

# DNS

PRACTICAL WORK 3

TIZIANO NARDONE
UNIVERSITY OF REIMS | FRANCE

# Contents

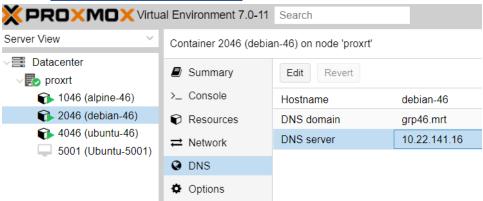
I.		Requirements – Network configuration on VBox	2
	1.	Proxmox DNS configuration	2
	2.	Host only network configuration	2
	3.	Debian network configuration	2
	4.	Alpine network configuration	3
	5.	Ubuntu network configuration	3
II.		DNS Master + cache Configuration	4
	6.	DNS Master configuration on Debian	4
		Debian Master DNS	4
		Zones configuration	4
		Forward resolution configuration	4
		Check the Forward resolution configuration	5
		Reverse resolution configuration	5
		Check the Reverse resolution configuration	5
	7.	DNS Cache configuration on Debian	5
	8.	DNS Dynamic	5
Ш		DNS & web server	5
	9.	Web server on Debian	5
	10	. Web server on Alpine	6
	11	. Web server on Ubuntu	6
	12	. Configuring resolv files on Alpine	6
	13	. Configuring resolv file on Ubuntu	6
IV		DNS slave on Ubuntu	6
	14	. DNS master configuration	6
	15	. DNS slave configuration	7
	16	. Check DNS slave configuration	9
٧.		DNS configuration	9
	17	. DNS master	9
	18	. Cache Master	O
	19	. Slave DNS server	0



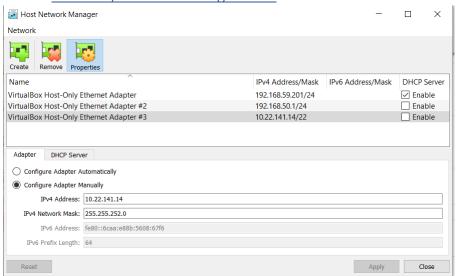
**VERSION: 21 DECEMBER 2021** 

# Requirements – Network configuration on VBox

1. Proxmox DNS configuration



2. Host only network configuration



3. Debian network configuration



PRACTICAL WORK 3 VERSION : 21 DECEMBER 2021

```
# This file describes the network inter
# and how to activate them. For more ir
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 dhcp

auto lo
allow-hotplug enp0s8
iface enp0s8 inet static
address 10.22.141.16/22
gateway 10.22.143.254
```

# 4. Alpine network configuration

```
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet dhcp
hostname alpine

auto eth1
iface eth1 inet static
address 10.22.141.15/22
gateway 10.22.143.254
```

```
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet dhcp
hostname alpine

auto eth1
iface eth1 inet static
address 10.22.141.15/22
gateway 10.22.143.254
```

# 5. Ubuntu network configuration

```
network:
ethernets:
enp0s3:
dhcp4: true
enp0s8:
addresses: [10.22.141.17/22]_
version: 2
```



**VERSION: 21 DECEMBER 2021** 

```
link/ether 08:00:27:c7:69:20 brd ff:ff:ff:ff:ff:ff
inet 10.22.141.17/22 brd 10.22.143.255 scope global enp0s8
valid_lft forever preferred_lft forever
inet6 fe80::a00:27ff:fec7:6920/64 scope link
valid_lft forever preferred_lft forever
tub@ubuntu:~$
```

- 1. Installation dig command on Debian
- sudo apt-get install dnsutils
- → dig -v
- 2. Installation bind9 on Debian
- → sudo apt-get install bind9

# II. DNS Master + cache Configuration

6. <u>DNS Master configuration on Debian</u>

#### **Debian Master DNS**

• Save the config file /etc/bind/named.conf.options

#### Zones configuration

Save the config file /etc/bind/named.conf.local

# Forward resolution configuration

• Copy the /etc/bind/db.local file to the /etc/bind/db.grp46.mrt file

```
BIND data file for grp46.mrt zone
$TTL
         604800
                  SOA
                           ip2.grp46.mrt. admin.grp46.mrt. (
                                             ; Serial
                            604800
                                               Refresh
                             86400
                                               Retry
                           2419200
                                                Expire
                            604800 )
                                              ; Negative Cache TTL
                  NS
                           ip2.grp46.mrt.
         IN
                           10.22.141.16
                  Α
                           10.22.141.15
10.22.141.17
         ΙN
                  Α
ip1
ip3
         IN
                  Α
alpine
debian
         IN
                  CNAME
                           ip1
         IN
                  CNAME
                            ip2
                  CNAME
ubuntu
         IN
```



**VERSION: 21 DECEMBER 2021** 

# Check the Forward resolution configuration

```
tdeb@debian-46:/etc/bind$ sudo named-checkzone grp46.mrt db.grp46.mrt
zone grp46.mrt/IN: loaded serial 3
OK
```

# Reverse resolution configuration

Copy the /etc/bind/db.127 file to the /etc/bind/db.141.22.10 file

```
BIND reverse data file for grp46.mrt zone
$TTL
        604800
0
                          ip2.grp46.mrt. admin.grp46.mrt. (
        IN
                                          ; Serial
                                2
                           604800
                                           ; Refresh
                                           ; Retry
                           86400
                          2419200
                                           ; Expire
                           604800 )
                                           ; Negative Cache TTL
ģ
16
        IN
                 NS
                          ip2.grp46.mrt.
                          ip2.grp46.mrt.
        IN
                 PTR
15
        IN
                 PTR
                          ip1.grp46.mrt.
17
        IN
                 PTR
                          ip3.grp46.mrt.
```

