

DHCP

MAIL

DNS

HTTP

SAMBA

Rapport Lunix

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Configuration des serveurs DNS, DHCP, hTTP et

SAMBA

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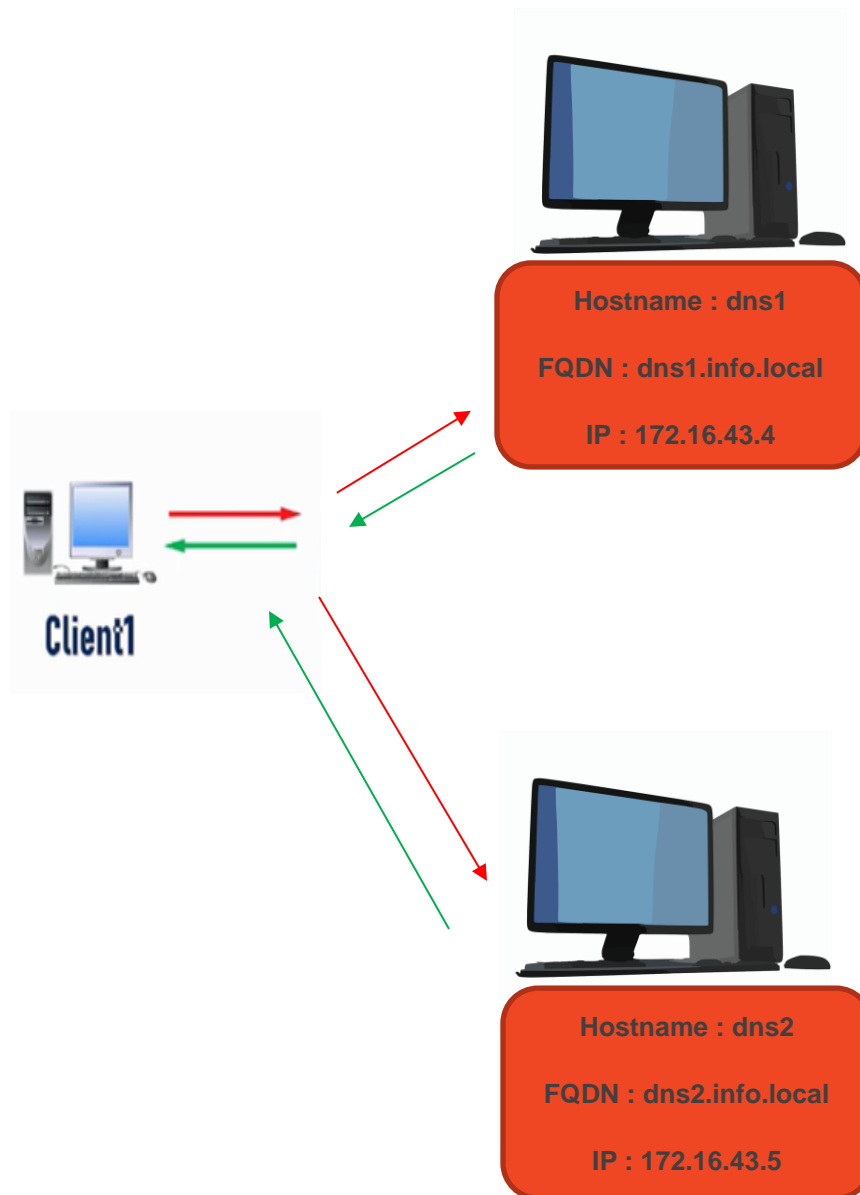
Le plan du rapport

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« La création
deux de serveurs
Primary DNS ou
Master DNS et
Slave DNS »

DNS

La configuration de DNS.



D'abord c'est quoi DNS ?

Le DNS ou le Domain Name System permet de convertir le nom d'un hôte (comme `www.exemple.com`) en une adresse IP. Les internautes accèdent aux informations en ligne via des noms de domaine tandis que les navigateurs interagissent par le biais d'adresses IP. En résumé, le DNS traduit le nom des domaines en une adresse IP pour que les navigateurs puissent charger les ressources web.

1. DNS MASTER :

D'abord, on crée un serveur. Dont le hostname est **`dns1.info.local`** et l'adresse IP static est **`172.16.43.4`**.

```
dba@dns1:~$ hostname
dns1.info.local
dba@dns1:~$ hostname -I
172.16.43.4
dba@dns1:~$
```

On install bind9.

```
dba@vm:~$ sudo apt-get install bind9
Reading package lists... Done
Building dependency tree
Reading state information... Done
bind9 is already the newest version (1:9.16.1-0ubuntu2.11).
0 upgraded, 0 newly installed, 0 to remove and 74 not upgraded.
dba@vm:~$ _
```

Puis on verifie que bind9 est activé

```
dba@dns1:~$ sudo systemctl status bind9
● named.service - BIND Domain Name Server
   Loaded: loaded (/lib/systemd/system/named.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2022-12-19 16:24:38 UTC; 2min 22s ago
     Docs: man:named(8)
    Main PID: 628 (named)
      Tasks: 5 (limit: 1429)
     Memory: 21.6M
    CGroup: /system.slice/named.service
            └─628 /usr/sbin/named -f -u bind

Dec 19 16:26:09 dns1.info.local named[628]: network unreachable resolving './NS/IN': 2001:7fd::1#53
Dec 19 16:26:10 dns1.info.local named[628]: network unreachable resolving './NS/IN': 2001:500:a8::e#53
Dec 19 16:26:10 dns1.info.local named[628]: network unreachable resolving './NS/IN': 2001:500:200::b#53
Dec 19 16:26:10 dns1.info.local named[628]: network unreachable resolving './NS/IN': 2001:503:c27::2:30#53
Dec 19 16:26:10 dns1.info.local named[628]: network unreachable resolving './NS/IN': 2001:503:ba3e::2:30#53
Dec 19 16:26:10 dns1.info.local named[628]: network unreachable resolving './NS/IN': 2001:500:1::53#53
Dec 19 16:26:12 dns1.info.local named[628]: network unreachable resolving './NS/IN': 2001:7fe::53#53
Dec 19 16:26:13 dns1.info.local named[628]: network unreachable resolving './NS/IN': 2001:500:2::c#53
Dec 19 16:26:14 dns1.info.local named[628]: network unreachable resolving './NS/IN': 2001:500:2d::d#53
Dec 19 16:26:17 dns1.info.local named[628]: resolver priming query complete
dba@dns1:~$
```

