

Université Sorbonne Paris Nord
Institut Galilée
Département d'informatique
Master 1



Rapport de TP2

Ousmane SOW 1160883

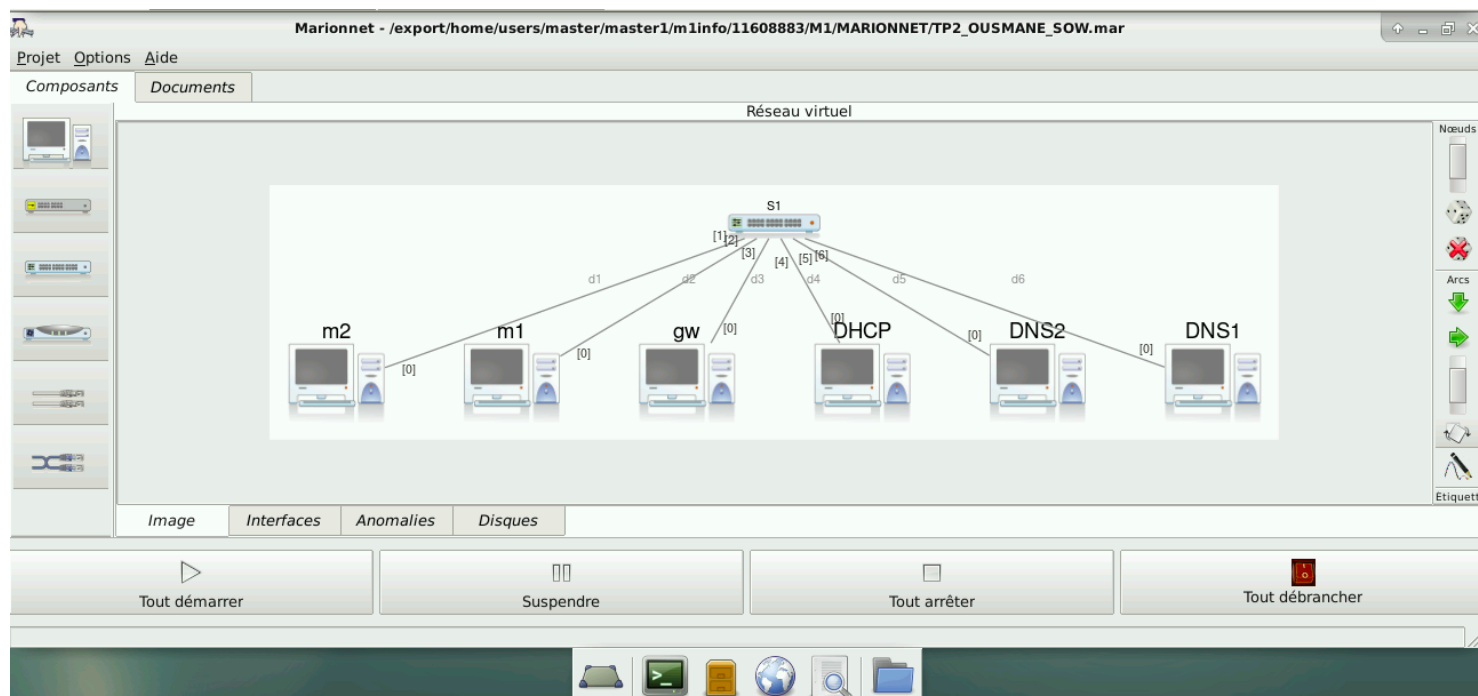
chargé de cours : Mamadou SOW

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1 Conception du réseau

Le réseau est composé de 6 machines (virtuelles).



