le service DNS sur DS1 :

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

4. Tests depuis DD1/UD1.

▪ Testez les deux résolutions DNS figurant ci-dessous :

```
sio@DD1:~$ dig SOA sio-exupery.fr

; <<>> DiG 9.20.11-4-Debian <<>> SOA sio-exupery.fr
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: SERVFAIL, id: 9553
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: d3aac7411c54d8200100000069d9015a6c7d79146472e4a1 (good)
;; QUESTION SECTION:
;sio-exupery.fr.                        IN      SOA

;; Query time: 2429 msec
;; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
;; WHEN: Fri Apr 10 15:55:39 CEST 2026
;; MSG SIZE  rcvd: 71
```

▪ Vérifiez la résolution hors zones intra.sio-exupery.fr et sio-exupery.fr :

```
 <<>> DiG 9.20.11-4-Debian <<>> www.ac-nice.fr
; global options: +cmd
; Got answer:
; ->>HEADER<<- opcode: QUERY, status: SERVFAIL, id: 59702
; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1

; OPT PSEUDOSECTION:
 EDNS: version: 0, flags:; udp: 1232
 COOKIE: 397a3fadf72247110100000069d9019068e53acad0763716 (good)
; QUESTION SECTION:
www.ac-nice.fr.                        IN      A

; Query time: 3117 msec
; SERVER: 192.168.4.254#53(192.168.4.254) (UDP)
; WHEN: Fri Apr 10 15:56:33 CEST 2026
; MSG SIZE  rcvd: 71
```

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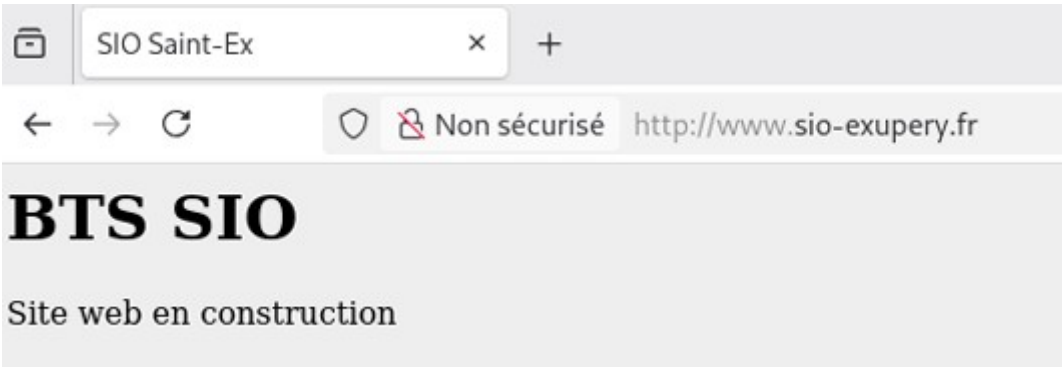
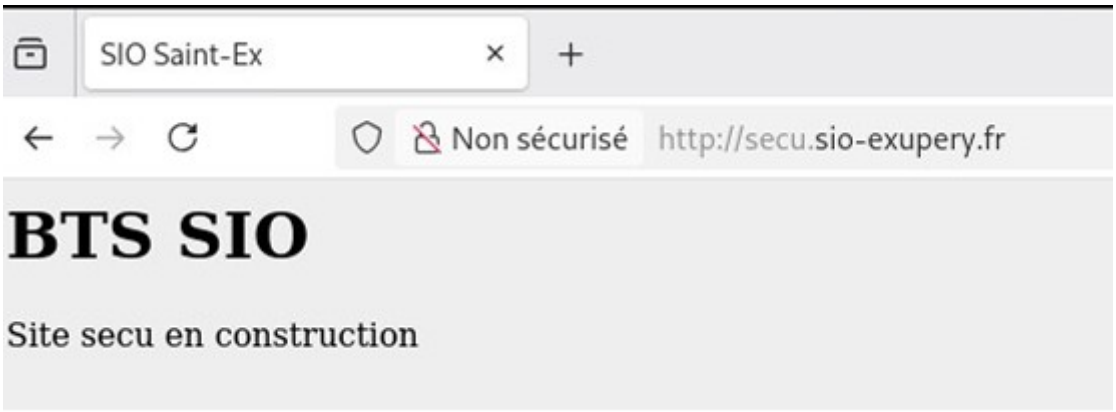
▪ Vérifiez l'accessibilité aux différents sites hébergés sur DS2 situé maintenant dans la DMZ :





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Blog
Bonjour tout le monde !
Bienvenue sur WordPress. Ceci est votre premier article. Modifiez-le ou supprimez-le, puis commencez à écrire !