SAMPERS
Benjamin

MISE EN PLACE D'UN SERVICE WEB #1

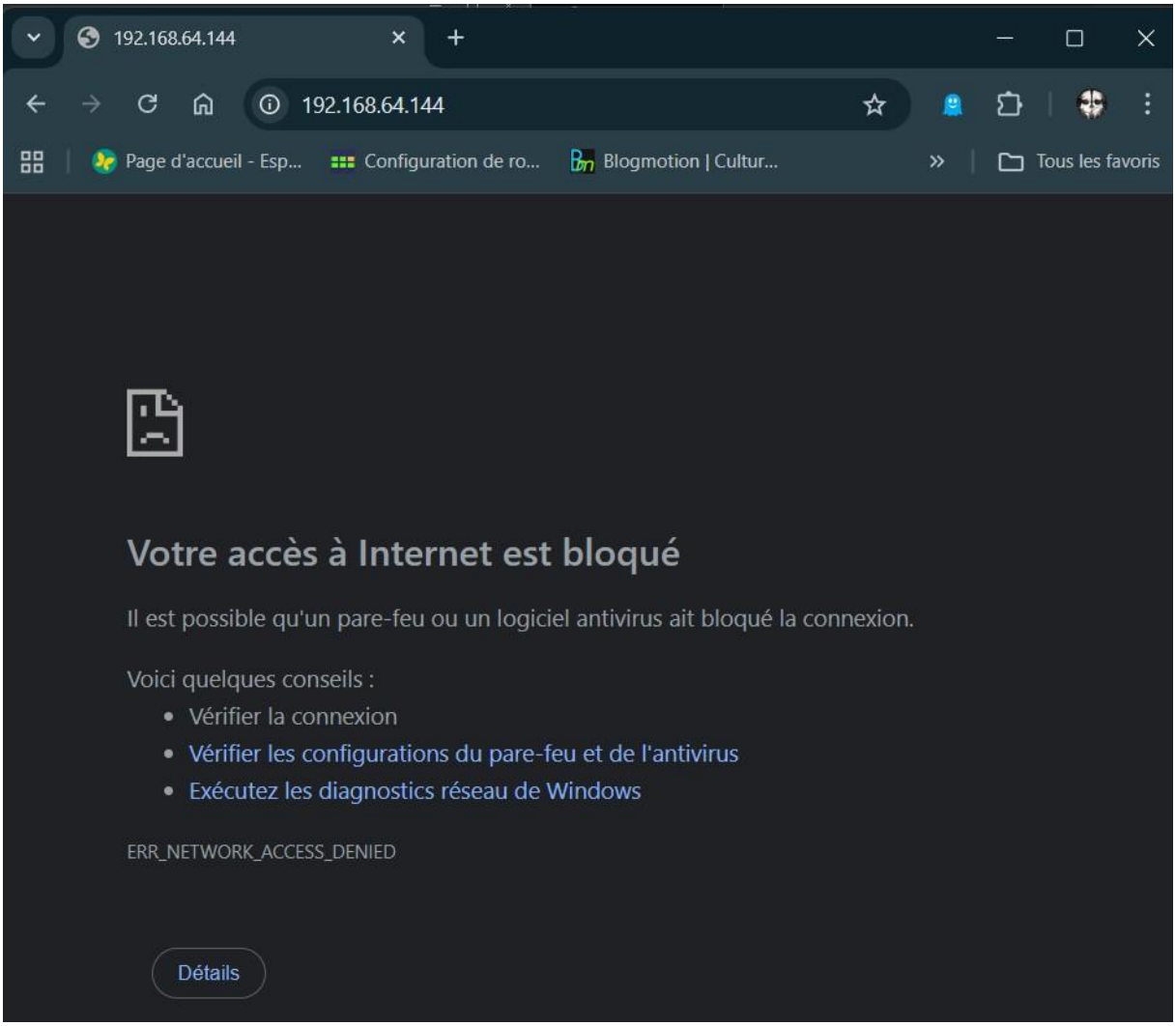
Première partie

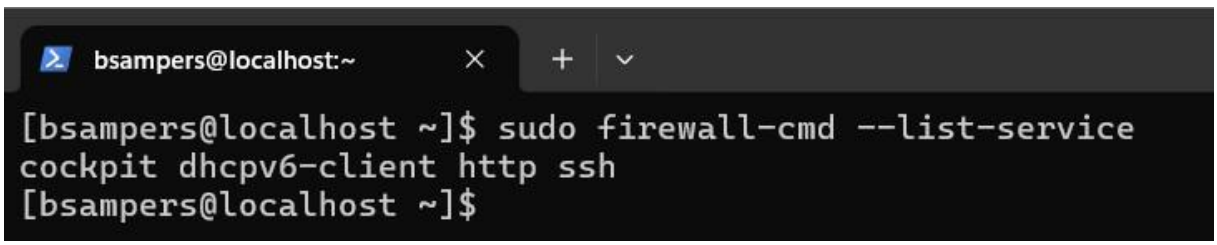
```
[bsampers@localhost ~]$ sudo dnf install php-fpm
Last metadata expiration check: 0:00:43 ago on Fri Feb 13 08:38:28 2026.
Dependencies resolved.
================================================================================
 Package              Arch       Version                 Repository     Size
================================================================================
Installing:
 php-fpm              x86_64     8.0.30-4.el9_7          appstream     1.6 M
Installing dependencies:
 httpd-filesystem     noarch     2.4.62-7.el9_7.3        appstream      12 k
 php-common           x86_64     8.0.30-4.el9_7          appstream     666 k
```

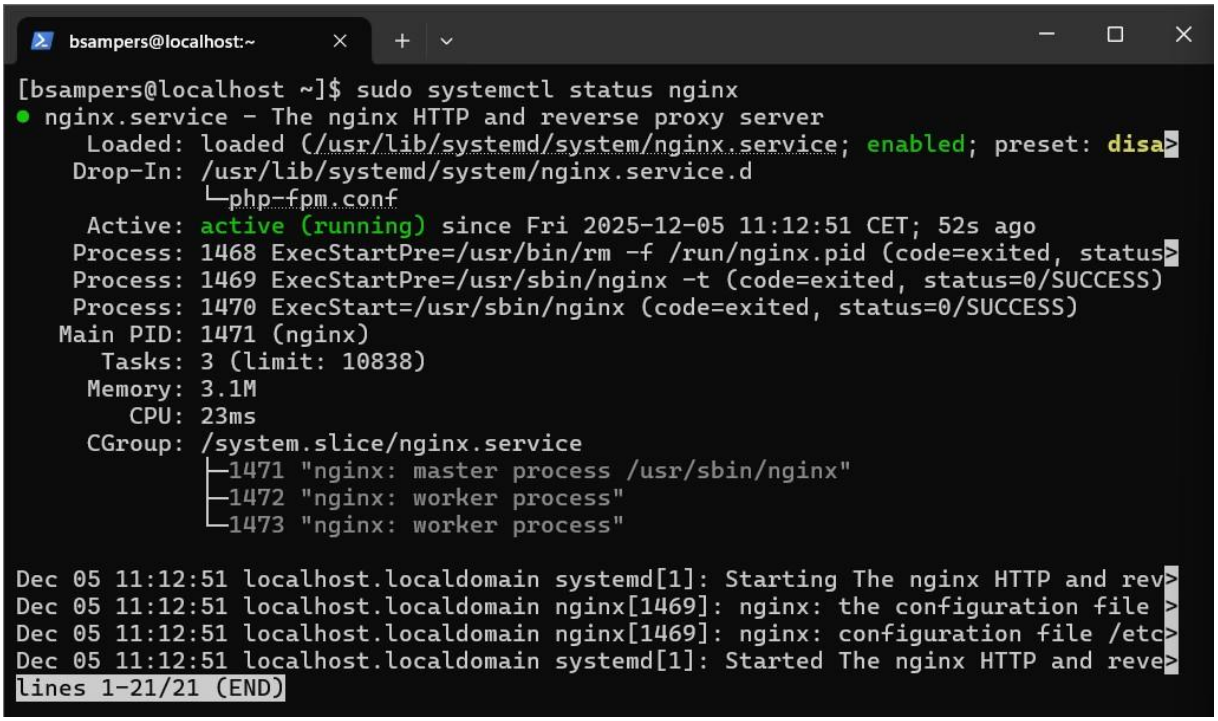
```
[bsampers@localhost ~]$ sudo dnf install php
Last metadata expiration check: 0:01:11 ago on Fri Feb 13 08:38:28 2026.
Dependencies resolved.
================================================================================
 Package              Arch       Version                 Repository     Size
================================================================================
Installing:
 php                  x86_64     8.0.30-4.el9_7          appstream     8.6 k
Installing dependencies:
 apr                  x86_64     1.7.0-12.el9_3          appstream     122 k
 apr-util             x86_64     1.6.1-23.el9            appstream      94 k
 apr-util-bdb         x86_64     1.6.1-23.el9            appstream      12 k
 httpd-core           x86_64     2.4.62-7.el9_7.3        appstream     1.4 M
 httpd-tools          x86_64     2.4.62-7.el9_7.3        appstream      79 k
 libxslt              x86_64     1.1.34-13.el9_6         appstream     239 k
 mailcap              noarch     2.1.49-5.el9.0.2        baseos         32 k
Installing weak dependencies:
 apr-util-openssl     x86_64     1.6.1-23.el9            appstream      14 k
 httpd                x86_64     2.4.62-7.el9_7.3        appstream      45 k
 mod_http2            x86_64     2.0.26-5.el9            appstream     163 k
 mod_lua              x86_64     2.4.62-7.el9_7.3        appstream      59 k
 php-cli              x86_64     8.0.30-4.el9_7          appstream     3.1 M
 php-mbstring         x86_64     8.0.30-4.el9_7          appstream     468 k
 php-opcache          x86_64     8.0.30-4.el9_7          appstream     510 k
 php-pdo              x86_64     8.0.30-4.el9_7          appstream      81 k
 php-xml              x86_64     8.0.30-4.el9_7          appstream     132 k
```

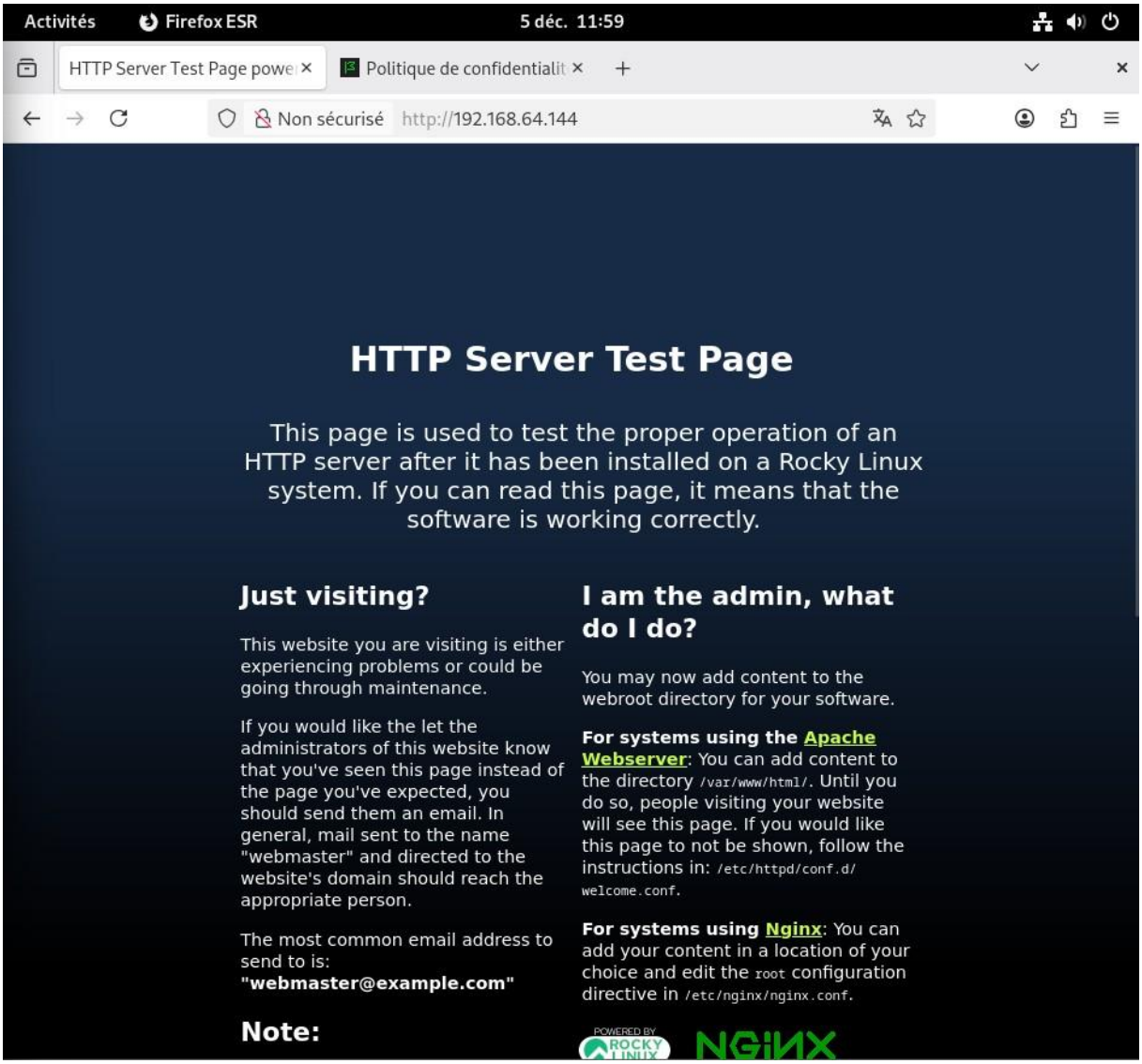
```
[bsampers@localhost ~]$ sudo dnf install php-mysqlnd
Last metadata expiration check: 0:01:53 ago on Fri Feb 13 08:38:28 2026.
Dependencies resolved.
================================================================================
 Package            Architecture Version                 Repository       Size
================================================================================
Installing:
 php-mysqlnd        x86_64       8.0.30-4.el9_7          appstream       150 k
```

```
[bsampers@localhost html]$ ls
404.html  50x.html  icons  index.html  nginx-logo.png  poweredby.png  system_noindex_logo.png
[bsampers@localhost html]$
```






bsampers@localhost:~
[bsampers@localhost ~]$ sudo systemctl status nginx
● nginx.service - The nginx HTTP and reverse proxy server
Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: disa>
Drop-In: /usr/lib/systemd/system/nginx.service.d
└─php-fpm.conf
Active: active (running) since Fri 2025-12-05 11:12:51 CET; 52s ago
Process: 1468 ExecStartPre=/usr/bin/rm -f /run/nginx.pid (code=exited, status>
Process: 1469 ExecStartPre=/usr/sbin/nginx -t (code=exited, status=0/SUCCESS)
Process: 1470 ExecStart=/usr/sbin/nginx (code=exited, status=0/SUCCESS)
Main PID: 1471 (nginx)
Tasks: 3 (limit: 10838)
Memory: 3.1M
CPU: 23ms
CGroup: /system.slice/nginx.service
├─1471 "nginx: master process /usr/sbin/nginx"
├─1472 "nginx: worker process"
└─1473 "nginx: worker process"
Dec 05 11:12:51 localhost.localdomain systemd[1]: Starting The nginx HTTP and rev>
Dec 05 11:12:51 localhost.localdomain nginx[1469]: nginx: the configuration file >
Dec 05 11:12:51 localhost.localdomain nginx[1469]: nginx: configuration file /etc>
Dec 05 11:12:51 localhost.localdomain systemd[1]: Started The nginx HTTP and reve>
lines 1-21/21 (END)