Paramètres du réseaux

Les adresses IP sont de la plages d'adresses ip privées de la classe C avec un netmask 255.225.255.0

Nom	Adresse IP
Serveur DHCP	192.168.20.1
Serveur DNS1	192.168.20.2
Serveur DNS2	192.168.20.3
La passerelle GW	192.168.0.254
m1	
m2	

Démarrage du réseau et configuration des trois serveurs et la machine passerelle

1. Serveur DHCP

modification du fichier interfaces et activation de eth0

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

# The loopback network interface
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet static
    address 192.168.20.1
    netmask 255.255.255.0
DHCP:~# ifup eth0
if-up.d/mountnfs[eth0]: waiting for interface lo before doing NFS mounts
postconf: fatal: open /etc/postfix/main.cf: No such file or directory
DHCP:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 02:04:06:e2:6f:23
          inet addr:192.168.20.1  Bcast:192.168.20.255  Mask:255.255.255.0
          inet6 addr: fe80::4:6ff:fee2:6f23/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:85 errors:0 dropped:0 overruns:0 frame:0
          TX packets:17 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2910 (2.8 KiB)  TX bytes:820 (820.0 B)
          Interrupt:5

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:19 errors:0 dropped:0 overruns:0 frame:0
          TX packets:19 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:758 (758.0 B)  TX bytes:758 (758.0 B)

DHCP:~#
```

2. Serveur DNS1

modification du fichier interfaces et activation de eth0

```
DNS1 () x
DNS1:~# cat /etc/network/interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

# The loopback network interface
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet static
    address 192.168.20.2
    netmask 255.255.255.0

DNS1:~# ifup eth0
if-up.d/mountnfs[eth0]: waiting for interface lo before doing NFS mounts
postconf: fatal: open /etc/postfix/main.cf: No such file or directory
DNS1:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 02:04:06:21:b6:33
          inet addr:192.168.20.2  Bcast:192.168.20.255  Mask:255.255.255.0
          inet6 addr: fe80::4:6ff:fe21:b633/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:105 errors:0 dropped:0 overruns:0 frame:0
          TX packets:21 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:3270 (3.1 KiB)  TX bytes:948 (948.0 B)
          Interrupt:5

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:23 errors:0 dropped:0 overruns:0 frame:0
          TX packets:23 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:830 (830.0 B)  TX bytes:830 (830.0 B)

DNS1:~#
```

3. Serveur DNS2

modification du fichier interfaces et activation de eth0

```
DNS2 () x
DNS2:~# cat /etc/net
netatalk/ netgroup network/ networks
DNS2:~# cat /etc/network/interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

# The loopback network interface
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet static
    address 192.168.20.3
    netmask 255.255.255.0
DNS2:~# ifup eth0
if-up.d/mountnfs[eth0]: waiting for interface lo before doing NFS mounts
postconf: fatal: open /etc/postfix/main.cf: No such file or directory
DNS2:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 02:04:06:89:9f:05
          inet addr:192.168.20.3 Bcast:192.168.20.255 Mask:255.255.255.0
          inet6 addr: fe80::4:6ff:fe89:9f05/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:125 errors:0 dropped:0 overruns:0 frame:0
          TX packets:25 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:3630 (3.5 KiB)  TX bytes:1076 (1.0 KiB)
          Interrupt:5

lo        Link encap:Local Loopback
          inet addr:127.0.0.1 Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:27 errors:0 dropped:0 overruns:0 frame:0
          TX packets:27 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:902 (902.0 B)  TX bytes:902 (902.0 B)

DNS2:~#
```

4. La passerelle gw

modification du fichier interfaces et activation de eth0

```
gw () x
gw:~# cat /etc/network/interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

# The loopback network interface
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet static
address 192.168.20.254
netmask 255.255.255.0

gw:~# ifup eth0
if-up,d/mountnfs[eth0]: waiting for interface lo before doing NFS mounts
postconf: fatal: open /etc/postfix/main.cf: No such file or directory
gw:~# ifconfig
eth0      Link encap:Ethernet  Hwaddr 02:04:06:41:98:14
          inet addr:192.168.20.254  Bcast:192.168.20.255  Mask:255.255.255.0
          inet6 addr: fe80::4:6ff:fe41:9814/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:250 errors:0 dropped:0 overruns:0 frame:0
          TX packets:50 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:5880 (5.7 KiB)  TX bytes:1876 (1.8 KiB)
          Interrupt:5