Named.conf.local

```
dba@dns1:/etc/bind$ cd /etc/bind
dba@dns1:/etc/bind$ ls
bind.keys  db.127  db.empty  named.conf          named.conf.local  rndc.key
db.0       db.255  db.local  named.conf.default-zones  named.conf.options  zones.rfc1918
dba@dns1:/etc/bind$ sudo vim named.conf.local
dba@dns1:/etc/bind$
```

```
zone "info.local" IN { // Domain name : info.local
    type master; // Primary DNS : master
    file "/etc/bind/forward.info.local"; // Forward lookup file ( in step 3.3 )
    allow-update { none; }; // Primary DNS set : "none" ;
    allow-transfer { 172.16.43.5; }; //Allow Transfer of zone from master server
    also-notify { 172.16.43.5; }; //Notify slave zone changes
};

// Reverse Zone
zone "43.16.172.in-addr.arpa" IN { //Reverse lookup name, should match your network in reverse order
    type master; // Primary DNS : master
    file "/etc/bind/reverse.info.local"; //Reverse lookup file ( in step 3.4 )
    allow-update { none; }; //Primary DNS set : "none;" ;
    allow-transfer { 172.16.43.5; }; //Allow Transfer of zone from master server
    also-notify { 172.16.43.5; }; //Notify slave zone changes
};
"named.conf.local" 37L, 1016C
```

Forward.info.local

```
$TTL      604800
@         IN      SOA      dns1.info.local. root.info.local. (
                        3      ; Serial
                        604800 ; Refresh
                        86400  ; Retry
                        2419200 ; Expire
                        604800 ) ; Negative Cache TTL
;--- Name Server Information
@         IN      NS       dns1.info.local.
@         IN      NS       dns2.info.local.
;--- IP address of Name Server
dns1      IN      A        172.16.43.4
dns2      IN      A        172.16.43.5
http      IN      A        172.16.43.6
dhcp      IN      A        172.16.43.7
;--- Mail Exchanger ( if exists )
info.local. IN      MX      10 mail1.info.local.
;--- A - Record HostName To Ip Address
apps1     IN      A        192.168.43.155
mail1     IN      A        192.168.43.200
;--- CNAME record
www       IN      CNAME    apps1.info.local.
ftp       IN      CNAME    apps1.info.local.
```

Reverse.info.local

```
$TTL      604800
@         IN      SOA      info.local. root.info.local. (
                        3      ; Serial
                        604800 ; Refresh
                        86400  ; Retry
                        2419200 ; Expire
                        604800 ); Negative Cache TTL
;--Name Server Information
@         IN      NS       dns1.info.local.
@         IN      NS       dns2.info.local.
;--Reverse lookup for Name Server
4         IN      PTR      dns1.info.local.
5         IN      PTR      dns2.info.local.
6         IN      PTR      http.info.local.
;--PTR Record IP address to HostName
155       IN      PTR      apps1.info.local.
200       IN      PTR      mail1.info.local.
~
```

Puis on ajoute les deux serveurs dans le fichier resolv.conf

```
# This file is managed by man:systemd-resolved(8). Do not edit.
#
# 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 must 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 172.16.43.4
nameserver 172.16.43.5
#nameserver 127.0.0.53
#options edns0 trust-ad
~
```

2. DNS SLAVE :

D'abord, on crée un serveur. Dont le hostname est dns2.info.local et l'adresse IP static est 172.16.43.5.

```
dba@dns2:~$ hostname
dns2.info.local
dba@dns2:~$ hostname -I
172.16.43.5
dba@dns2:~$ _
```

Named.conf.local

```
zone "info.local" IN { // Domain name : info.local
    type slave; // Primary DNS : master
    file "/var/cache/bind/forward.info.local"; // Forward lookup file ( in step 3.3 )
    masters { 172.16.43.4; }; // Master serverIP
};

// Reverse Zone
zone "43.16.172.in-addr.arpa" IN { //Reverse lookup name, should match your network in reverse order
    type slave; // Primary DNS : master
    file "/var/cache/bind/reverse.info.local"; //Reverse lookup file ( in step 3.4 )
    masters { 172.16.43.4; }; //Master server IP
};
```

Puis on ajoute les deux serveurs dans le fichier resolv.conf

```
dba@dns2:/etc/bind$ sudo vim /etc/resolv.conf
dba@dns2:/etc/bind$ cat /etc/resolv.conf
# This file is managed by man:systemd-resolved(8). Do not edit.
#
# 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 must 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 192.168.43.5
nameserver 192.168.43.4
#nameserver 127.0.0.53
#options edns0 trust-ad
dba@dns2:/etc/bind$
```


Tester le DNS :

```
dba@dns2:~$ nslookup 172.16.43.4
4.43.16.172.in-addr.arpa      name = dns1.info.local.

dba@dns2:~$ nslookup dns1.info.local
Server:      172.16.43.5
Address:     172.16.43.5#53

Name:   dns1.info.local
Address: 172.16.43.4

dba@dns2:~$ nslookup dns2.info.local
Server:      172.16.43.5
Address:     172.16.43.5#53

Name:   dns2.info.local
Address: 172.16.43.5

dba@dns2:~$ nslookup 172.16.43.5
5.43.16.172.in-addr.arpa      name = dns2.info.local.

dba@dns2:~$
```

```
dba@dns1:/$ nslookup 172.16.43.4
4.43.16.172.in-addr.arpa      name = dns1.info.local.

dba@dns1:/$ nslookup 172.16.43.5
5.43.16.172.in-addr.arpa      name = dns2.info.local.

dba@dns1:/$ nslookup dns1.info.local
Server:      172.16.43.4
Address:     172.16.43.4#53

Name:   dns1.info.local
Address: 172.16.43.4

dba@dns1:/$ nslookup dns2.info.local
Server:      172.16.43.4
Address:     172.16.43.4#53

Name:   dns2.info.local
Address: 172.16.43.5

dba@dns1:/$ _
```

DHCP

D'abord c'est quoi DHCP ?

Dynamic Host Configuration Protocol est un protocole réseau dont le rôle est d'assurer la configuration automatique des paramètres IP d'une station ou d'une machine, notamment en lui attribuant automatiquement une adresse IP et un masque de sous-réseau.

Dans notre cas le DHCP affectera des adresses IP dans la plage **172.16.43.10/24** à **172.16.43.110/24** (c'est-à-dire la capacité maximale de serveur est 100 hots). Et le masque sous-réseau est **255.255.0.0**.