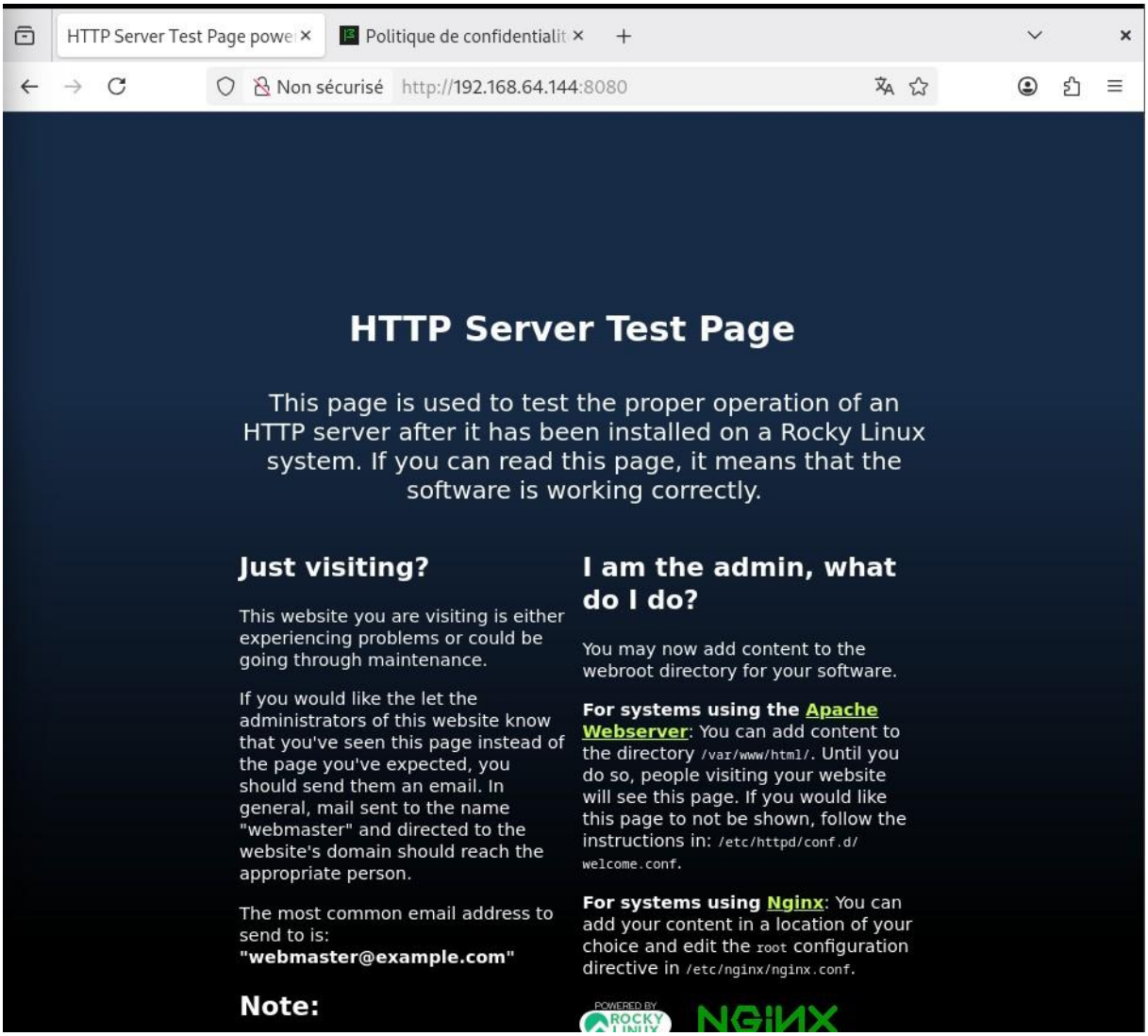
L’accès fonctionne avec le port 80.

```
[bsampers@localhost nginx]$ sudo firewall-cmd --list-port
80/tcp 8080/tcp
[bsampers@localhost nginx]$
```

bsampers@localhost:/etc/ngi

```
# For more information on configuration, see:
#   * Official English Documentation: http://nginx.org/en/docs/
#   * Official Russian Documentation: http://nginx.org/ru/docs/

user nginx;
worker_processes auto;
error_log /var/log/nginx/error.log;
pid /run/nginx.pid;

# Load dynamic modules. See /usr/share/doc/nginx/README.dynamic.
include /usr/share/nginx/modules/*.conf;

events {
    worker_connections 1024;
}

http {
    log_format  main  '$remote_addr - $remote_user [$time_local] "$request" '
                      '$status $body_bytes_sent "$http_referer" '
                      '"$http_user_agent" "$http_x_forwarded_for"';

    access_log  /var/log/nginx/access.log  main;

    sendfile            on;
    tcp_nopush          on;
    tcp_nodelay         on;
    keepalive_timeout   65;
    types_hash_max_size 4096;

    include             /etc/nginx/mime.types;
    default_type        application/octet-stream;

    # Load modular configuration files from the /etc/nginx/conf.d directory.
    # See http://nginx.org/en/docs/ngx_core_module.html#include
    # for more information.
    include /etc/nginx/conf.d/*.conf;

    server {
        listen       8080;
        listen       [::]:8080;
"nginx.conf" 84L, 2338B
```

Test avec le port 8080 après avoir ouvert le port dans le Firewall et changer dans le fichier de configuration de Nginx.


HTTP Server Test Page powe
Politique de confidentialit
Non sécurisé
http://192.168.64.144:8080
HTTP Server Test Page
This page is used to test the proper operation of an HTTP server after it has been installed on a Rocky Linux system. If you can read this page, it means that the software is working correctly.
Just visiting?
This website you are visiting is either experiencing problems or could be going through maintenance.
If you would like the let the administrators of this website know that you've seen this page instead of the page you've expected, you should send them an email. In general, mail sent to the name "webmaster" and directed to the website's domain should reach the appropriate person.
The most common email address to send to is: "webmaster@example.com"
Note:
I am the admin, what do I do?
You may now add content to the webroot directory for your software.
For systems using the Apache Webserver: You can add content to the directory /var/www/html/. Until you do so, people visiting your website will see this page. If you would like this page to not be shown, follow the instructions in: /etc/httpd/conf.d/welcome.conf.
For systems using Nginx: You can add your content in a location of your choice and edit the root configuration directive in /etc/nginx/nginx.conf.
POWERED BY ROCKY LINUX
NGINX

```
[bsampers@localhost /]$ sudo systemctl enable --now mariadb.service
[bsampers@localhost /]$ sudo mysql_secure_installation

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
      SERVERS IN PRODUCTION USE!  PLEASE READ EACH STEP CAREFULLY!

In order to log into MariaDB to secure it, we'll need the current
password for the root user. If you've just installed MariaDB, and
haven't set the root password yet, you should just press enter here.

Enter current password for root (enter for none):
OK, successfully used password, moving on...

Setting the root password or using the unix_socket ensures that nobody
can log into the MariaDB root user without the proper authorisation.

You already have your root account protected, so you can safely answer 'n'.

Switch to unix_socket authentication [Y/n] n
 ... skipping.

You already have your root account protected, so you can safely answer 'n'.

Change the root password? [Y/n] n
 ... skipping.

By default, a MariaDB installation has an anonymous user, allowing anyone
to log into MariaDB without having to have a user account created for
them.  This is intended only for testing, and to make the installation
go a bit smoother.  You should remove them before moving into a
production environment.

Remove anonymous users? [Y/n] Y
 ... Success!

Normally, root should only be allowed to connect from 'localhost'.  This
ensures that someone cannot guess at the root password from the network.

Disallow root login remotely? [Y/n] n
 ... skipping.
```

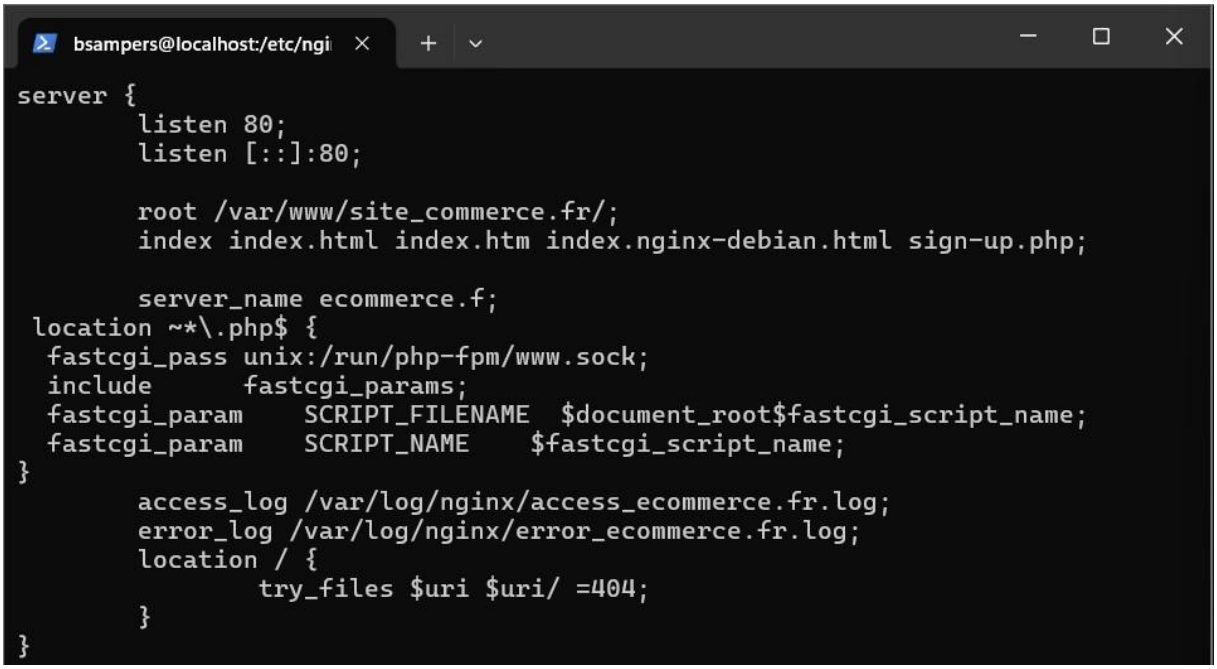
```
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 30
Server version: 10.5.27-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statemen
t.

MariaDB [(none)]> CREATE DATABASE BDD_WEB;
Query OK, 1 row affected (0.001 sec)

MariaDB [(none)]> SHOW DATABASES
    -> ;
+--------------------+
| Database           |
+--------------------+
| BDD_WEB            |
| information_schema |
| mysql              |
| performance_schema |
+--------------------+
4 rows in set (0.001 sec)
```

```
[bsampers@localhost /]$ sudo mkdir -p /var/www/ecommerce.fr/
[sudo] password for bsampers:
[bsampers@localhost /]$ cd /var/www
[bsampers@localhost www]$ ls
cgi-bin  ecommerce.fr  html
[bsampers@localhost www]$
```

```
[bsampers@localhost ecommerce.fr]$ ls
config.php  css  database.sql  images  js  sign-up.php
[bsampers@localhost ecommerce.fr]$
```

```
; Start a new pool named 'www'.
; the variable $pool can be used in any directive and will be replaced by th
e
; pool name ('www' here)
[www]

; Per pool prefix
; It only applies on the following directives:
; - 'access.log'
; - 'slowlog'
; - 'listen' (unixsocket)
; - 'chroot'
; - 'chdir'
; - 'php_values'
; - 'php_admin_values'
; When not set, the global prefix (or @php_fpm_prefix@) applies instead.
; Note: This directive can also be relative to the global prefix.
; Default Value: none
;prefix = /path/to/pools/$pool

; Unix user/group of processes
; Note: The user is mandatory. If the group is not set, the default user's g
roup
;       will be used.
; RPM: apache user chosen to provide access to the same directories as httpd
user = nginx
; RPM: Keep a group allowed to write in log dir.
group = nginx

; The address on which to accept FastCGI requests.
; Valid syntaxes are:
;   'ip.add.re.ss:port'    - to listen on a TCP socket to a specific IPv4 ad
dress on
;                            a specific port;
;   '[ip:6:addr:ess]:port' - to listen on a TCP socket to a specific IPv6 ad
dress on
;                            a specific port;
;   'port'                 - to listen on a TCP socket to all addresses
;                            (IPv6 and IPv4-mapped) on a specific port;
;   '/path/to/unix/socket' - to listen on a unix socket.
:wq
```