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:52 errors:0 dropped:0 overruns:0 frame:0
          TX packets:52 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1352 (1.3 KiB)  TX bytes:1352 (1.3 KiB)

gw:~#
```

2 Mise en place d'un service DHCP

Configuration sur la machine DHCP le fichier */etc/dhcp3/dhcpd.conf* pour l'adapter a notre réseau

Configuration pour la plage dynamique

```
# This is a very basic subnet declaration.

subnet 192.168.20.0 netmask 255.255.255.0 {
  range 192.168.20.10 192.168.20.20;
  option routers 192.168.20.254;
}
```

Configuration statique pour la machine m2

affichage de l'adresse physique de la machine m2

```
m2 ()
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
m2:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 02:04:06:c2:00:fd
          inet6 addr: fe80::4:6fff:fec2:fd/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:86 errors:0 dropped:0 overruns:0 frame:0
          TX packets:17 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2928 (2.8 KiB)  TX bytes:820 (820.0 B)
          Interrupt:5

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:19 errors:0 dropped:0 overruns:0 frame:0
          TX packets:19 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:758 (758.0 B)  TX bytes:758 (758.0 B)

m2:~#
```

modification du fichier `/etc/dhcp3/dhcpd.conf`

```
# Fixed IP addresses can also be specified for hosts.  These addresses
# should not also be listed as being available for dynamic assignment.
# Hosts for which fixed IP addresses have been specified can boot using
# BOOTP or DHCP.  Hosts for which no fixed address is specified can only
# be booted with DHCP, unless there is an address range on the subnet
# to which a BOOTP client is connected which has the dynamic-bootp flag
# set.
host m2 {
    hardware ethernet 02:04:06:c2:00:fd;
    fixed-address 192.168.20.25;
}
```

Test pour le serveur DHCP

On test avec la commande `dhcpd3 -d` pour déboguer le fichier

```
DHCP ()
DHCP:~# dhcpd3 -d
Internet Systems Consortium DHCP Server V3.1.1
Copyright 2004-2008 Internet Systems Consortium.
All rights reserved.
For info, please visit http://www.isc.org/sw/dhcp/
Wrote 0 deleted host decls to leases file.
Wrote 0 new dynamic host decls to leases file.
Wrote 0 leases to leases file.
Listening on LPF/eth0/02:04:06:e2:6f:23/192.168.20/24
Sending on   LPF/eth0/02:04:06:e2:6f:23/192.168.20/24
Sending on   Socket/fallback/fallback-net
```


on demare le serveur DHCP avec la commande `/etc/init.d/dhcp3-serveur start`

```
DHCP:~# /etc/init.d/dhcp3-server start
Starting DHCP server: dhcpd3.
DHCP:~# █
```

on active eth0 de la machine m1 avec la commande `ifup` et on vérifie avec la commande `ifconfig` si le serveur DHCP a bien attribué une adresse Ip.



```
m1 ()
permitted by applicable law.
m1:~# ifup eth0
Internet Systems Consortium DHCP Client V3.1.1
Copyright 2004-2008 Internet Systems Consortium.
All rights reserved.
For info, please visit http://www.isc.org/sw/dhcp/

Listening on LPF/eth0/02:04:06:06:db:88
Sending on   LPF/eth0/02:04:06:06:db:88
Sending on   Socket/Fallback
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 3
DHCPOFFER from 192.168.20.1
DHCPREQUEST on eth0 to 255.255.255.255 port 67
DHCPACK from 192.168.20.1
bound to 192.168.20.10 -- renewal in 259 seconds.
if-up.d/mountnfs[eth0]: waiting for interface lo before doing NFS mounts
postconf: fatal: open /etc/postfix/main.cf: No such file or directory
m1:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 02:04:06:06:db:88
          inet addr:192.168.20.10  Bcast:192.168.20.255  Mask:255.255.255.0
          inet6 addr: fe80::4:6ff:fe06:db88/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:331 errors:0 dropped:0 overruns:0 frame:0
          TX packets:74 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:8668 (8.4 KiB)  TX bytes:3520 (3.4 KiB)
          Interrupt:5