On donne à notre DHCP server l'adresse IP **172.16.43.7**

```
# This is the network config written by 'subiquity'
network:
  ethernets:
    enp0s3:
      addresses: [172.16.43.7/16]
      gateway4: 172.16.1.250
      nameservers:
        addresses: [8.8.8.8,8.8.4.4]
      dhcp4: no
  version: 2
```

a. DHCP sever

Voila les etapes de la configuration de dhcp :

1 – Premièrement on installe le package isc-dhcp-server :

```
dba@dhcp:~$ sudo apt-get install isc-dhcp-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
isc-dhcp-server is already the newest version (4.4.1-2.1ubuntu5.20.04.4).
0 upgraded, 0 newly installed, 0 to remove and 95 not upgraded.
dba@dhcp:~$ _
```

2- Deuxièmement on précise l'interface de notre système de notre carte réseau dans le fichier `/etc/default/isc-dhcp-server` :

L'interface sur laquelle le dhcp sera fonctionner.

```
dba@dhcp:~$ sudo nano /etc/default/isc-dhcp-server
dba@dhcp:~$ cat /etc/default/isc-dhcp-server
# Defaults for isc-dhcp-server (sourced by /etc/init.d/isc-dhcp-server)

# Path to dhcpd's config file (default: /etc/dhcp/dhcpd.conf).
#DHCPDv4_CONF=/etc/dhcp/dhcpd.conf
#DHCPDv6_CONF=/etc/dhcp/dhcpd6.conf

# Path to dhcpd's PID file (default: /var/run/dhcpd.pid).
#DHCPDv4_PID=/var/run/dhcpd.pid
#DHCPDv6_PID=/var/run/dhcpd6.pid

# Additional options to start dhcpd with.
# Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
#OPTIONS=""

# On what interfaces should the DHCP server (dhcpd) serve DHCP requests?
# Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACESv4="enp0s3"
INTERFACESv6=""
dba@dhcp:~$
```

3- Puis on change le chemin courant vers `/etc/dhcp` et on tape la commande `sudo nano /etc/dhcp/dhcpd.conf` qui ne permettra de configurer notre serveur dhcp grace :

- Préciser le domaine name 'info.local' 172.16.43.4 et adress reseau 172.16.0.0
- Préciser la plage des adresses sera donner par DHCP :172.16.43.10 – 172.16.43.110
- Préciser le masque sous-réseau 255.255.0.0

```
# option definitions common to all supported networks ...
#option domaine-name "exemple.org";
#option domaine-name "info.local";
option domain-name-servers 172.16.43.4;

default-lease-time 600;
max-lease-time 7200;

# The ddns-updates-style parameter controls whether or not the server will
# attempt to do a DNS update when a lease is confirmed. We default to the
# behavior of the version 2 packages ('none', since DHCP v2 didn't
# have support for DDNS.)
ddns-update-style none;

# If this DHCP server is the official DHCP server for the local
# network, the authoritative directive should be uncommented.
authoritative;
```

```
# A slightly different configuration for an internal subnet.
subnet 172.16.0.0 netmask 255.255.0.0 {
    range 172.16.43.10 172.16.43.110;
    option domain-name-servers 172.16.43.4;
    option domain-name "info.local";
    option subnet-mask 255.255.0.0;
    option routers 172.16.255.255;
    option broadcast-address 172.16.255.255;
    default-lease-time 600;
    max-lease-time 7200;
}

# Hosts which require special configuration options can be listed in
# host statements.  If no address is specified, the address will be
# allocated dynamically (if possible), but the host-specific information
# will still come from the host declaration.
```

4- Puis on commence le service par la commande : `sudo systemctl start isc-dhcp-server`

```
dba@dhcp:/etc/dhcp$ sudo systemctl start isc-dhcp-server
dba@dhcp:/etc/dhcp$
```

5- Ensuite on verifie le status de notre serveur par la commande : `sudo systemctl status isc-dhcp-server`

```
dba@dhcp:/etc/dhcp$ sudo systemctl status isc-dhcp-server
● isc-dhcp-server.service - ISC DHCP IPv4 server
   Loaded: loaded (/lib/systemd/system/isc-dhcp-server.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2022-12-20 14:48:24 UTC; 1h 38min ago
     Docs: man:dhcpd(8)
    Main PID: 667 (dhcpd)
      Tasks: 4 (limit: 448)
    Memory: 5.3M
    CGroup: /system.slice/isc-dhcp-server.service
            └─667 dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/dhcpd.pid -cf /etc/dhcp/dhcpd.conf enp0s3

Dec 20 16:27:20 dhcp.info.local dhcpd[667]: DHCPOFFER on 172.16.43.98 to 14:1f:78:42:c6:99 (Galaxy-J5-Prime) via enp0s3
Dec 20 16:27:21 dhcp.info.local dhcpd[667]: DHCPREQUEST for 172.16.195.122 from 66:ee:7a:98:67:23 via enp0s3: unknown lea
Dec 20 16:27:21 dhcp.info.local dhcpd[667]: DHCPDISCOVER from ac:5f:3e:a4:c2:8c (Galaxy-S7) via enp0s3
Dec 20 16:27:21 dhcp.info.local dhcpd[667]: DHCPOFFER on 172.16.43.31 to ac:5f:3e:a4:c2:8c (Galaxy-S7) via enp0s3
Dec 20 16:27:21 dhcp.info.local dhcpd[667]: DHCPDISCOVER from 14:1f:78:42:c6:99 (Galaxy-J5-Prime) via enp0s3
Dec 20 16:27:21 dhcp.info.local dhcpd[667]: DHCPOFFER on 172.16.43.98 to 14:1f:78:42:c6:99 (Galaxy-J5-Prime) via enp0s3
Dec 20 16:27:21 dhcp.info.local dhcpd[667]: DHCPDISCOVER from f6:83:e5:3d:0b:7a (Galaxy-A03s) via enp0s3
Dec 20 16:27:21 dhcp.info.local dhcpd[667]: DHCPOFFER on 172.16.43.24 to f6:83:e5:3d:0b:7a (Galaxy-A03s) via enp0s3
Dec 20 16:27:21 dhcp.info.local dhcpd[667]: DHCPDISCOVER from 0e:f0:21:63:44:fd (Galaxy-A10s) via enp0s3
Dec 20 16:27:21 dhcp.info.local dhcpd[667]: DHCPOFFER on 172.16.43.59 to 0e:f0:21:63:44:fd (Galaxy-A10s) via enp0s3
dba@dhcp:/etc/dhcp$
```

6- Puis on tape la commande : `sudo systemctl enable isc-dhcp-server`

```
dba@dhcp:/etc/dhcp$ sudo systemctl enable isc-dhcp-server
Synchronizing state of isc-dhcp-server.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable isc-dhcp-server
dba@dhcp:/etc/dhcp$
```

b. DHCP client

Le but dans cette partie est de créer une machine qu'elle obtiendra son adresse IP d'après de notre serveur DHCP server et donc l'adresse IP sera comprise entre 172.16.43.10 et 172.16.43.110.