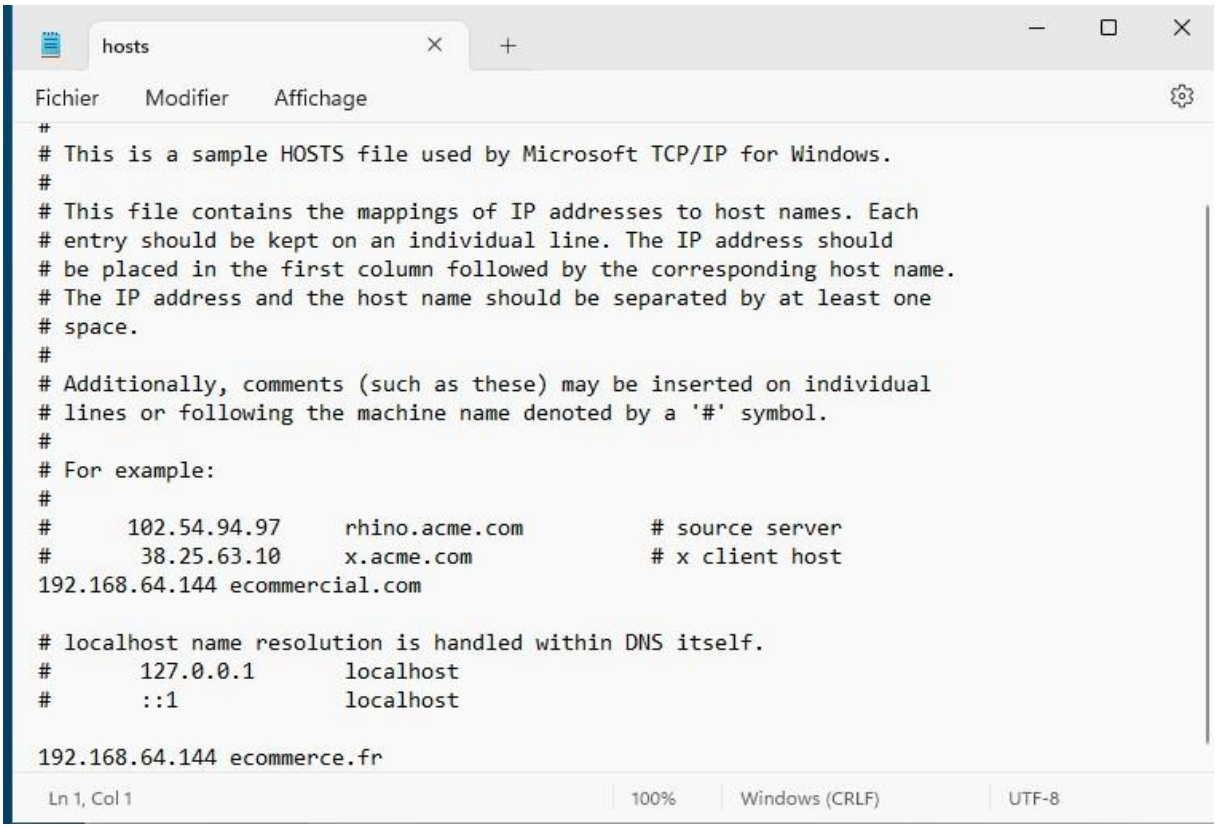
```
[bsampers@localhost conf.d]$ sudo touch site_ecommerce.fr.conf
[bsampers@localhost conf.d]$ ls
php-fpm.conf  site_ecommerce.fr.conf
[bsampers@localhost conf.d]$ pwd
/etc/nginx/conf.d
[bsampers@localhost conf.d]$
```



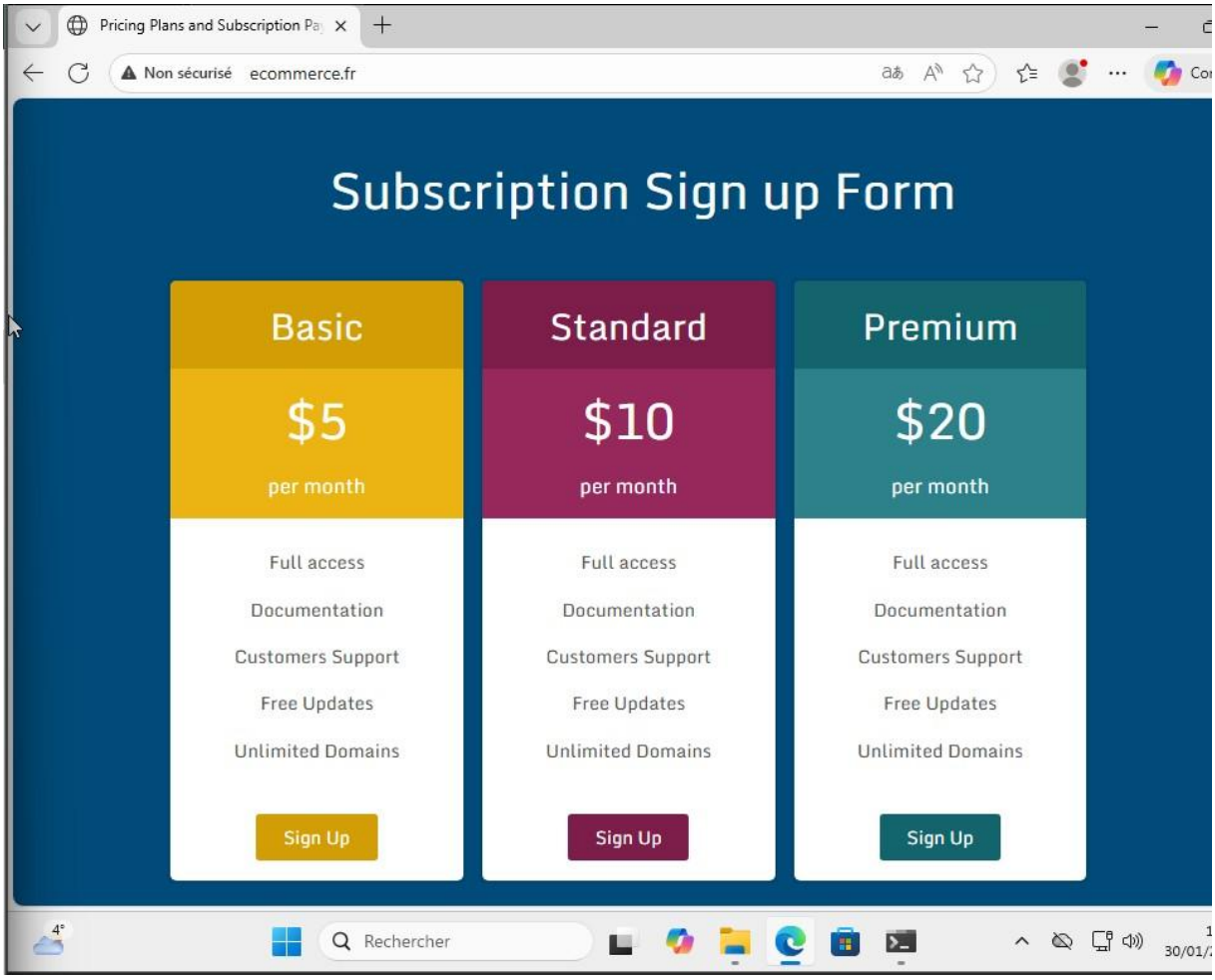

```
[bsampers@localhost ecommerce.fr]$ mysql -u bsampers -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 37
Server version: 10.5.27-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statemen
t.

MariaDB [(none)]> USE BDD_WEB_FR;
Database changed
MariaDB [BDD_WEB_FR]> source /var/www/ecommerce.fr/database.sql
Query OK, 0 rows affected (0.005 sec)

MariaDB [BDD_WEB_FR]> SHOW TABLES;
+----------------------+
| Tables_in_BDD_WEB_FR |
+----------------------+
| registrations        |
+----------------------+
1 row in set (0.000 sec)
```

```php
<?php
$SETTINGS["mysql_user"]='bsampers';
$SETTINGS["mysql_pass"]='pass';
$SETTINGS["hostname"]='localhost';
$SETTINGS["mysql_database"]='BDD_WEB_FR';
$SETTINGS["data_table"]='registrations';
$SETTINGS["paypal_address"]='email@domain.com';
?>
```

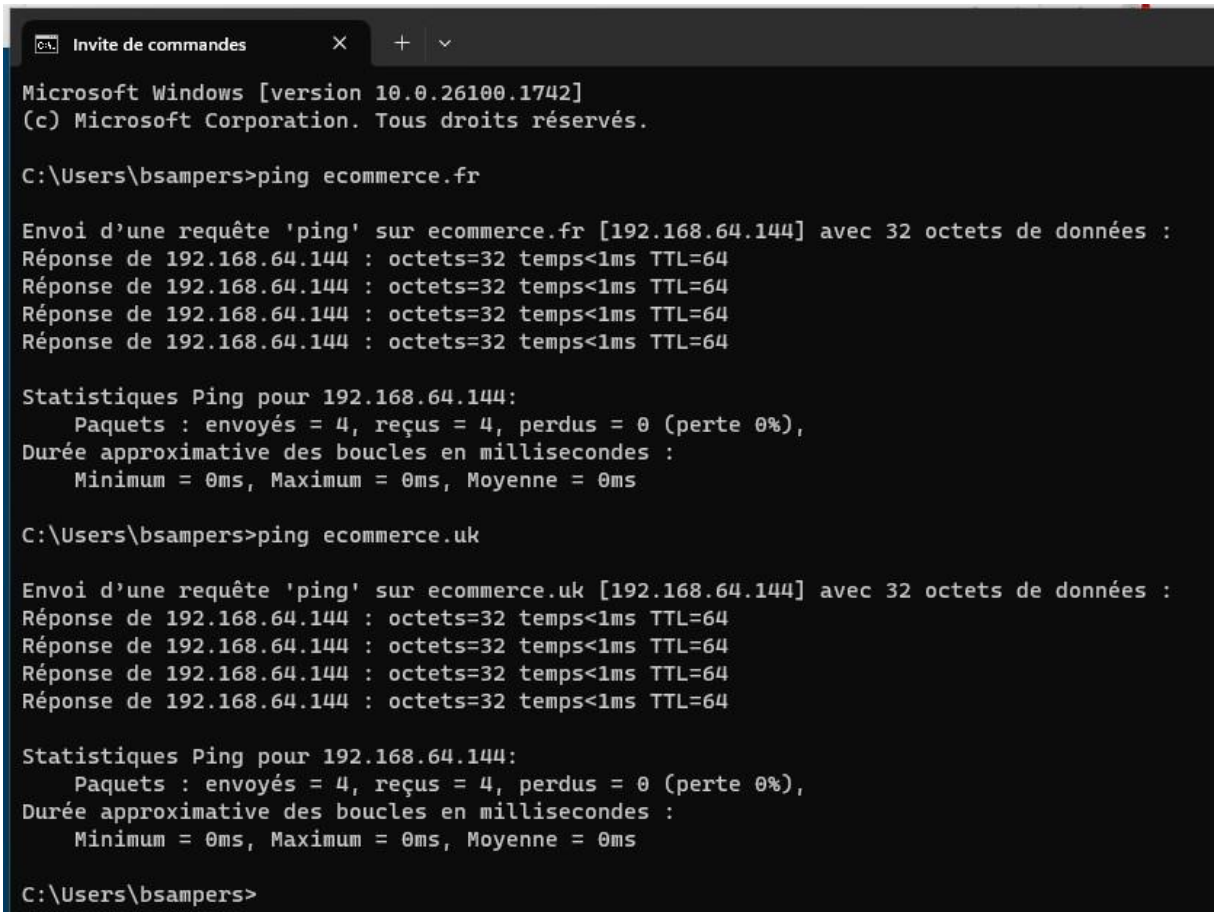
Après avoir ajouté l'adresse IP de notre serveur Web et le domaine utilisé :