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:66 errors:0 dropped:0 overruns:0 frame:0
          TX packets:66 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1604 (1.5 KiB)  TX bytes:1604 (1.5 KiB)

m1:~# █
```

Sur la capture d'écran on voit le serveur DHCP a attribue la première adresse de la plage a la machine m1.

on active eth0 de la machine m2 avec la commande `ifup` et on vérifie avec la commande `ifconfig` si le serveur DHCP a bien attribué une adresse Ip.

```
m2 ()
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
m2:~# ifup eth0
Internet Systems Consortium DHCP Client V3.1.1
Copyright 2004-2008 Internet Systems Consortium.
All rights reserved.
For info, please visit http://www.isc.org/sw/dhcp/

Listening on LPF/eth0/02:04:06:c2:00:fd
Sending on LPF/eth0/02:04:06:c2:00:fd
Sending on Socket/fallback
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 5
DHCPOFFER from 192.168.20.1
DHCPREQUEST on eth0 to 255.255.255.255 port 67
DHCPACK from 192.168.20.1
bound to 192.168.20.25 -- renewal in 282 seconds.
if-up,d/mountnfs[eth0]: waiting for interface lo before doing NFS mounts
postconf: fatal: open /etc/postfix/main.cf: No such file or directory
m2:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 02:04:06:c2:00:fd
          inet addr:192.168.20.25  Bcast:192.168.20.255  Mask:255.255.255.0
          inet6 addr: fe80::4:6ff:fec2:fd/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:314 errors:0 dropped:0 overruns:0 frame:0
          TX packets:72 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:7672 (7.4 KiB)  TX bytes:3553 (3.4 KiB)
          Interrupt:5

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:64 errors:0 dropped:0 overruns:0 frame:0
          TX packets:64 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1568 (1.5 KiB)  TX bytes:1568 (1.5 KiB)

m2:~#
```

Le serveur DHCP a attribué l'adresse IP fixe définie au préalable sur le fichier de configuration à la machine m 2.

3 Mise en place du service DNS

Le serveur DNS1 est le serveur primaire de la zone

Configuration sur le serveur DNS1

1. ajout des deux zones sur le fichier `/etc/bind/named.conf` pour la résolution directe et inverse

```
zone "255.in-addr.arpa"{
    type master;
    file "/etc/bind/db.255";
};
// ajout du domaine sow.sow-ousmane.fr pour la résolution directe
zone "sow.sow-ousmane.fr"{
    type master;
    file "/etc/bind/db.sow.sow-ousmane.fr";
};
//20.168.192.in-addr.arpa pour la résolution inverse
zone "20.168.192.in-addr.arpa"{
    type master;
    file "/etc/bind/db.sow.sow-ousmane.fr.rev";
};
```

2. création sur le serveur DNS1 le fichier `/etc/bind/db.sow.sow-ousmane.fr` pour la gestion de la zone directe.

```
DNS1: # cat /etc/bind/db.sow.sow-ousmane.fr
; BIND reverse data file for empty rfc1918 zone
;
; DO NOT EDIT THIS FILE -it is used for multiple zones.
; Instead, copy it, edit named.conf, and use that copy.
;
$TTL      86400
@         IN      SOA      localhost. root.localhost. (
                        1          ; Serial
                        604800     ; Refresh
                        86400      ; Retry
                        2419200    ; Expire
                        86400)     ; Negative Cache TTL
;
DNS1      IN      NS       DNS1.sow.sow-ousmane.fr.
gw        IN      A        192.168.20.2
m1        IN      A        192.168.20.254
m2        IN      A        192.168.20.10
m2        IN      A        192.168.20.25
```

3. création sur le serveur DNS1 le fichier `/etc/bind/db.sow.sow-ousmane.fr.rev` pour la gestion de la zone reverse.