Pour cela on configure la machine de telle sorte qu'elle obtiendra l'adresse IP auprès de DHCP server

Obtenir l'adresse
IP d'après DHCP
est : Activé



```
# This is the network config written by 'subiquity'
network:
  ethernets:
    enp0s3:
      gateway4: 172.16.1.250
      nameservers:
        addresses: [8.8.8.8,8.8.4.4]
      dhcp4: true
  version: 2
```

D'abord on tape la commande : `sudo nano /etc/network/interfaces`

```
# interfaces(5) file used by ifup (8)and ifdown(8)
auto lo
iface lo inet loopback
auto enp0s3
iface enp0s3 inet dhcp
```

Puis on tape la commande : `sudo systemctl restart networking`

```
dba@dhcp-client:~$ sudo systemctl restart networking
Failed to restart networking.service: Unit networking.service not found.
dba@dhcp-client:~$
```

Puis on voit l'adresse IP par la commande `ifconfig`

L'adresse IP obtenu
est : 172.16.43.65

```
dba@dhcp-client:~$ ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:e0:78:6d:4b txqueuelen 0 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.16.43.65 netmask 255.255.0.0 broadcast 172.16.255.255
    inet6 fe80::a00:27ff:feae:b104 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:ae:b1:04 txqueuelen 1000 (Ethernet)
    RX packets 13761 bytes 1113804 (1.1 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 22 bytes 2204 (2.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

On voit bien la
machine DHCP-
client

Puis on revient à DHCP server et on tape la commande : **dhcp-lease-list** cette commande nous permet de connaître toutes les machines ont obtenus leurs adresses IP auprès de notre serveur dhcp.

```
=====
08:00:27:ae:b1:04 172.16.43.65 dhcp-client 2022-12-20 17:08:38 -NA-
0e:d4:f7:23:e0:53 172.16.43.66 -NA- 2022-12-20 18:24:43 -NA-
1a:25:1d:2e:0c:3b 172.16.43.101 -NA- 2022-12-20 18:33:50 -NA-
22:0f:d3:75:ed:bd 172.16.43.94 -NA- 2022-12-20 17:38:49 -NA-
26:68:7e:b9:ce:7e 172.16.43.44 -NA- 2022-12-20 18:45:50 -NA-
```

```
dba@dhcp:~$ dhcp-lease-list
To get manufacturer names please download http://standards.ieee.org/regauth/oui/oui.txt to /usr/
Reading leases from /var/lib/dhcp/dhcpd.leases
=====
MAC IP hostname valid until manufacturer
=====
0a:b0:fb:3e:9f:a1 172.16.43.89 -NA- 2022-12-20 17:24:34 -NA-
0e:d4:f7:23:e0:53 172.16.43.66 -NA- 2022-12-20 18:24:43 -NA-
14:9d:09:e7:4b:e3 172.16.43.65 Honor_6X 2022-12-20 17:26:23 -NA-
1a:25:1d:2e:0c:3b 172.16.43.101 -NA- 2022-12-20 18:33:50 -NA-
22:0f:d3:75:ed:bd 172.16.43.94 -NA- 2022-12-20 17:38:49 -NA-
26:68:7e:b9:ce:7e 172.16.43.44 -NA- 2022-12-20 18:45:50 -NA-
26:c4:a0:d1:22:d1 172.16.43.72 Galaxy-A30 2022-12-20 17:22:43 -NA-
28:16:a8:58:9f:1c 172.16.43.53 T-LH 2022-12-20 17:23:34 -NA-
2a:23:45:27:bd:e2 172.16.43.28 -NA- 2022-12-20 18:42:14 -NA-
32:f6:41:99:f1:fa 172.16.43.98 -NA- 2022-12-20 18:36:57 -NA-
36:fb:00:77:1c:42 172.16.43.27 -NA- 2022-12-20 18:58:21 -NA-
42:a3:27:ff:27:a1 172.16.43.38 -NA- 2022-12-20 17:21:23 -NA-
44:46:87:1f:f2:45 172.16.43.42 realm-x 2022-12-20 17:27:28 -NA-
46:f6:eb:8d:70:e4 172.16.43.74 -NA- 2022-12-20 18:28:17 -NA-
4c:34:88:c6:37:89 172.16.43.70 DESKTOP-17J4AC 2022-12-20 17:26:19 -NA-
4e:27:88:4f:62:97 172.16.43.108 -NA- 2022-12-20 18:16:49 -NA-
5e:6c:00:91:de:6a 172.16.43.30 -NA- 2022-12-20 19:12:38 -NA-
62:36:ff:00:f5:26 172.16.43.110 -NA- 2022-12-20 17:28:00 -NA-
62:a3:3b:09:67:c8 172.16.43.25 -NA- 2022-12-20 19:12:19 -NA-
74:df:bf:a5:4e:f0 172.16.43.86 DESKTOP-7TH09D 2022-12-20 17:20:11 -NA-
76:fe:9e:76:b5:97 172.16.43.15 A03-de-Fatima 2022-12-20 17:23:13 -NA-
```

HTTP

D'abord c'est quoi HTTP ?

Le HTTP ou l'**HyperText Transfer Protocol** est un protocole de communication client-serveur développé pour le World Wide Web. Alors que le HTML définit comment un site web est construit, le HTTP détermine comment la page est transmise du serveur au client. L'utilisateur va taper l'URL dans le navigateur qui va traduire cette dernière en une requête HTTP qui va être envoyée au serveur Web qui va l'interpréter et va récupérer les fichiers de données requis, ensuite, le serveur web va envoyer le statut de la requête et des données à la page web, après, le navigateur va adapter les données à la page web finale et va afficher à l'utilisateur la page web index.html

Les étapes de la configuration de http sont :

1 – On crée une machine dont le hostname est **http.info.local** et l'adresse IP **172.16.43.6**

```
dba@http:~$ hostname
http.info.local
dba@http:~$ hostname -I
172.16.43.6 172.17.0.1
dba@http:~$
```

2- On ajoute http au fichier /etc/bind/forward.info.local dans le DNS 1 (DNS MASTER)