#### Check the Reverse resolution configuration

tdeb@debian-46:/etc/bind\$ sudo named-checkzone 141.22.10.in-addr.arpa db.141.22.10 zone 141.22.10.in-addr.arpa/IN: loaded serial 2 OK

# 7. DNS Cache configuration on Debian

- Forward
- /etc/bind/named.conf.options

#### 8. DNS Dynamic

/etc/resolv.conf

# nameserver 10.22.141.16

- → sudo systemctl restart bind9
- → sudo systemctl restart networking

# III. DNS & web server

- 9. Web server on Debian
- → sudo apt-get -y install apache2



**VERSION: 21 DECEMBER 2021** 

→ Edit the /var/www/html/index.html file

<meta http-equiv="Content-Type" content="text/html; charse
<title>Apache2 Debian Default Page: It works</title>
<style type="text/css" media="screen">

# 10. Web server on Alpine

- → sudo apk add apache2
- → sudo service apache2 start
- → Edit the /var/www/localhost/htdocs/index.html file

<html><body><h1>ALPIINE !!!! It works!</h1></body></html>

### 11. Web server on Ubuntu

- → Sudo apt-get install -y apache2
- → Edit the /var/www/html/index.html file

<meta http-equiv="Content-Type" content="text/html; char <title>Apache2 Ubuntu Default Page: It works</title> <style type="text/css" media="screen"> f

# 12. Configuring resolv files on Alpine

→ Edit the /etc/resolv.conf file

nameserver 10.22.141.16 nameserver 192.168.1.254

- → sudo apk add curl
- → curl ubuntu.grp46.mrt | grep "Apache2 Ubuntu Default Page"

#### 13. Configuring resolv file on Ubuntu

→ Edit the /etc/resolv.conf file

#nameserver 127.0.0.53
#options edns0 trust-ad
nameserver 10.22.141.16

→ curl alpine.grp46.mrt

ub@ubuntu:~\$ curl alpine.grp46.mrt html><body><h1>ALPIINE !!!! It works!</h1></body></html>

# IV. DNS slave on Ubuntu

# 14. DNS master configuration

• Edit /etc/bind/named.conf.local file



**VERSION: 21 DECEMBER 2021** 

```
zone "grp46.mrt" {
    type master;
    file "/etc/bind/db.grp46.mrt";
    notify yes;
    allow-transfer { 10.22.141.17; };
    also-notify { 10.22.141.17; };
};

zone "141.22.10.in-addr.arpa" {
    type master;
    file "/etc/bind/db.141.22.10";
    notify yes;
    allow-transfer {10.22.141.17; }; // Ameliore la convergence en notifiant l'esclave lors de la modif de la zone also-notify { 10.22.141.17; }; // Autorise les servers esclaves pour le transfert de la zone
};
```

Edit the /etc/bind/db.grp46.mrt and /etc/bind/db.141.22.10 files

sudo systemctl restart bind9

# 15. DNS slave configuration

- sudo apt-get -y install bind9
- sudo cp /etc/bind/named.conf.options /etc/bind/named.conf.options.bak
- Edit the /etc/bind/named.conf.options



- sudo cp /etc/bind/named.conf.local /etc/bind/named.conf.local
- Edit the /etc/bind/named.conf.local file

```
//
// 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 "grp46.mrt" {
    type slave;
    file "/var/cache/bind/db.grp46.mrt";
    masters { 10.22.141.16; };
    allow-transfer { 10.22.141.16; };

zone "141.22.10.in-addr.arpa" {
    type slave;
    file "/var/cache/bind/db.141.grp46.mrt";
    masters { 10.22.141.16; };
    allow-transfer { 10.22.141.16; };
};
```

- sudo cp /etc/bind/db.local /var/cache/bind/db.grp46.mrt
- Edit the /var/cache/bind/db.grp46.mrt file

- sudo cp /etc/bind/db.127 /var/cache/bind/db.141.22.10
- Edit the /var/cache/bind/db.141.22.10 file



**VERSION: 21 DECEMBER 2021** 

Edit owner

tub@ubuntu:/etc/bind\$ sudo chown bind:bind /var/cache/bind/db.grp46.mrt
tub@ubuntu:/etc/bind\$ sudo chown bind:bind /var/cache/bind/db.141.22.10

sudo systemctl restart bind9

#### 16. Check DNS slave configuration

• Zone transfer axfr

# V. DNS configuration

#### 17. DNS master

• Check Master configuration

```
tdeb@debian:~$ dig NS +short @10.22.141.16 grp46.mrt
ip3.grp46.mrt.
ip2.grp46.mrt.__
```

Check forwarding

tdeb@debian:~\$ dig A +short @10.22.141.16 www.univ-reims.fr 194.57.105.223 \_

Check local DNS

```
tdeb@debian:~$ dig A +short @10.22.141.16 ip2.grp46.mrt 10.22.141.16
```



**VERSION: 21 DECEMBER 2021** 

DNS TIZIANO NARDONE

PRACTICAL WORK 3 VERSION : 21 DECEMBER 2021

# 18. Cache Master

```
tdeb@debian:~$ dig A @10.22.141.16 www.juventus.com | grep time;; Query time: 288 msec tdeb@debian:~$ dig A @10.22.141.16 www.juventus.com | grep time;; Query time: 0 msec
```

19. Slave DNS server