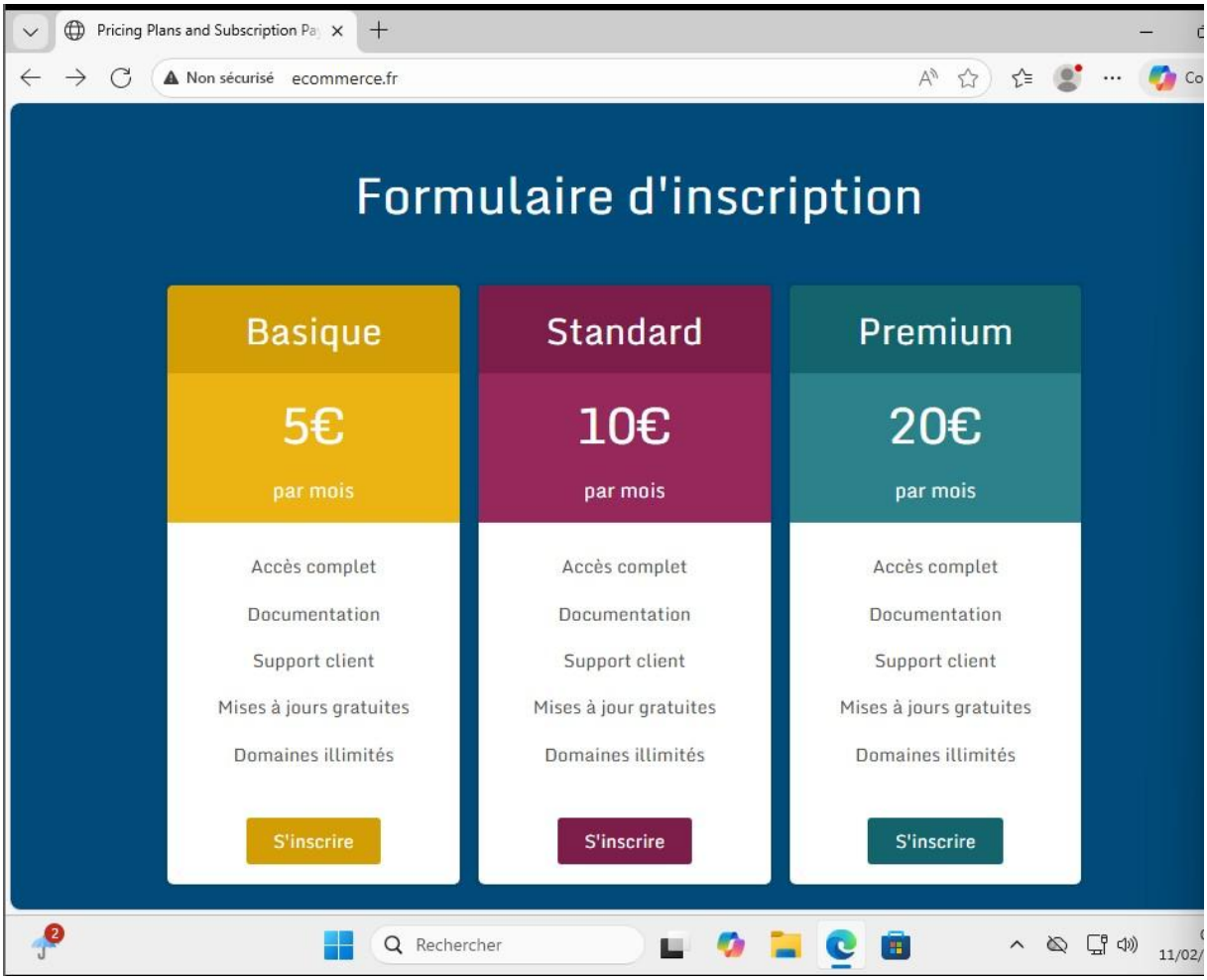


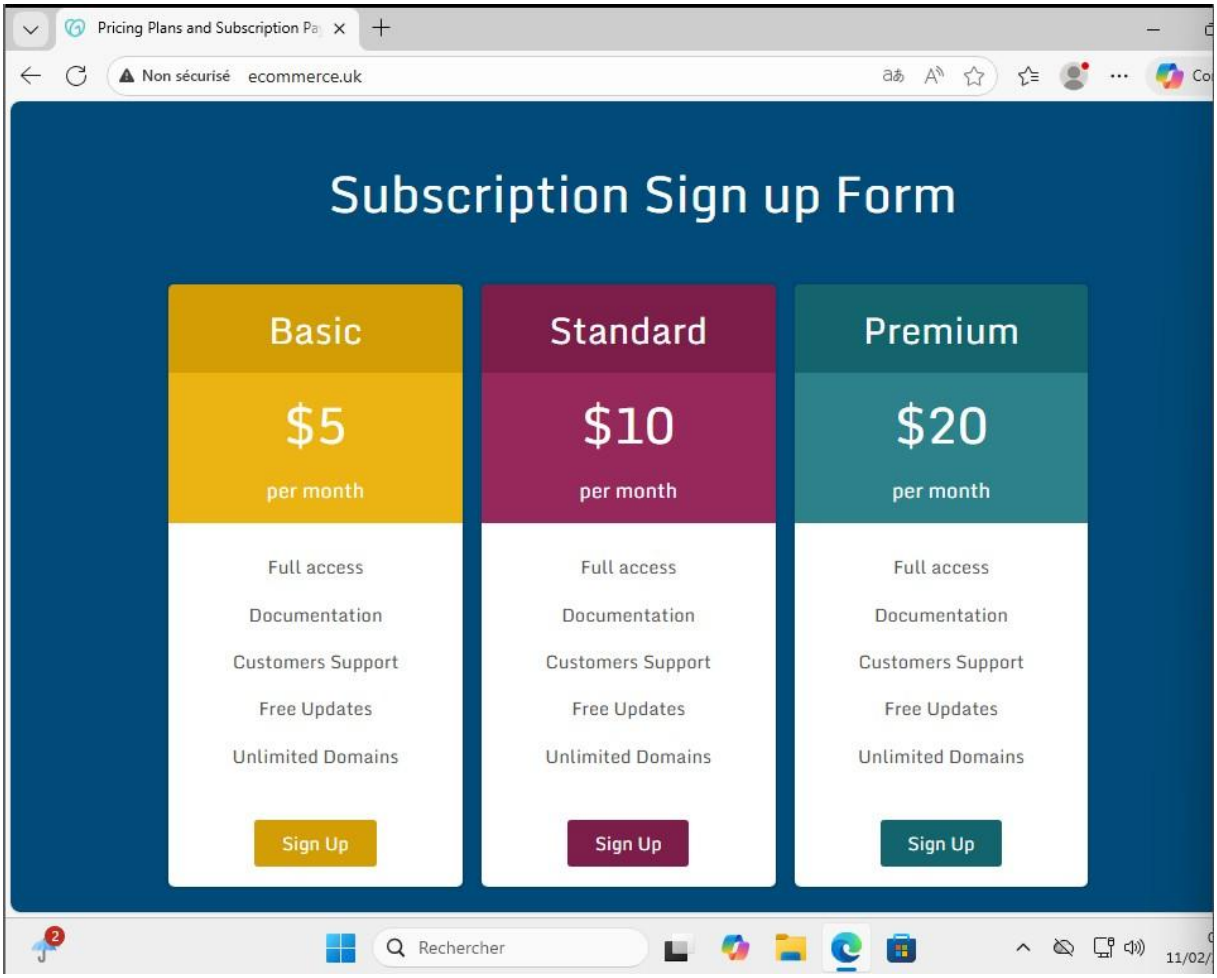
Nous pouvons remarquer que l'accès au site fonctionne avec l'url ecommerce.fr.



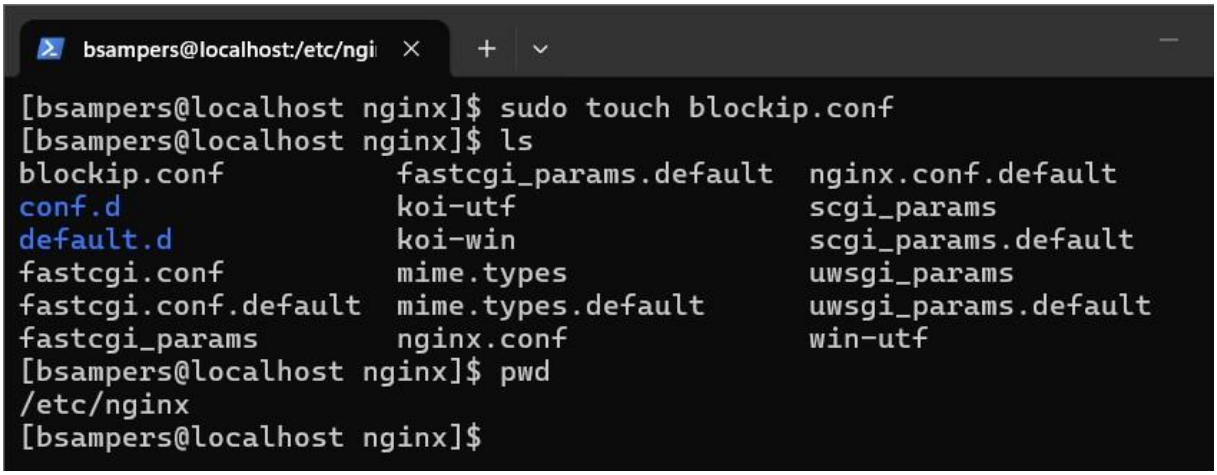
Si nous essayons de ping le domaine « ecommerce.fr » nous pouvons voir qu'il est bien rattaché à l'adresse IP « 192.168.64.144 ».Do


Invite de commandes
Microsoft Windows [version 10.0.26100.1742]
(c) Microsoft Corporation. Tous droits réservés.
C:\Users\bsampers>ping ecommerce.fr
Envoi d'une requête 'ping' sur ecommerce.fr [192.168.64.144] avec 32 octets de données :
Réponse de 192.168.64.144 : octets=32 temps<1ms TTL=64
Réponse de 192.168.64.144 : octets=32 temps<1ms TTL=64
Réponse de 192.168.64.144 : octets=32 temps<1ms TTL=64
Réponse de 192.168.64.144 : octets=32 temps<1ms TTL=64
Statistiques Ping pour 192.168.64.144:
Paquets : envoyés = 4, reçus = 4, perdus = 0 (perte 0%),
Durée approximative des boucles en millisecondes :
Minimum = 0ms, Maximum = 0ms, Moyenne = 0ms
C:\Users\bsampers>ping ecommerce.uk
Envoi d'une requête 'ping' sur ecommerce.uk [192.168.64.144] avec 32 octets de données :
Réponse de 192.168.64.144 : octets=32 temps<1ms TTL=64
Réponse de 192.168.64.144 : octets=32 temps<1ms TTL=64
Réponse de 192.168.64.144 : octets=32 temps<1ms TTL=64
Réponse de 192.168.64.144 : octets=32 temps<1ms TTL=64
Statistiques Ping pour 192.168.64.144:
Paquets : envoyés = 4, reçus = 4, perdus = 0 (perte 0%),
Durée approximative des boucles en millisecondes :
Minimum = 0ms, Maximum = 0ms, Moyenne = 0ms
C:\Users\bsampers>

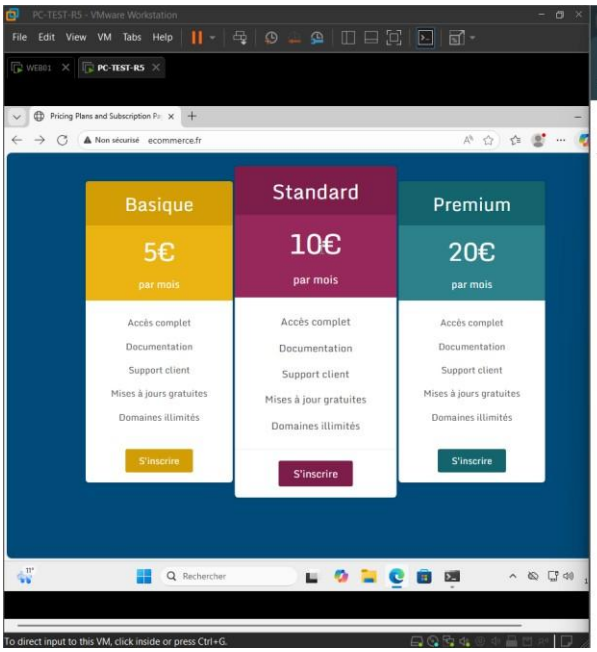

Pricing Plans and Subscription Pa
Non sécurisé ecommerce.fr
Formulaire d'inscription
Basique
5€
par mois
Accès complet
Documentation
Support client
Mises à jours gratuites
Domaines illimités
S'inscrire
Standard
10€
par mois
Accès complet
Documentation
Support client
Mises à jour gratuites
Domaines illimités
S'inscrire
Premium
20€
par mois
Accès complet
Documentation
Support client
Mises à jours gratuites
Domaines illimités
S'inscrire
Rechercher

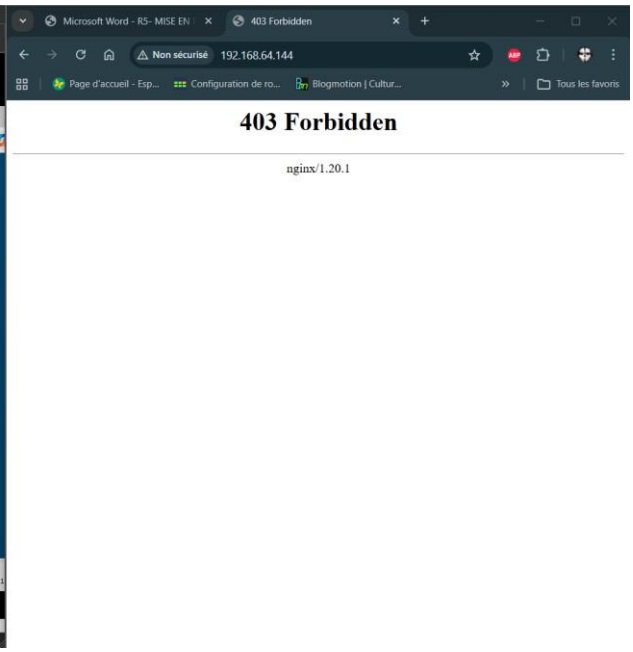

Pricing Plans and Subscription Pa
Non sécurisé ecommerce.uk
Subscription Sign up Form
Basic
$5
per month
Full access
Documentation
Customers Support
Free Updates
Unlimited Domains
Sign Up
Standard
$10
per month
Full access
Documentation
Customers Support
Free Updates
Unlimited Domains
Sign Up
Premium
$20
per month
Full access
Documentation
Customers Support
Free Updates
Unlimited Domains
Sign Up
Rechercher


WEB01 - Snapshot Manager
site fr&uk OK You Are Here

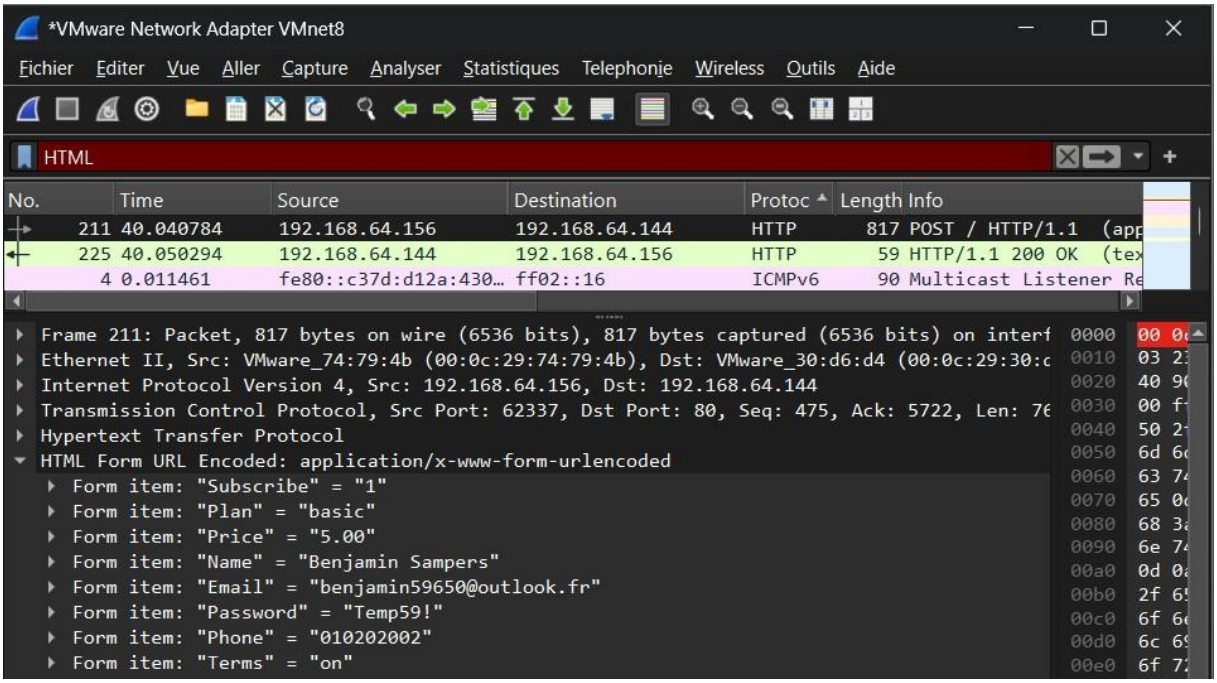

bsampers@localhost:/etc/ngi
[bsampers@localhost nginx]$ sudo touch blockip.conf
[bsampers@localhost nginx]$ ls
blockip.conf fastcgi_params.default nginx.conf.default
conf.d koi-utf scgi_params
default.d koi-win scgi_params.default
fastcgi.conf mime.types uwsgi_params
fastcgi.conf.default mime.types.default uwsgi_params.default
fastcgi_params nginx.conf win-utf
[bsampers@localhost nginx]$ pwd
/etc/nginx
[bsampers@localhost nginx]$

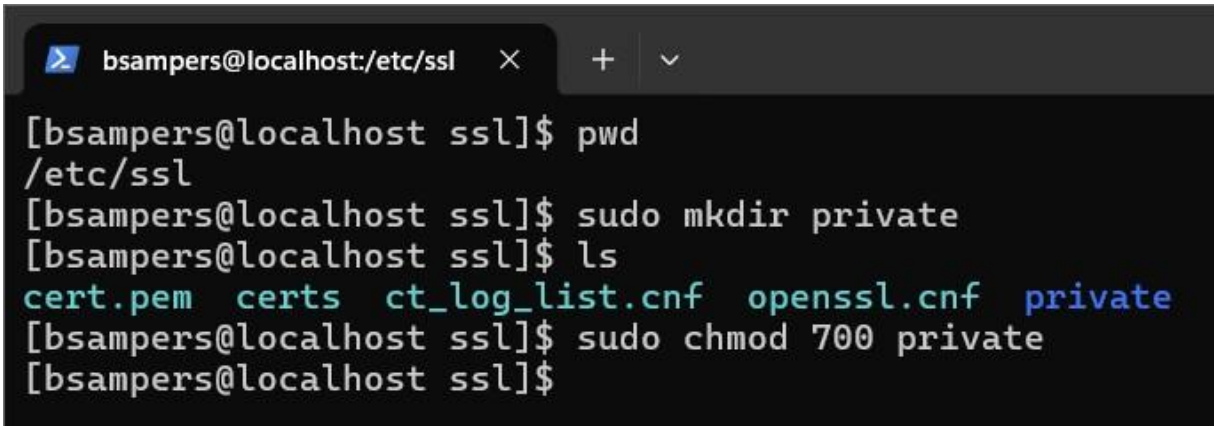
```
bsampers@localhost:/
[bsampers@localhost /]$ sudo cat etc/nginx/blockip.conf
deny 192.168.64.1;
[bsampers@localhost /]$
```