```
DNS1: # cat /etc/bind/db.sow.sow-ousmane.fr.rev
; BIND reverse data file for empty rfc1918 zone
;
; DO NOT EDIT THIS FILE -it is used for multiple zones.
; Instead, copy it, edit named.conf, and use that copy.
;
$TTL      86400
@         IN      SOA      localhost. root.localhost. (
                        1          ; Serial
                        604800     ; Refresh
                        86400      ; Retry
                        2419200    ; Expire
                        86400)     ; Negative Cache TTL
;
2         IN      NS       DNS1.sow.sow-ousmane.fr.
254       IN      PTR      DNS1.sow.sow-ousmane.fr.
10        IN      PTR      gw.sow.sow-ousmane.fr.
25        IN      PTR      m1.sow.sow-ousmane.fr.
25        IN      PTR      m2.sow.sow-ousmane.fr.
```

4. On lance le service DNS avec la commande `/etc/init.d/bind9 start`

pour la capture d'écran c'est une redémarrage car le service était déjà lancé

```
DNS1:~# vi/etc/bind/db.sow.sow-ousmane.fr
DNS1:~# /etc/init.d/bind9 restart
Stopping domain name service...: bind.
Stopping domain name service...: bind.
DNS1:~# nslookup 192.168.20.254
```

2. On modifie le fichier `/etc/resolv.conf` de DNS1 pour que le domaine internet et de recherche soit `sow.sow-ousmane.fr` et le serveur de nom sa propre adresse.

```
DNS1:~# cat/etc/resolv.conf
domain sow.sow-ousmane.fr
search sow.sow-ousmane.fr
nameserver 192.168.28.2

DNS1:~#
```

Test de fonctionnement du service DNS

On test le service avec les commandes `ping` et `nslookup`

```
DNS1:~# nslookup 192.168.20.25
Server:      192.168.20.2
Address:     192.168.20.2#53

25.20.168.192.in-addr.arpa      name = m2.sow.sow-ousmane.fr.

DNS1:~# nslookup m1
Server:      192.168.20.2
Address:     192.168.20.2#53

Name:  m1.sow.sow-ousmane.fr
Address: 192.168.20.10

DNS1:~#
```

```
DNS1:~# ping m1
PING m1.sow.sow-ousmane.fr (192.168.20.10) 56(84) bytes of data.
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=1 ttl=64 time=20.5 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=2 ttl=64 time=0.202 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=3 ttl=64 time=0.222 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=4 ttl=64 time=0.249 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=5 ttl=64 time=0.233 ms

-- m1.sow.sow-ousmane.fr ping statistics --
5 packets transmitted, 5 received, 0% packet loss, time 4047ms
rtt min/avg/max/mdev = 0.202/4.281/20.501/8.110 ms
DNS1:~#
```

Pour que m1 puisse communiquer directement avec m2 il faut :

- On ajoute sur le serveur DHCP le nom du domaine et l'adresse du serveur de noms

```
#       deny members of "foo";
#       range 10.0.29.10 10.0.29.230;
#     }
#}
option domain-name "sow.sow-ousmane.fr";
option domain-name-server 192.168.20.2;

DHCP:~#
```

- On redémarre le serveur DHCP et on désactive eth0 sur les machines m1 et m 2 ensuite on les activent pour qu'elles prennent en compte des modifications sur le domaine de recherche.
- Ainsi le fichier **/etc/resolv.conf** s'est met automatiquement a jour sur les machines m1 et m 2

```
m2:~# cat /etc/resolv.conf
domain sow.sow-ousmane.fr
domain sow.sow-ousmane.fr
nameserver 192.168.20.2

m2:~#
```

En fin les pings de m1 vers m 2 et m 2 vers m1

```
m2:~# ping m1
PING m1.sow.sow-ousmane.fr (192.168.20.10) 56(84) bytes of data.
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=1 ttl=64 time=20.4 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=2 ttl=64 time=0.272 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=3 ttl=64 time=0.284 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=4 ttl=64 time=0.274 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=5 ttl=64 time=0.292 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=6 ttl=64 time=0.220 ms
64 bytes from m1.sow.sow-ousmane.fr (192.168.20.10): icmp_seq=7 ttl=64 time=0.243 ms