```
dba@dns1:/etc/bind$ cd /etc/bind
dba@dns1:/etc/bind$ sudo vi /etc/bind/forward.info.local_
```

On a ajouté le http
au fichier
forward.info.local

```
$TTL      604800
@         IN      SOA      dns1.info.local. root.info.local. (
                        3      ; Serial
                        604800 ; Refresh
                        86400  ; Retry
                        2419200 ; Expire
                        604800 ) ; Negative Cache TTL
;--- Name Server Information
@         IN      NS       dns1.info.local.
@         IN      NS       dns2.info.local.
;--- IP address of Name Server
dns1      IN      A        172.16.43.4
dns2      IN      A        172.16.43.5
http      IN      A        172.16.43.6
dhcp      IN      A        172.16.43.7
;--- Mail Exchanger ( if exists )
info.local. IN      MX      10 mail1.info.local.
;--- A - Record HostName To Ip Address
apps1     IN      A        192.168.43.155
mail1     IN      A        192.168.43.200
;--- CNAME record
www       IN      CNAME    apps1.info.local.
ftp       IN      CNAME    apps1.info.local.
```

3- On ajoute http au fichier reverse.info.local de bind

```
dba@dns1:/etc/bind$ sudo vi reverse.info.local
```


On ajoute http au
fichier
reverse.info.local

```
$TTL      604800
@         IN      SOA      info.local. root.info.local. (
                        3      ; Serial
                        604800 ; Refresh
                        86400  ; Retry
                        2419200 ; Expire
                        604800 ); Negative Cache TTL
;---Name Server Information
@         IN      NS       dns1.info.local.
@         IN      NS       dns2.info.local.
;---Reverse lookup for Name Server
4         IN      PTR      dns1.info.local.
5         IN      PTR      dns2.info.local.
6         IN      PTR      http.info.local.
;---PTR Record IP address to HostName
155       IN      PTR      apps1.info.local.
200       IN      PTR      mail1.info.local.
```

Puis on vérifie l'état de bind9.service

```
dba@dns1:/etc/bind$ sudo systemctl restart bind9.service
dba@dns1:/etc/bind$ sudo systemctl status bind9.service
• named.service - BIND Domain Name Server
   Loaded: loaded (/lib/systemd/system/named.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2022-12-20 20:11:16 UTC; 13s ago
     Docs: man:named(8)
  Main PID: 1109 (named)
    Tasks: 5 (limit: 462)
   Memory: 12.0M
   CGroup: /system.slice/named.service
           └─1109 /usr/sbin/named -f -u bind

Dec 20 20:11:16 dns1.info.local named[1109]: zone localhost/IN: loaded serial 2
Dec 20 20:11:16 dns1.info.local named[1109]: zone 127.in-addr.arpa/IN: loaded serial 1
Dec 20 20:11:17 dns1.info.local named[1109]: zone 255.in-addr.arpa/IN: loaded serial 1
Dec 20 20:11:17 dns1.info.local named[1109]: zone info.local/IN: loaded serial 3
Dec 20 20:11:17 dns1.info.local named[1109]: all zones loaded
Dec 20 20:11:17 dns1.info.local named[1109]: running
Dec 20 20:11:17 dns1.info.local named[1109]: zone info.local/IN: sending notifies (serial 3)
Dec 20 20:11:17 dns1.info.local named[1109]: zone 43.16.172.in-addr.arpa/IN: sending notifies (serial 1)
Dec 20 20:11:27 dns1.info.local named[1109]: managed-keys-zone: Unable to fetch DNSKEY set '': timeout
Dec 20 20:11:27 dns1.info.local named[1109]: resolver priming query complete
lines 1-20/20 (END)
```

Et on vérifie que le DNS est bien fonctionné :

```
dba@dns1:~$ nslookup http.info.local
Server:      172.16.43.4
Address:     172.16.43.4#53

Name:   http.info.local
Address: 172.16.43.6

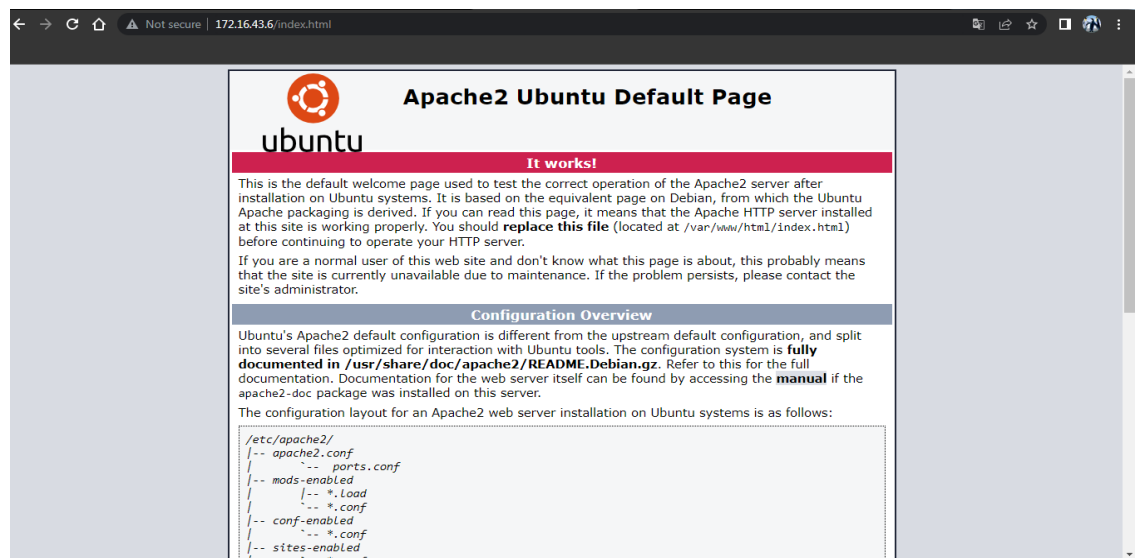
dba@dns1:~$ nslookup 172.16.43.6
6.43.16.172.in-addr.arpa      name = http.info.local.