Deuxième partie






bsampers@localhost:/
a:2048 -keyout /etc/ssl/private/nginx-selfsigned.key -out /etc/ssl/certs/nginx-selfsigned.crt
.+.....+.....+....+..+....+.....+.....+....+..+.+++
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++++++++++++++++++++++*....+.....+...+.....+.....+.....+..+.+..+...
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....+.....+...+.....+....+.....+...+...+..+.....+....++++++
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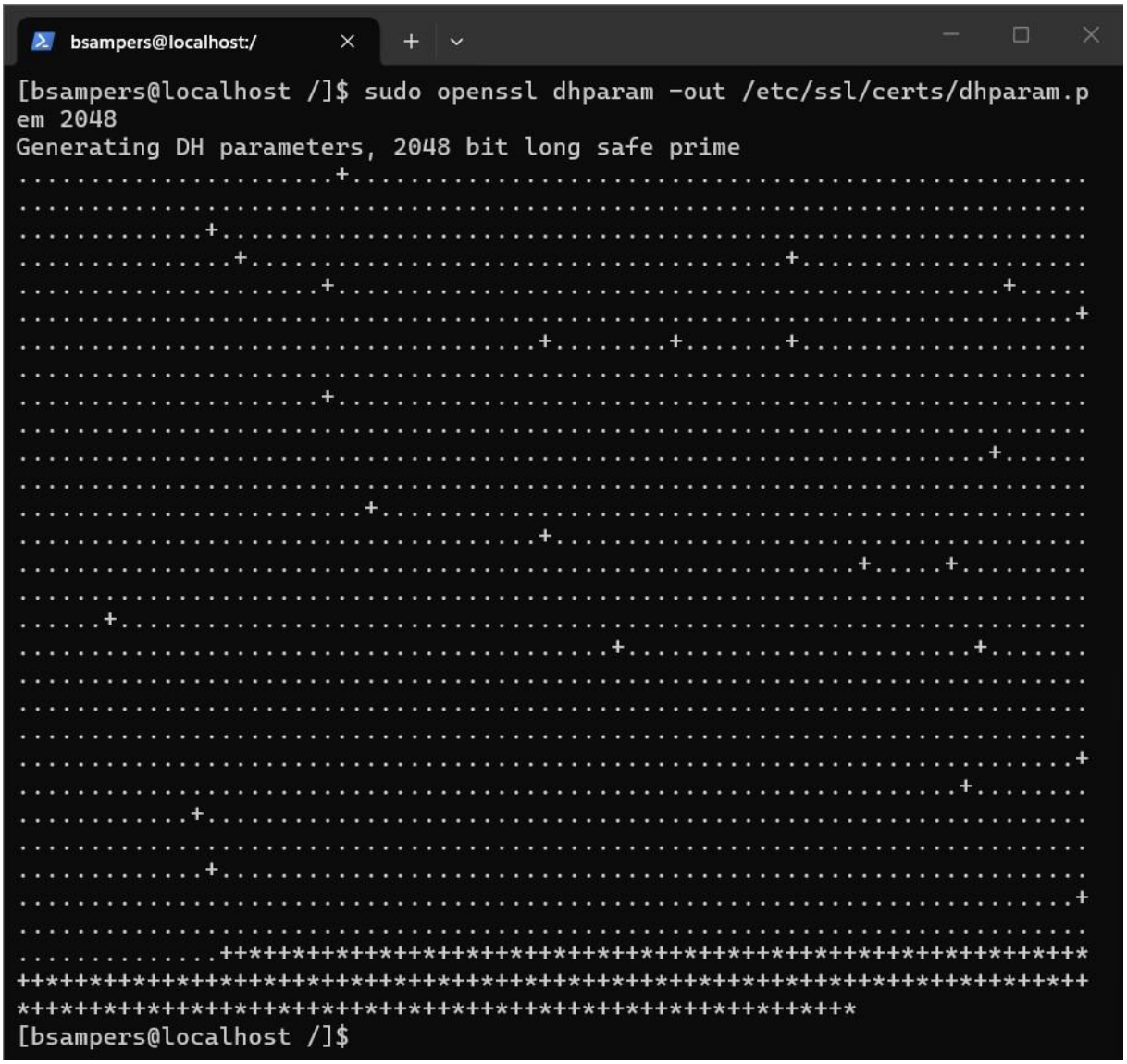
.....+.....+...+...+.....+.....++++++

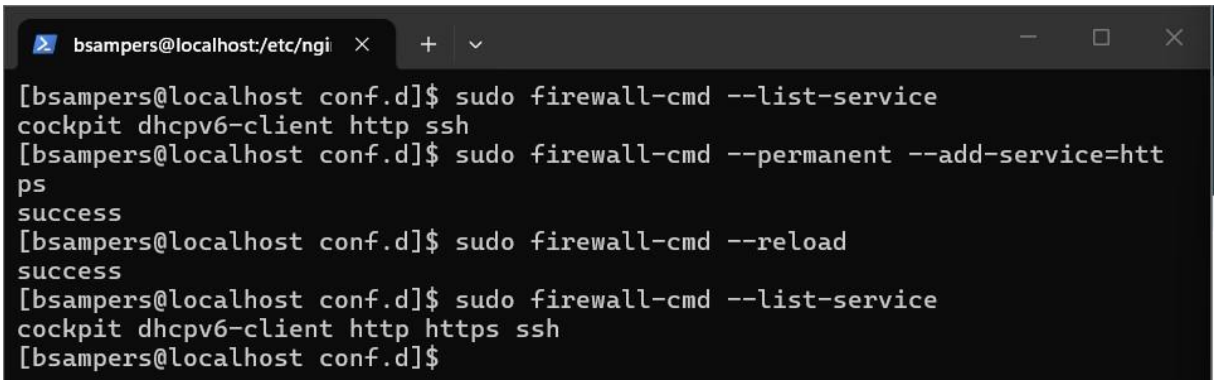
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN
.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.

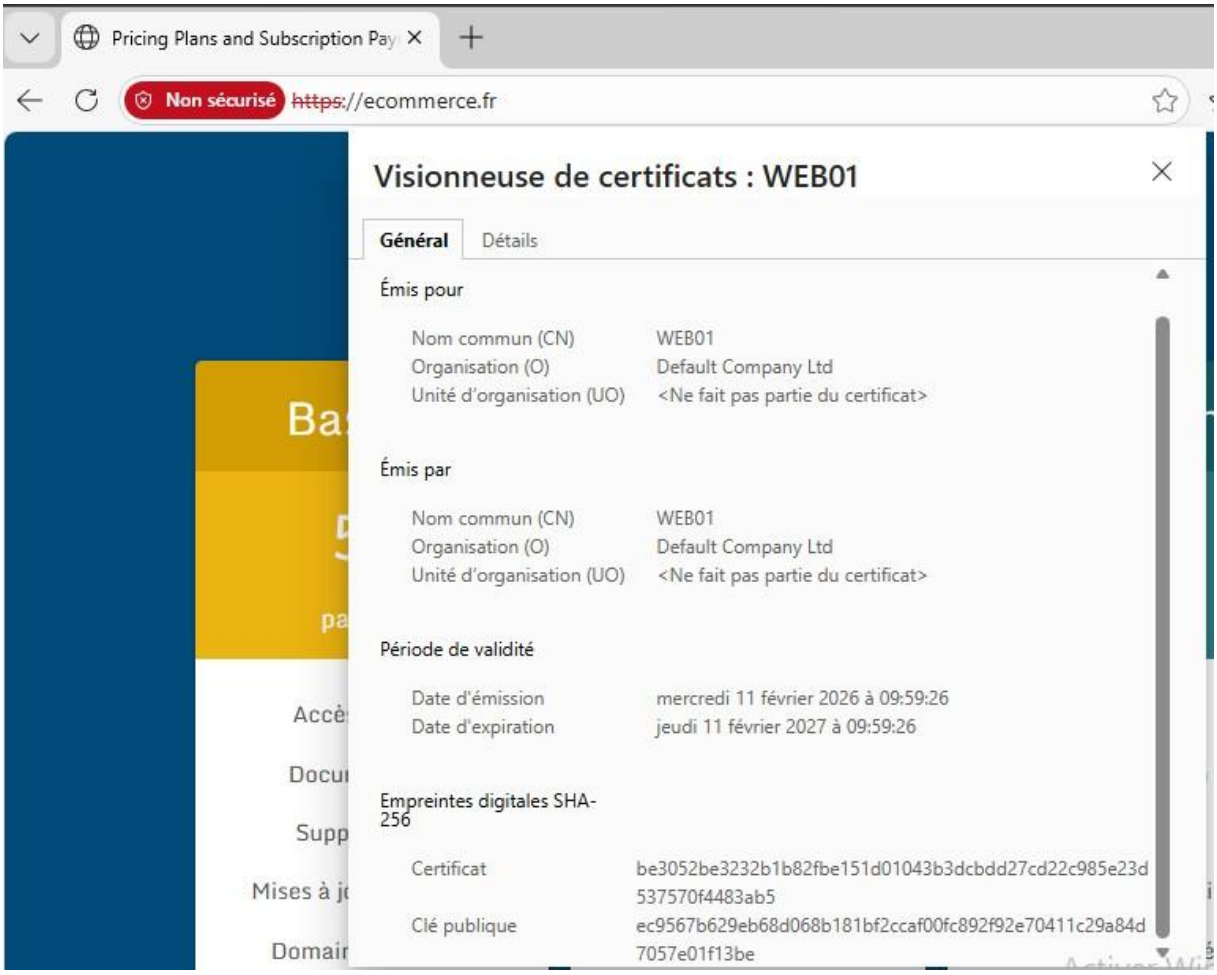
Country Name (2 letter code) [XX]:FR
State or Province Name (full name) []:
Locality Name (eg, city) [Default City]:Lille
Organization Name (eg, company) [Default Company Ltd]:
Organizational Unit Name (eg, section) []:
Common Name (eg, your name or your server's hostname) []:bsampers
Email Address []:
[bsampers@localhost /]$

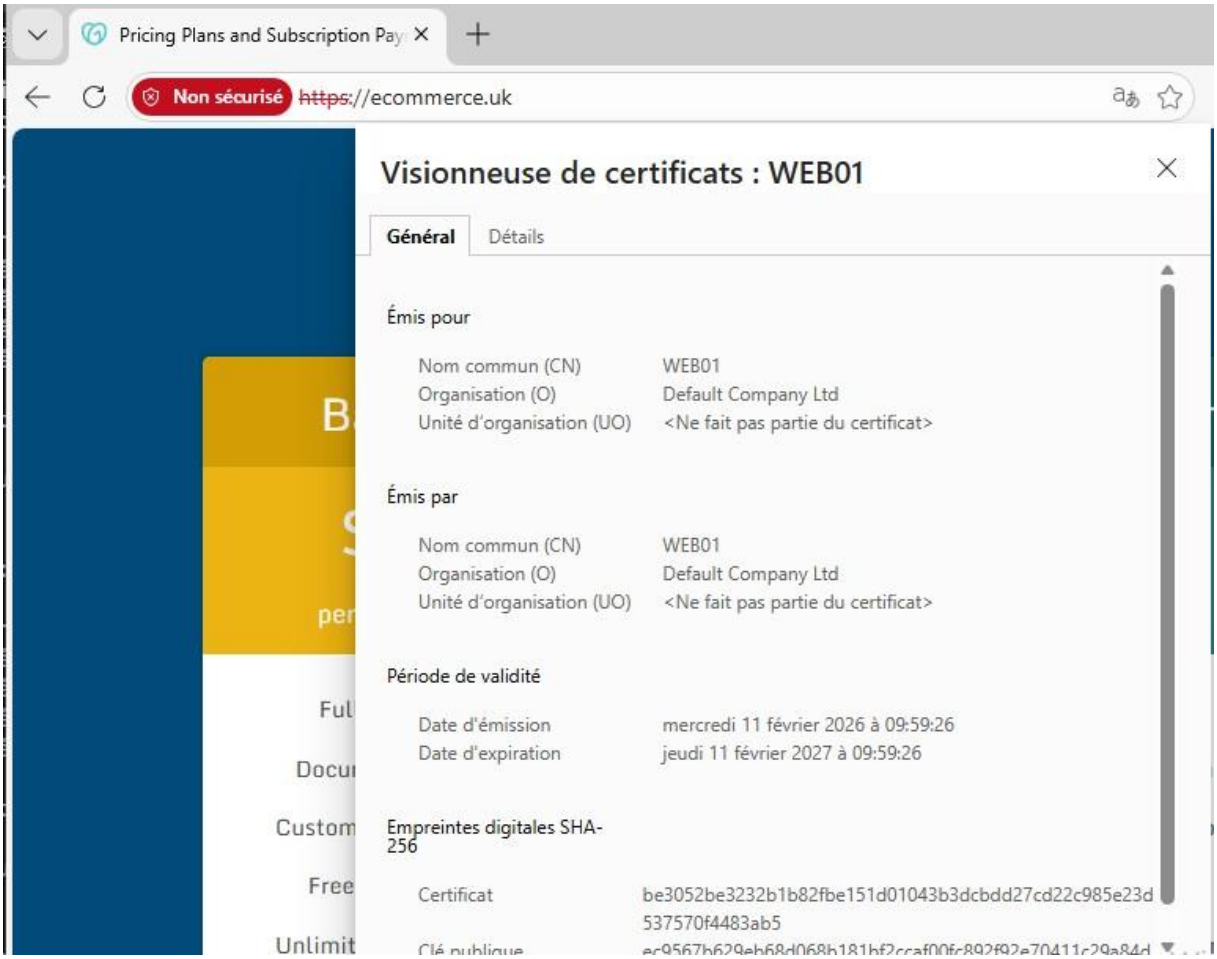

bsampers@localhost:/
[bsampers@localhost /]$ sudo openssl dhparam -out /etc/ssl/certs/dhparam.p
em 2048
Generating DH parameters, 2048 bit long safe prime
[bsampers@localhost /]$