--- m1.sow.sow-ousmane.fr ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6048ms
rtt min/avg/max/mdev = 0.220/3.144/20.424/7.054 ms
m2:~#
```

```
m1:~# ping m2
PING m2.sow.sow-ousmane.fr (192.168.20.25) 56(84) bytes of data.
64 bytes from m2.sow.sow-ousmane.fr (192.168.20.25): icmp_seq=1 ttl=64 time=20.4 ms
64 bytes from m2.sow.sow-ousmane.fr (192.168.20.25): icmp_seq=2 ttl=64 time=0.272 ms
64 bytes from m2.sow.sow-ousmane.fr (192.168.20.25): icmp_seq=3 ttl=64 time=0.284 ms
64 bytes from m2.sow.sow-ousmane.fr (192.168.20.25): icmp_seq=4 ttl=64 time=0.274 ms
64 bytes from m2.sow.sow-ousmane.fr (192.168.20.25): icmp_seq=5 ttl=64 time=0.292 ms
64 bytes from m2.sow.sow-ousmane.fr (192.168.20.25): icmp_seq=6 ttl=64 time=0.260 ms
64 bytes from m2.sow.sow-ousmane.fr (192.168.20.25): icmp_seq=7 ttl=64 time=0.262 ms
```

Configuration sur le serveur DNS2

– le serveur DNS2 est le serveur secondaire

1. On configure le fichier **/etc/resolv.conf** pour la résolution de noms

```
DNS2:~# cat /etc/resolv.conf
nameserver 192.168.20.2
domain sow.sow-ousmane.fr
search sow.sow-ousmane.fr

DNS2:~#
```

2. On ajoute le serveur DNS2 dans les table de DNS1 et on vérifie avec la commande nslookup

```

DNS1:~# nslookup DNS2
Server:      192.168.20.2
Address:     192.168.20.2#53

Name:   DNS2.sow.sow-ousmane.fr
Address: 192.168.20.3

DNS1:~# nslookup 192.168.20.3
Server:      192.168.20.2
Address:     192.168.20.2#53

3.20.168.192.in-addr.arpa      name = DNS2.sow.sow-ousmane.fr.

DNS1:~#

```

3. Sur DNS1 on autorise le transfert de zones vers ns2 en éditant le fichier */etc/bind/named.conf* et en ajoutant la ligne allow-transfer { 192.168.20.3};

```

};
// ajout du domaine sow.sow-ousmane.fr pour la resolution directe
zone "sow.sow-ousmane.fr"{
    type master;
    file "/etc/bind/db.sow.sow-ousmane.fr";
    allow-transfer{192.168.20.2;};
};

//20.168.192.in-addr.arpa pour la resolution inverse

```

4. On ajoute dans la zone directe et la zone reverse de DNS1, un enregistrement de type NS pointant sur sow.sow-ousmane.fr

```

DNS1:~# cat /etc/bind/db.sow.sow-ousmane.fr.rev
; BIND reverse data file for empty rf1918 zone
;
; DO NOT EDIT FILE - it is used for multiple zones.
; Instead, copy it, edit named.conf, and use that copy.
;
$TTL      86400
@         IN      SOA      localhost. root.localhost. (
                        1          ; Serial
                        604800     ; Refresh
                        86400      ; Retry
                        2419200    ; Expire
                        86400 )    ; Negative Cache TTL

                        IN      NS      DNS1.sow.sow-ousmane.fr.
                        IN      NS      DNS2.sow.sow-ousmane.fr.