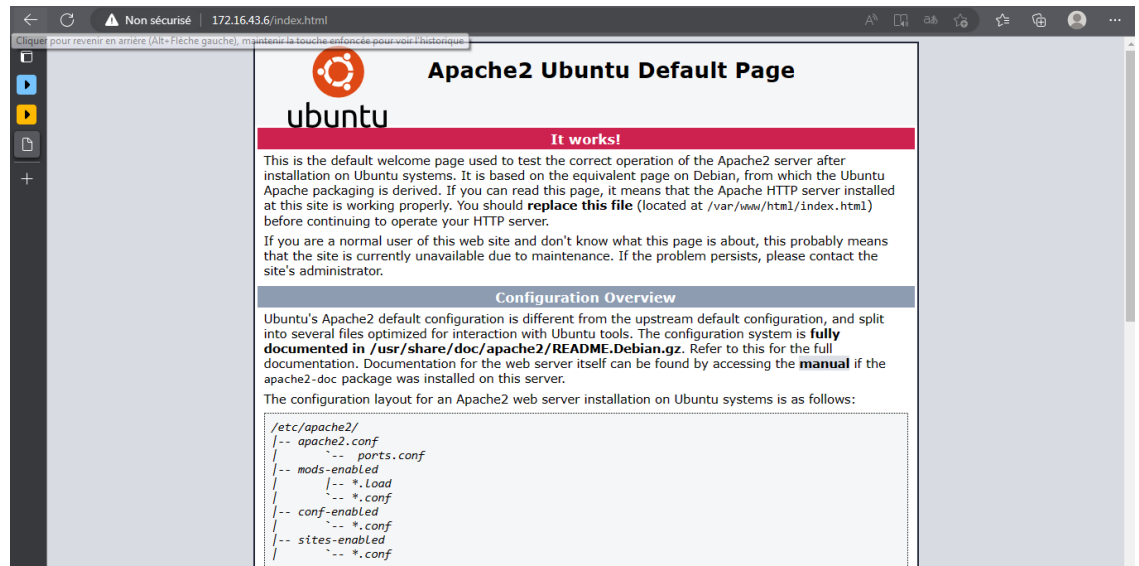
dba@dns1:~$
```

Puis on installe la bibliothèque http par la commande : `sudo apt-get install apache2`

```
dba@http:~$ sudo apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
apache2 is already the newest version (2.4.41-4ubuntu3.12).
0 upgraded, 0 newly installed, 0 to remove and 161 not upgraded.
dba@http:~$ _
```

Puis on bascule vers le navigateur pour afficher le contenu de notre page web
`http://172.16.43.index.html`.





Puis on tape les commandes : `sudo systemctl start apache2.service` / `sudo systemctl status apache2.service`

```
dba@http:~$ sudo systemctl start apache2.service
dba@http:~$ sudo systemctl status apache2.service
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2022-12-20 20:50:59 UTC; 16min ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 631 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
  Main PID: 950 (apache2)
    Tasks: 55 (limit: 448)
   Memory: 8.1M
    CGroup: /system.slice/apache2.service
            └─950 /usr/sbin/apache2 -k start
              └─971 /usr/sbin/apache2 -k start
                └─972 /usr/sbin/apache2 -k start

Dec 20 20:50:36 http.info.local systemd[1]: Starting The Apache HTTP Server...
Dec 20 20:51:02 http.info.local apachectl[686]: AH00558: apache2: Could not reliably determine the
Dec 20 20:50:59 http.info.local systemd[1]: Started The Apache HTTP Server.
lines 1-16/16 (END)
```

Puis on tape la commande `curl http://http.info.local`

```
<!--
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
    <title>Apache2 Ubuntu Default Page: It works</title>
    <style type="text/css" media="screen">
      * {
        margin: 0px 0px 0px 0px;
        padding: 0px 0px 0px 0px;
      }
      body, html {
        padding: 3px 3px 3px 3px;
        background-color: #D8DBE2;
        font-family: Verdana, sans-serif;
        font-size: 11pt;
        text-align: center;
      }
      div.main_page {
        position: relative;
        display: table;
        width: 800px;
        margin-bottom: 3px;
        margin-left: auto;
        margin-right: auto;
        padding: 0px 0px 0px 0px;

```

Puis on tape la commande : `curl http://172.16.43.6`

```
dba@http:~$ curl http://172.16.43.6
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <!--
    Modified from the Debian original for Ubuntu
    Last updated: 2016-11-16
    See: https://launchpad.net/bugs/1288690
  -->
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
    <title>Apache2 Ubuntu Default Page: It works</title>
    <style type="text/css" media="screen">
      * {
        margin: 0px 0px 0px 0px;
        padding: 0px 0px 0px 0px;
      }

body, html {
  padding: 3px 3px 3px 3px;

  background-color: #D8DBE2;

  font-family: Verdana, sans-serif;
  font-size: 11pt;
  text-align: center;
}

div.main_page {
  position: relative;
  display: table;

  width: 800px;

  margin-bottom: 3px;
  margin-left: auto;
  margin-right: auto;
  padding: 0px 0px 0px 0px;
```

Puis on bascule vers DNS MASTER (DNS1) et on installe le package [links](#) par la commande : `sudo apt-get install -y links`

```
dba@dns1:~$ sudo apt-get install -y links
Reading package lists... Done
Building dependency tree
Reading state information... Done
links is already the newest version (2.20.2-1).
0 upgraded, 0 newly installed, 0 to remove and 74 not upgraded.
dba@dns1:~$ _
```

Puis on tape la commande : `links http://http.info.local`

```
Ubuntu Logo Apache2 Ubuntu Default Page: It works (p1 of 2)
It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based
on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP
server installed at this site is working properly. You should replace this file (located at /var/www/html/index.html) before continuing to
operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable
due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for
interaction with Ubuntu tools. The configuration system is fully documented in /usr/share/doc/apache2/README.Debian.gz. Refer to this for the
full documentation. Documentation for the web server itself can be found by accessing the manual if the apache2-doc package was installed on
this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

/etc/apache2/
-- apache2.conf
   |-- ports.conf
-- mods-enabled
   |-- *.load
   |-- *.conf
-- conf-enabled
   |-- *.conf
-- sites-enabled
   |-- *.conf

* apache2.conf is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up
the web server.
* ports.conf is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and
this file can be customized anytime.
image http://http.info.local/icons/ubuntu-logo.png
```

SAMBA

D'abord c'est quoi SAMBA?

Le logiciel **Samba** est un outil permettant de partager des dossiers et des imprimantes à travers un réseau local. Il permet de partager et d'accéder aux ressources d'autres ordinateurs fonctionnant avec des systèmes d'exploitation Microsoft® Windows® et Apple® Mac OS® X, ainsi que des systèmes GNU/Linux, *BSD et Solaris dans lesquels une implémentation de Samba est installée.

Le partage de dossiers et d'imprimantes dans un réseau local est une fonctionnalité des systèmes d'exploitation modernes permettant d'accéder à des ressources d'un ordinateur (dossiers de données et imprimantes) à partir d'un autre ordinateur situé dans un même réseau local (réseau domestique ou d'entreprise). Et c'est le même dans le cadre de ce projet on veut créer un serveur Samba qui va nous permettre de gérer et modifier les fichiers sous linux à partir de notre système windows.

Pour cela on crée une machine dont l'adresse IP est : **172.16.43.9** et l'hostname est : **samba**