bsampers@localhost:/etc/ngi
include blockip.conf;
root /var/www/ecommerce.fr/;
index index.html index.htm index.nginx-debian.html sign-up.php;
server_name ecommerce.fr ;
location ~* \.php$ {
fastcgi_pass unix:/run/php-fpm/www.sock;
include fastcgi_params;
fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
fastcgi_param SCRIPT_NAME $fastcgi_script_name;
}
access_log /var/log/nginx/access_ecommerce.fr.log;
error_log /var/log/nginx/error_ecommerce.fr.log;
location / {
try_files $uri $uri/ =404;
}
}
server {
listen 443 http2 ssl;
listen [::]:443 http2 ssl;
ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;
ssl_certificate /etc/ssl/private/nginx-selfsigned.key;
ssl_dhparam /etc/ssl/certs/dhparam.pem;
root /var/www/ecommerce.fr/;
index index.html index.htm index.nginx-debian.html sign-up.php;
server_name ecommerce.fr ;
location ~* \.php$ {
fastcgi_pass unix:/run/php-fpm/www.sock;
include fastcgi_params;
fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
fastcgi_param SCRIPT_NAME $fastcgi_script_name;
}
access_log /var/log/nginx/access_ecommerce.fr.log;
error_log /var/log/nginx/error_ecommerce.fr.log;
location / {
try_files $uri $uri/ =404;
}
}


bsampers@localhost:/etc/
index index.html index.htm index.nginx-debian.html sign-up.php;
server_name ecommerce.uk ;
location ~* \.php$ {
fastcgi_pass unix:/run/php-fpm/www.sock;
include fastcgi_params;
fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
fastcgi_param SCRIPT_NAME $fastcgi_script_name;
}
access_log /var/log/nginx/access_ecommerce.uk.log;
error_log /var/log/nginx/error_ecommerce.uk.log;
location / {
try_files $uri $uri/ =404;
}
}
server {
listen 443 http2 ssl;
listen [::]:443 http2 ssl;
ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;
ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;
ssl_dhparam /etc/ssl/certs/dhparam.pem;
root /var/www/ecommerce.uk/;
index index.html index.htm index.nginx-debian.html sign-up.php;
server_name ecommerce.uk ;
location ~* \.php$ {
fastcgi_pass unix:/run/php-fpm/www.sock;
include fastcgi_params;
fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
fastcgi_param SCRIPT_NAME $fastcgi_script_name;
}
access_log /var/log/nginx/access_ecommerce.uk.log;
error_log /var/log/nginx/error_ecommerce.uk.log;
location / {
try_files $uri $uri/ =404;
}


bsampers@localhost:/etc/ngi
[bsampers@localhost conf.d]$ sudo firewall-cmd --list-service
cockpit dhcpv6-client http ssh
[bsampers@localhost conf.d]$ sudo firewall-cmd --permanent --add-service=htt
ps
success
[bsampers@localhost conf.d]$ sudo firewall-cmd --reload
success
[bsampers@localhost conf.d]$ sudo firewall-cmd --list-service
cockpit dhcpv6-client http https ssh
[bsampers@localhost conf.d]$


Pricing Plans and Subscription Pay
Non sécurisé
https://ecommerce.fr
Visionneuse de certificats : WEB01
Général
Détails
Émis pour
Nom commun (CN) WEB01
Organisation (O) Default Company Ltd
Unité d'organisation (UO) <Ne fait pas partie du certificat>
Émis par
Nom commun (CN) WEB01
Organisation (O) Default Company Ltd
Unité d'organisation (UO) <Ne fait pas partie du certificat>
Période de validité
Date d'émission mercredi 11 février 2026 à 09:59:26
Date d'expiration jeudi 11 février 2027 à 09:59:26
Empreintes digitales SHA-256
Certificat be3052be3232b1b82fbe151d01043b3dcbdd27cd22c985e23d537570f4483ab5
Clé publique ec9567b629eb68d068b181bf2ccaf00fc892f92e70411c29a84d7057e01f13be

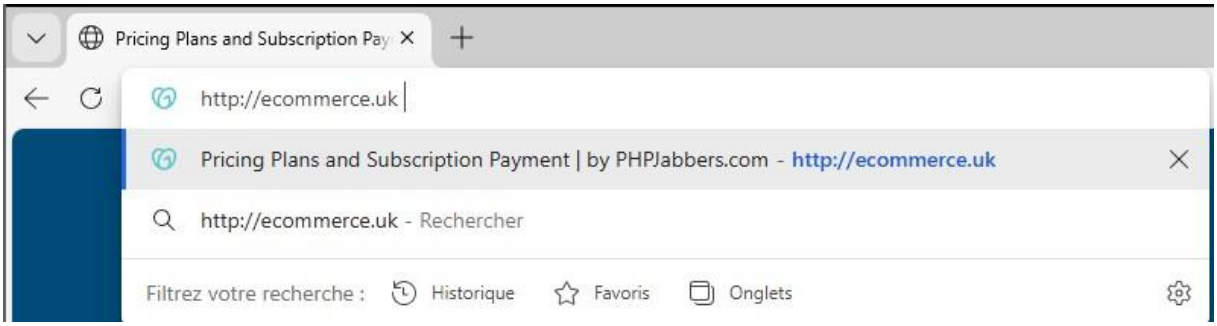



```
bsampers@localhost:~
[bsampers@localhost ~]$ sudo firewall-cmd --list-service
[sudo] password for bsampers:
cockpit dhcpv6-client https ssh
[bsampers@localhost ~]$
```

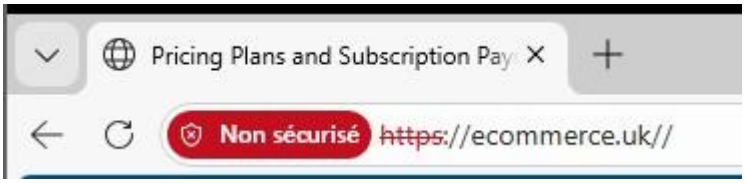
```
[bsampers@localhost conf.d]$ sudo cat site_ecommerce.fr.conf
server {
  listen 80;
  listen [::]:80;

  return 301 https://$host$request_uri/;
```

```
[bsampers@localhost conf.d]$ sudo cat site_ecommerce.uk.conf
server {
  listen 80;
  listen [::]:80;

  return 301 https://$host$request_uri/;
```

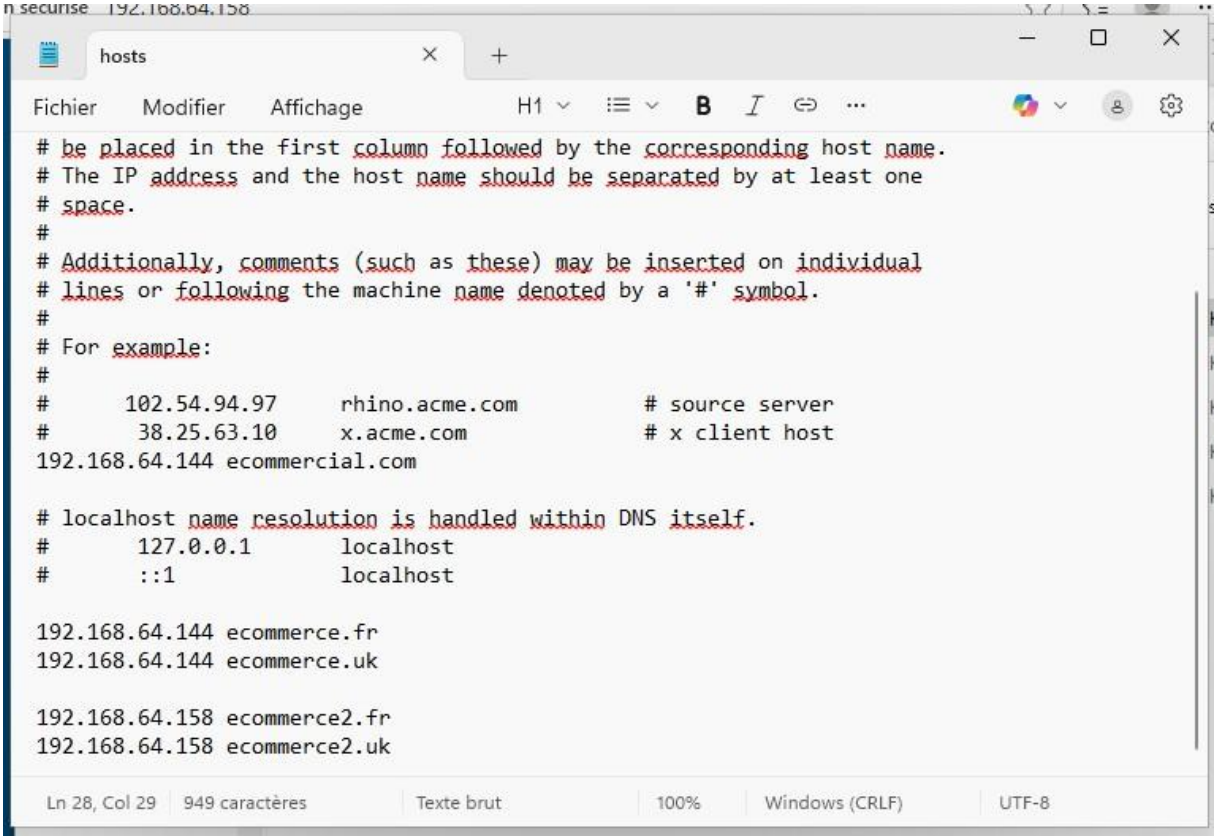
Quand nous tapons l’url suivante : http://ecommerce.uk



Le site est renvoyé directement vers la version https.