2         IN      PTR      DNS1.sow.sow-ousmane.fr.
254       IN      PTR      gw.sow.sow-ousmane.fr.
10        IN      PTR      m1.sow.sow-ousmane.fr.
25        IN      PTR      m2.sow.sow-ousmane.fr.
3         IN      PTR      DNS2.sow.sow-ousmane.fr.

```

```

; BIND reverse data file for empty rf1918 zone
;
; DO NOT EDIT FILE - it is used for multiple zones.
; Instead, copy it, edit named.conf, and use that copy.
;
$TTL      86400
@         IN      SOA      localhost. root.localhost. (
                        1          ; Serial
                        604800     ; Refresh
                        86400      ; Retry
                        2419200    ; Expire
                        86400 )    ; Negative Cache TTL

                        IN      NS      DNS1.sow.sow-ousmane.fr.
                        IN      NS      DNS1.sow.sow-ousmane.fr.

DNS1      IN      A        192.168.20.2
gw        IN      A        192.168.20.254
m1        IN      A        192.168.20.10
m2        IN      A        192.168.20.25
DNS2      IN      A        192.168.20.3

```

5. On relance le service DNS sur DNS1 pour prendre en compte les modifications avec la commande `/etc/init.d/bind9 restart`

```

DNS1 ()
DNS1:~# /etc/init.d/bind9 restart
Stopping domain name service...: bind.
Starting domain name service...: bind.
DNS1:~#

```

6. Sur DNS2 on édite le fichier `/etc/bind/named.conf`

```
// root-delegation-only exclude {"DE"; "MUSEUM"; };
zone "sow.sow-ousmane.fr" {
    type slave;
    file "/etc/bind/db.sow.sow-ousmane.fr";
    masters { 192.168.20.2; };
};
zone "20.168.192.in-addr.arpa" {
    type slave;
    file "/etc/bind/db.sow.sow-ousmane.fr";
    masters { 192.168.20.2; };
};

include "/etc/bind/named.conf.local";
```

```
DNS2:~# /etc/init.d/bind9 start
Starting domain name service...: bind.
DNS2:~# cd /etc/bind
DNS2:/etc/bind# ls
db.0      db.255      db.empty    db.root      named.conf.local  rndc.key
db.127    db.sow.sow-ousmane.fr  db.local     named.conf    named.conf.options  zones.rfc1918
```

7. On démarre le service DNS du serveur DNS2 par la commande `/etc/init.d/bind9 start` et le transfert de zone s'effectue automatiquement sur le serveur DNS2, en transférant les fichiers `.db` de DNS1

Test de fonctionnement du service DNS du serveur DNS2

On test avec la commande `nslookup` sur le DNS2 pour vérifier le fonctionnement du DNS secondaire.

```
DNS2:/etc/bind# nslookup
> DNS1
Server:      192.168.20.2
Address:     192.168.20.2#53

Name:   DNS1.sow.sow-ousmane.fr
Address: 192.168.20.2
> DNS2
Server:      192.168.20.2
Address:     192.168.20.2#53

Name:   DNS2.sow.sow-ousmane.fr
Address: 192.168.20.3
> m1
server:     192.168.20.2
Address:    192.168.20.2#53

Name:   m1.sow.sow-ousmane.fr
Address: 192.168.20.10
> m2
Server:      192.168.20.2
Address:     192.168.20.2#53

Name:   m2.sow.sow-ousmane.fr
Address: 192.168.20.25
>
```


- On ajoute sur le serveur DHCP le nom du domaine et l'adresse du serveur de noms

```
# match if substring (option vendor-class-identifier, 0, 4) = "SUNW";
#}

#shared-network 224-29 {
# subnet 10.17.224.0 netmask 255.255.255.0 {
#   option routers rtr-224.example.org;
# }
# subnet 10.0.29.0 netmask 255.255.255.0 {
#   option routers rtr-29.example.org;
# }
# pool {
#   allow members of "foo";
#   range 10.17.224.10 10.17.224.250;
# }
# pool {
#   deny members of "foo";
#   range 10.0.29.10 10.0.29.230;
# }
#}
#option domain-name "sow.sow-ousmane.fr";
#option domain-name-servers 192.168.20.2 192.168.20.3;
```