```
dba@samba:~$ hostname  
samba  
dba@samba:~$ hostname -I  
172.16.43.9 172.17.0.1  
dba@samba:~$
```

Les étapes pour faire la configuration de samba sont :

1 – D'abord on installe samba par la commande : **sudo apt-get install samba**

```
dba@samba:~$ sudo apt-get install samba  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
samba is already the newest version (2:4.13.17~dfsg-0ubuntu1.20.04.2).  
0 upgraded, 0 newly installed, 0 to remove and 210 not upgraded.  
dba@samba:~$ _
```

2- Puis on vérifie que `smbd` est activé par la commande : `sudo systemctl status smbd`

de

```
dba@samba:~$ sudo systemctl status smbd
• smbd.service - Samba SMB Daemon
  Loaded: loaded (/lib/systemd/system/smbd.service; enabled; vendor preset: enabled)
  Active: active (running) since Wed 2022-12-21 20:36:22 UTC; 13min ago
    Docs: man:smbd(8)
           man:samba(7)
           man:smb.conf(5)
  Main PID: 927 (smbd)
  Status: "smbd: ready to serve connections..."
    Tasks: 4 (limit: 448)
  Memory: 10.7M
  CGroup: /system.slice/smbd.service
          └─927 /usr/sbin/smbd --foreground --no-process-group
            └─954 /usr/sbin/smbd --foreground --no-process-group
              └─955 /usr/sbin/smbd --foreground --no-process-group
                └─978 /usr/sbin/smbd --foreground --no-process-group

Dec 21 20:36:04 samba systemd[1]: Starting Samba SMB Daemon...
Dec 21 20:36:22 samba systemd[1]: Started Samba SMB Daemon.
dba@samba:~$
```

3- Puis on prépare les fichiers à transférer entre par la création de deux fichiers `share1` et `share2` grâce aux commandes suivantes :

- `mkdir /home/dba/home/user/share1`
- `mkdir /home/dba/home/user/share2`

```
dba@samba:~$ tree /home
/home
├── dba
│   └── home
│       └── user
│           ├── share1
│           └── share2
└── ...

5 directories, 0 files
dba@samba:~$ _
```

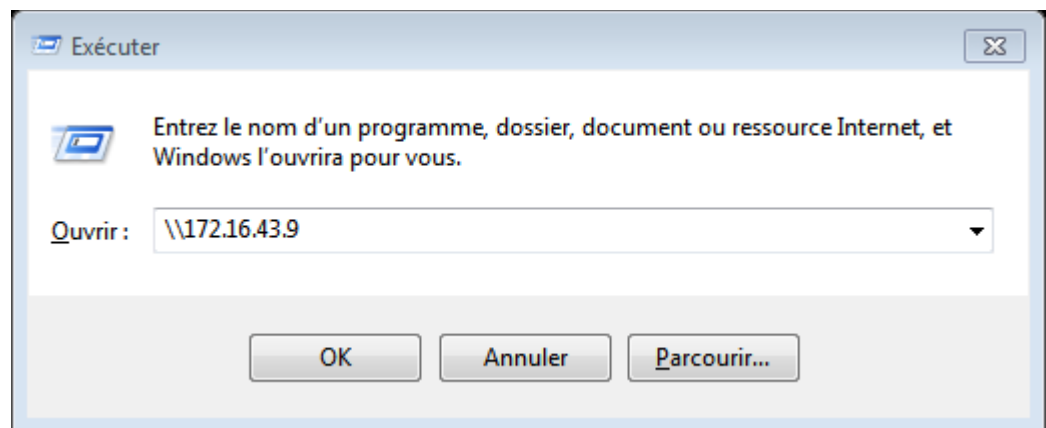
4- Puis on crée deux utilisateurs `user1` et `user2` et on les attribue des mots de passe par les commandes suivantes :

- `sudo useradd user1 / sudo smbpasswd -a user1`
- `sudo useradd user2 / sudo smbpasswd -a user2`

5- Puis on tape la commande : `sudo nano /etc/samba/smb.conf` puis on ajoute les lignes suivantes à la fin de fichier.

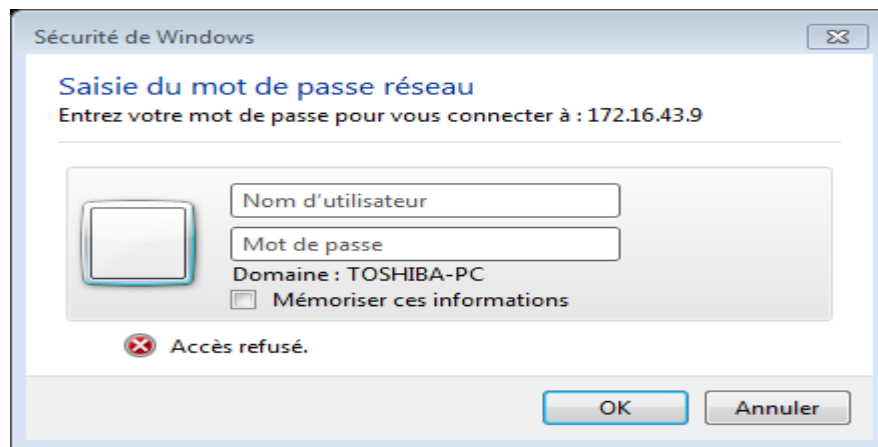
```
; write list = root, @lpadmin  
  
[share1]  
path = /home/dba/home/user/share1  
valid users = user1, user2  
read list = user2  
write list = user1  
browseable = yes  
  