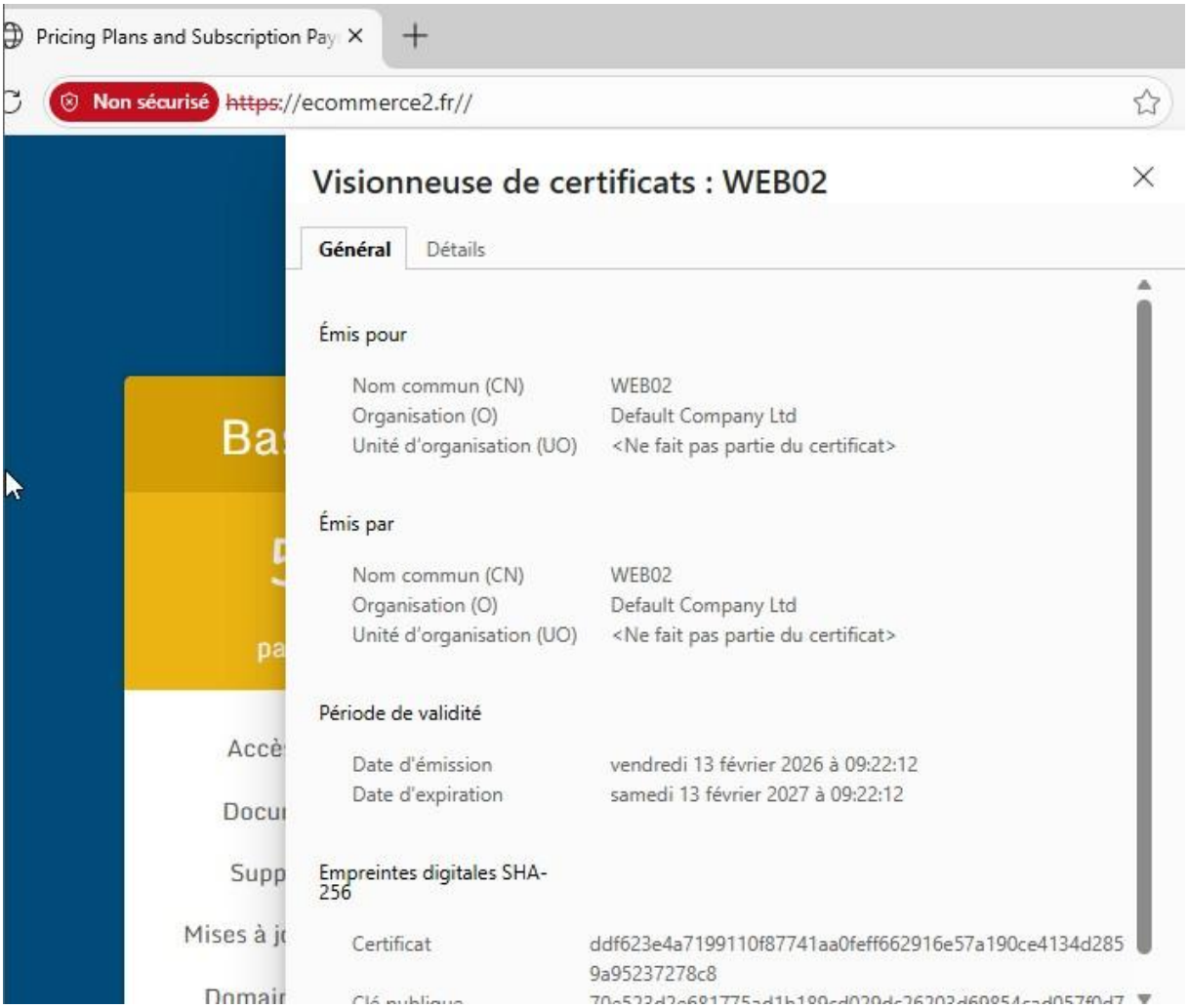
Troisième partie

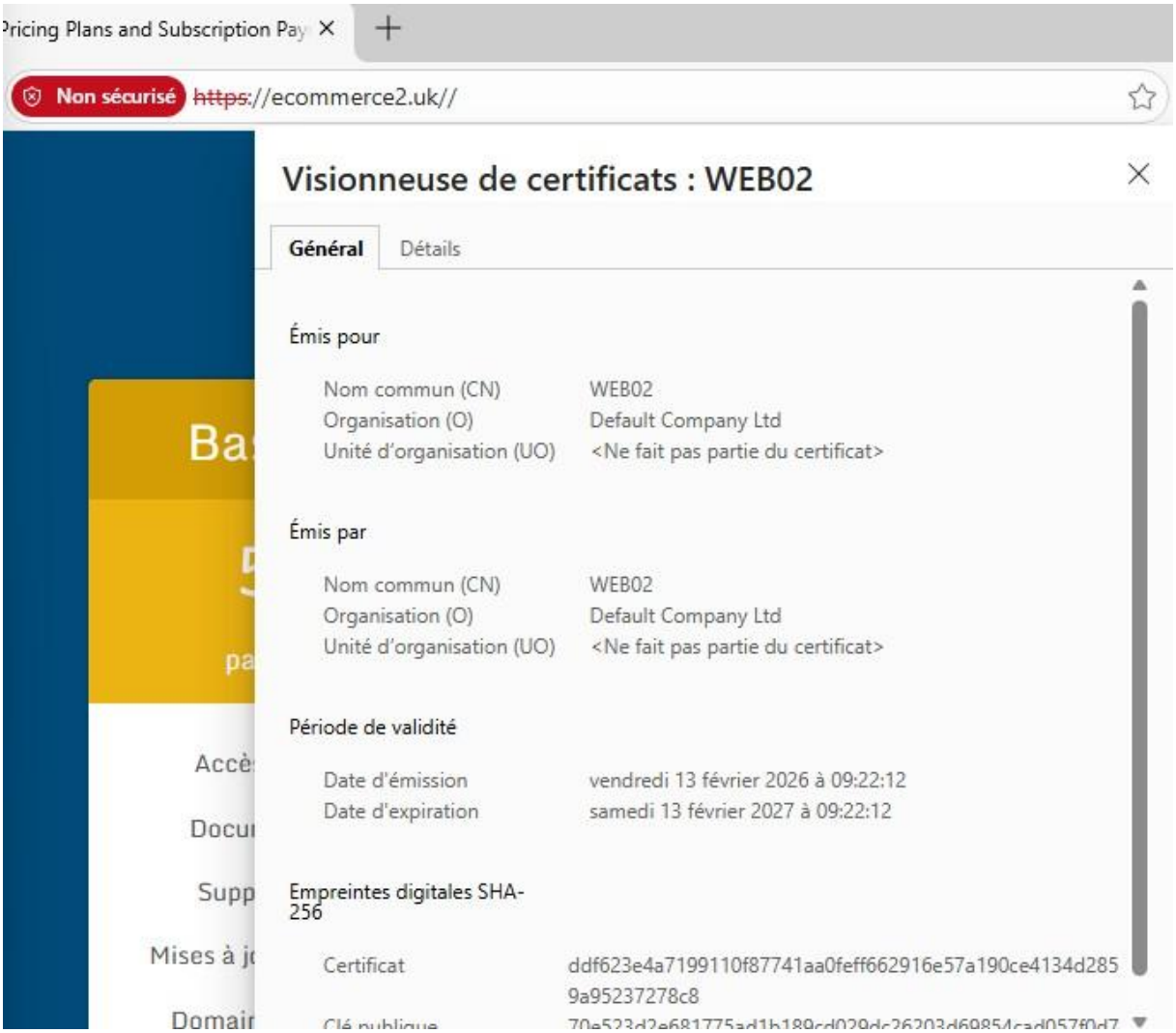

n securise 192.168.64.158
hosts
Fichier Modifier Affichage H1
be placed in the first column followed by the corresponding host name.
The IP address and the host name should be separated by at least one
space.
#
Additionally, comments (such as these) may be inserted on individual
lines or following the machine name denoted by a '#' symbol.
#
For example:
#
102.54.94.97   rhino.acme.com   # source server
38.25.63.10   x.acme.com   # x client host
192.168.64.144 ecommercial.com

localhost name resolution is handled within DNS itself.
127.0.0.1   localhost
::1   localhost

192.168.64.144 ecommerce.fr
192.168.64.144 ecommerce.uk

192.168.64.158 ecommerce2.fr
192.168.64.158 ecommerce2.uk
Ln 28, Col 29
949 caractères
Texte brut
100%
Windows (CRLF)
UTF-8

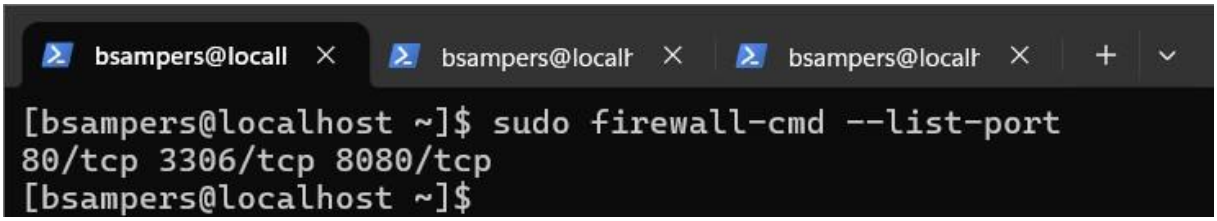

Pricing Plans and Subscription Pay
Non sécurisé
https://ecommerce2.fr//
Visionneuse de certificats : WEB02
Général
Détails
Émis pour
Nom commun (CN) WEB02
Organisation (O) Default Company Ltd
Unité d'organisation (UO) <Ne fait pas partie du certificat>
Émis par
Nom commun (CN) WEB02
Organisation (O) Default Company Ltd
Unité d'organisation (UO) <Ne fait pas partie du certificat>
Période de validité
Date d'émission vendredi 13 février 2026 à 09:22:12
Date d'expiration samedi 13 février 2027 à 09:22:12
Empreintes digitales SHA-256
Certificat ddf623e4a7199110f87741aa0feff662916e57a190ce4134d2859a95237278c8

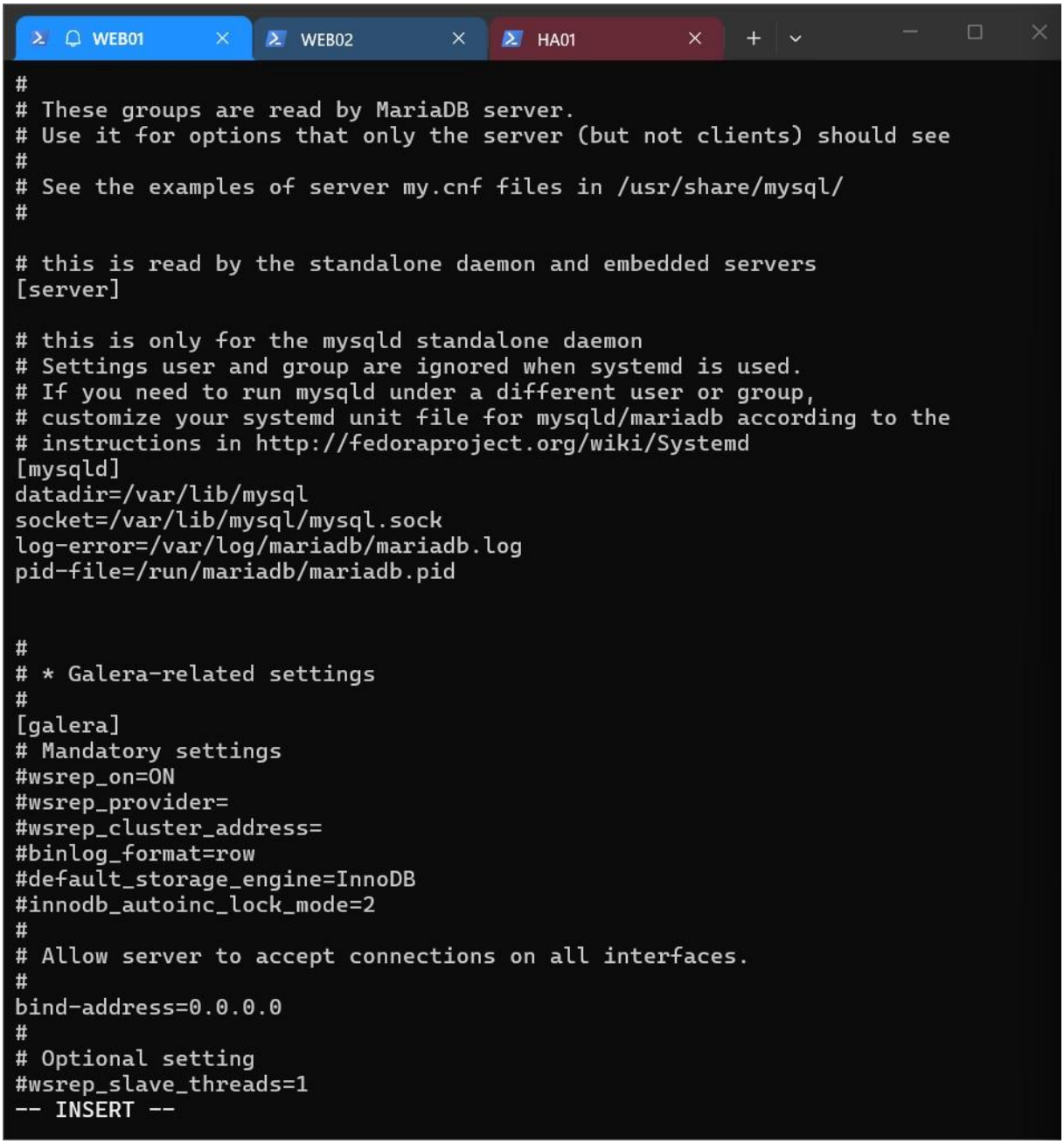


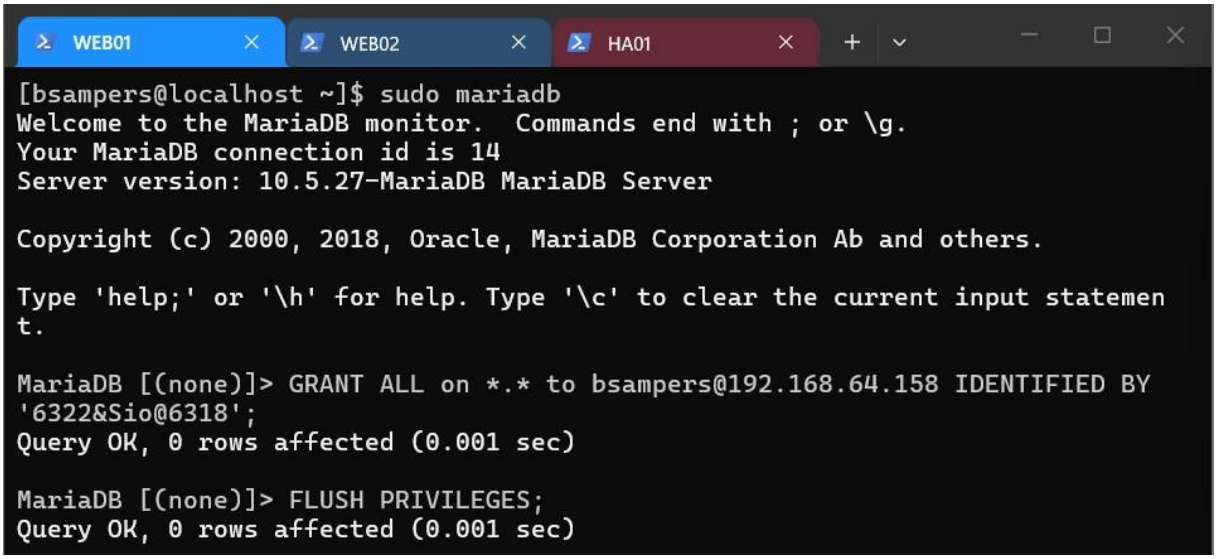

```
[bsampers@localhost ~]$ sudo dnf install haproxy

We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:

    #1) Respect the privacy of others.
    #2) Think before you type.
    #3) With great power comes great responsibility.

[sudo] password for bsampers:
Rocky Linux 9 - BaseOS                    8.2 MB/s |  12 MB     00:01
Rocky Linux 9 - AppStream                 2.8 MB/s |  15 MB     00:05
Rocky Linux 9 - Extras                     66 kB/s |  17 kB     00:00
Dependencies resolved.
================================================================================
 Package       Architecture Version                    Repository       Size
================================================================================
Installing:
 haproxy       x86_64       2.8.14-1.el9_7.1          appstream       2.5 M
```

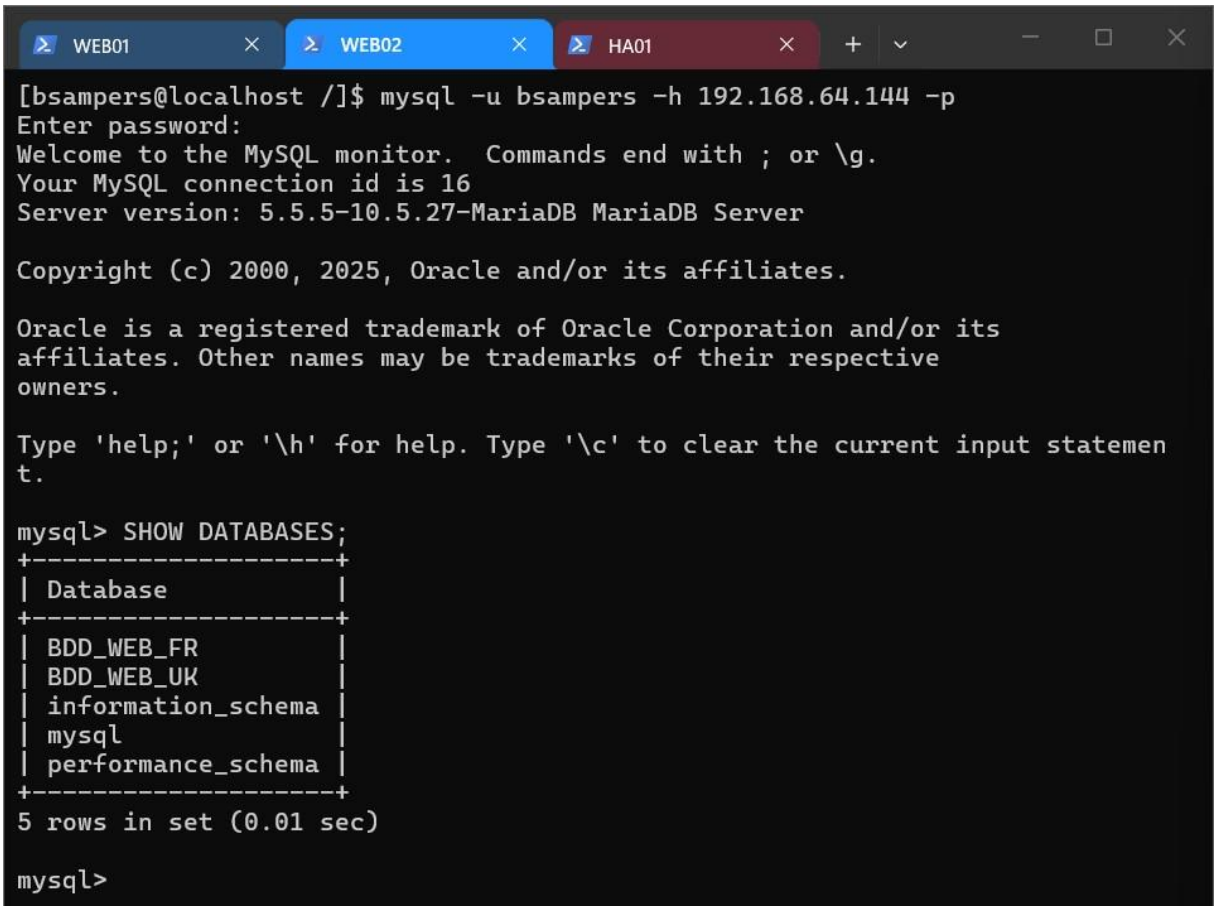
Ouverture du port 3306 en TCP sur WEB01 sudo