[share2]  
path = /home/dba/home/user/share2  
valid users = user1, user2  
read list = user1  
write list = user2  
browseable = yes
```

Puis on veut accéder à ces fichiers à partir de Windows, pour cela on exécute le terminale Windows comme suit :

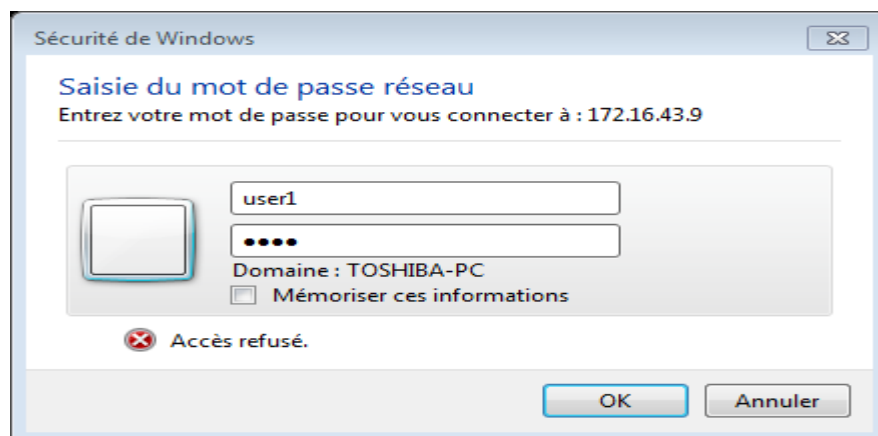


Il s'affiche pour nous une console pour se connecter on utilise les utilisateurs qu'on a déjà crée **user1** et **user2** et le mot de passe déjà donner aux deux comptes.

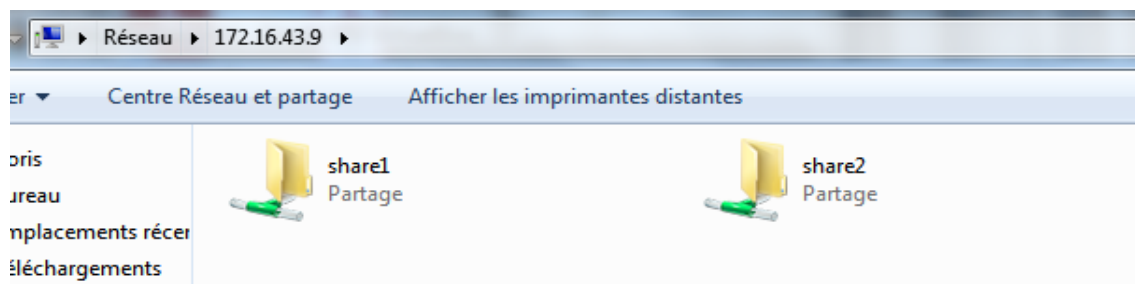
On utilise l'utilisateur user1 on obtient le résultat suivant :



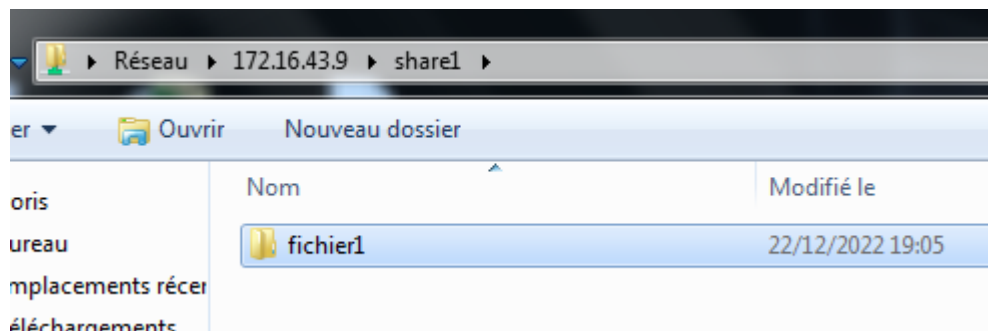
On se connecte par l'utilisateur 1



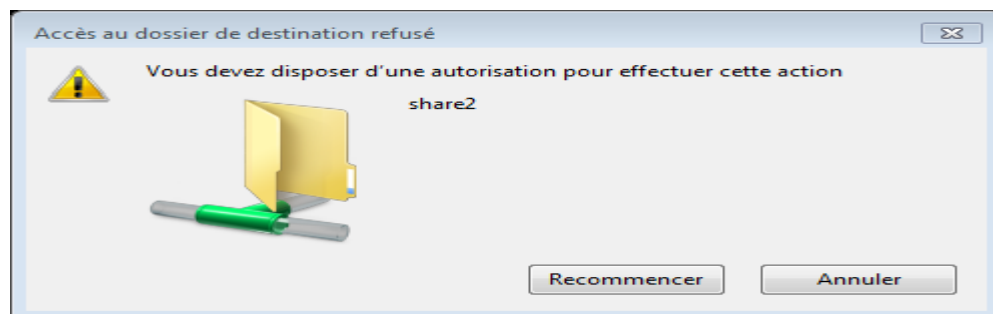
Donc on a accéder aux fixhiers que on a créés précédemment dans le serveur samba .



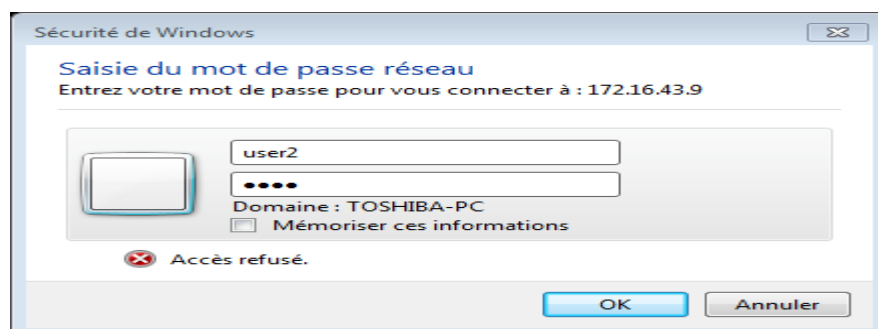
On crée un nouveau dossier dans le dossier share1 se fait sans aucun probleme



On essaie de créer un dossier dans share2 il s'affiche une message d'erreur car user1 ne dispose de droit d'écriture :



Puis on se connecte par l'utilisateur 2 user



Deux user2 dispose de droit d'écriture dans share2 et dispose de droit de lecture seulement pour share1.

MAIL

D'abord c'est quoi MAIL ?

Un serveur de messagerie électronique est un logiciel serveur de courrier électronique. Il a pour vocation de transférer les messages électroniques d'un serveur à un autre. Un utilisateur n'est jamais en contact direct avec ce serveur mais utilise soit un client de messagerie installé sur son terminal (ordinateur ou smartphone), soit une messagerie web, qui se charge de contacter le serveur pour envoyer ou recevoir les messages. On parle dans le premier cas de client lourd, dans le deuxième cas de client léger.

Note : la configuration de serveur mail demande des performances que mon pc portable ne possède pas (4G ram et 100G espace de stockage).

Réalisé par Ayoub SAMI.