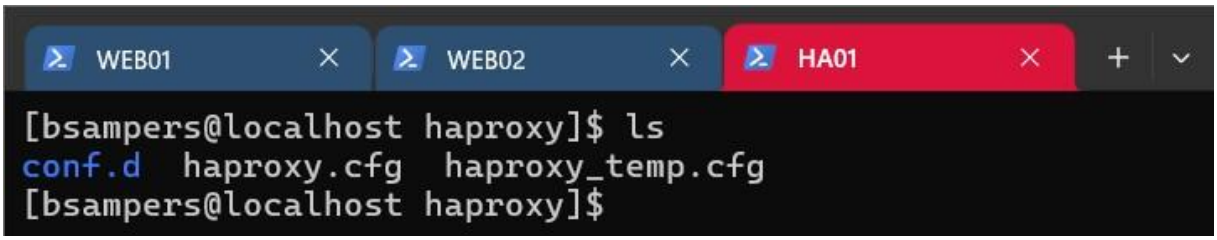
firewall-cmd --add-port=3306/tcp






WEB01
WEB02
HA01
[bsampers@localhost ~]$ sudo mariadb
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 14
Server version: 10.5.27-MariaDB MariaDB Server
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statemen
t.
MariaDB [(none)]> GRANT ALL on *.* to bsampers@192.168.64.158 IDENTIFIED BY
'6322&Sio@6318';
Query OK, 0 rows affected (0.001 sec)
MariaDB [(none)]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.001 sec)


WEB01
WEB02
HA01
[bsampers@localhost /]$ mysql -u bsampers -h 192.168.64.144 -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 5.5.5-10.5.27-MariaDB MariaDB Server
Copyright (c) 2000, 2025, Oracle and/or its affiliates.
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statemen
t.
mysql> SHOW DATABASES;
+--------------------+
| Database |
+--------------------+
| BDD_WEB_FR |
| BDD_WEB_UK |
| information_schema |
| mysql |
| performance_schema |
+--------------------+
5 rows in set (0.01 sec)
mysql>


WEB01
WEB02
HA01
[bsampers@localhost haproxy]$ ls
conf.d haproxy.cfg haproxy_temp.cfg
[bsampers@localhost haproxy]$

WEB01 | WEB02 | HA01

```
# Provides UDP syslog reception
# for parameters see http://www.rsyslog.com/doc/imudp.html
module(load="imudp") # needs to be done just once
input(type="imudp" port="514")
```

WEB01 | WEB02 | HA01

```
[bsampers@localhost /]$ sudo setsebool -P haproxy_connect_any 1
```

WEB01 | WEB02 | HA01

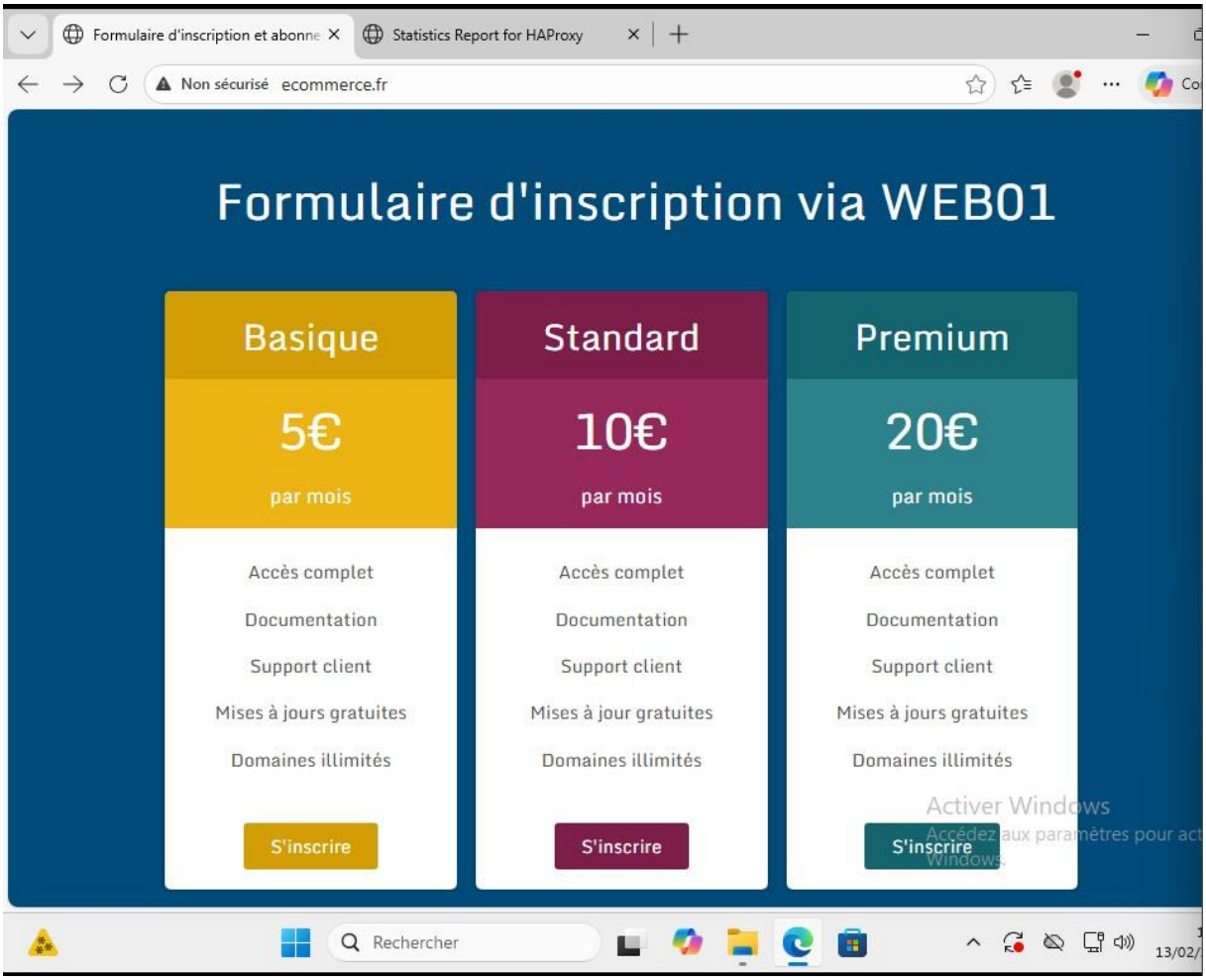
```
[bsampers@localhost /]$ sudo systemctl start haproxy
[bsampers@localhost /]$ sudo systemctl start rsyslog
```

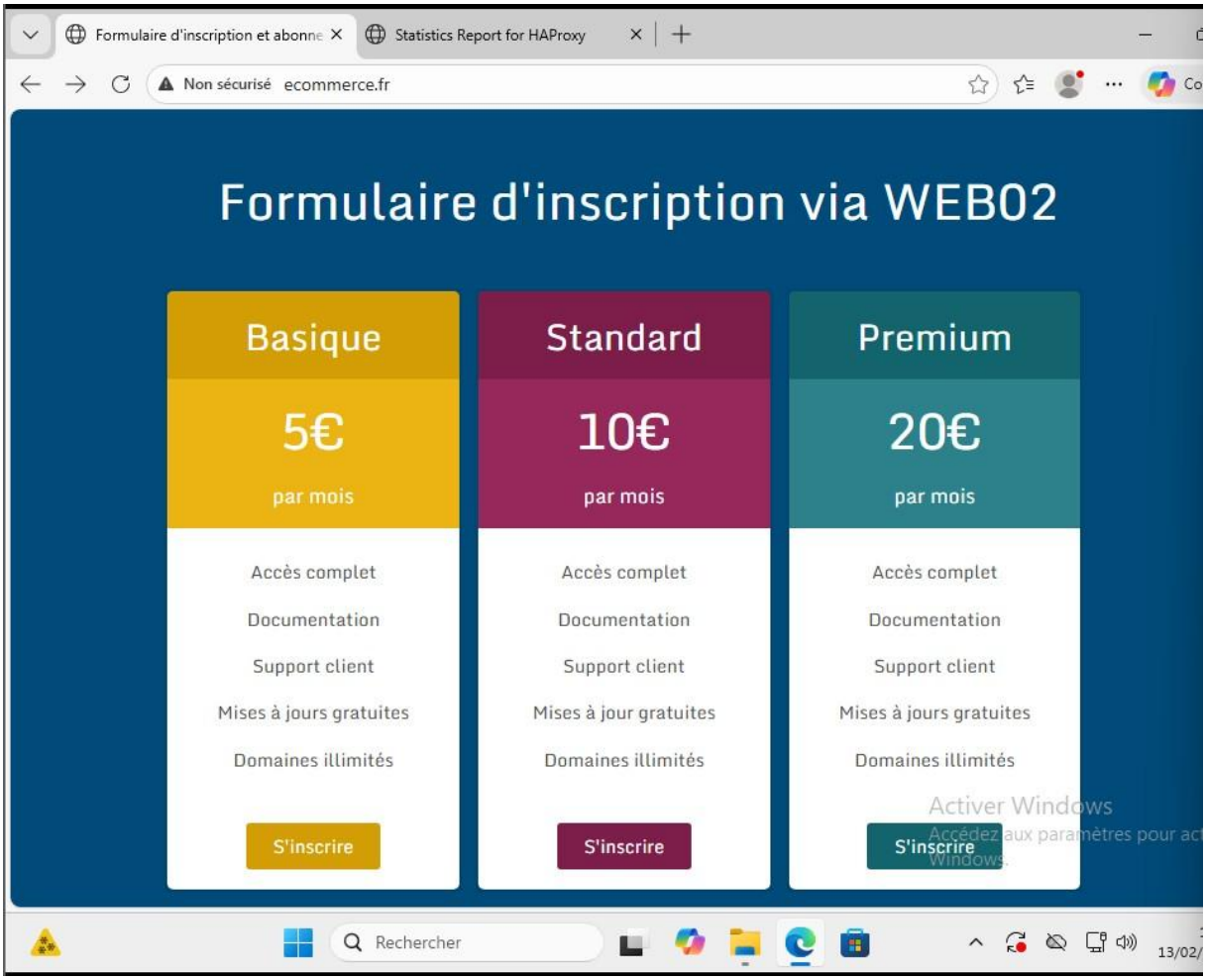
hosts

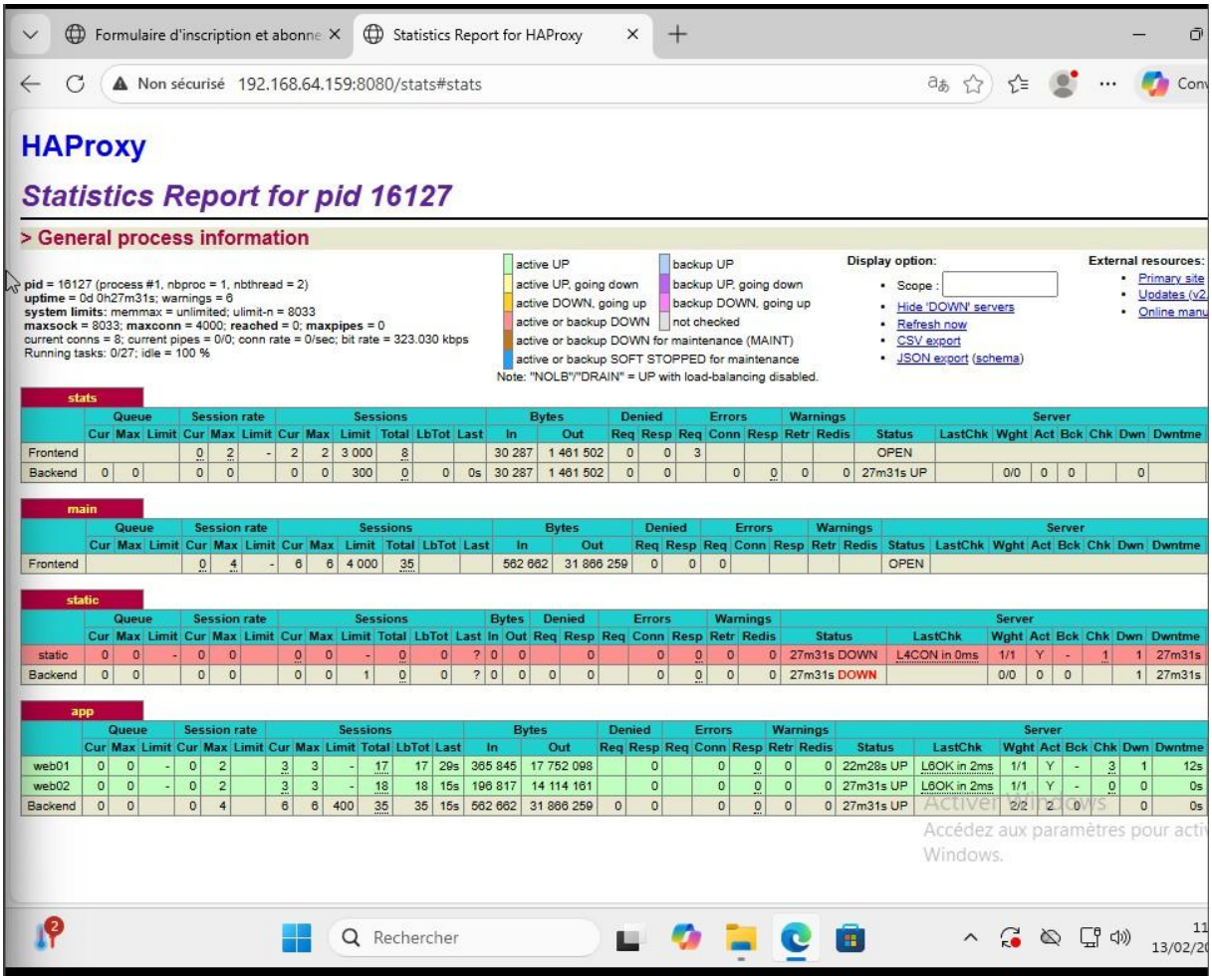
Fichier Modifier Affichage H1

```
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#      102.54.94.97     rhino.acme.com          # source server
#       38.25.63.10     x.acme.com              # x client host
192.168.64.144 ecommercial.com

# localhost name resolution is handled within DNS itself.
#       127.0.0.1       localhost
#       ::1             localhost

192.168.64.159 ecommerce.fr
192.168.64.159 ecommerce.uk
```

Ln 25, Col 15 | 890 caractères | Texte brut | 100% | Windows (CRLF) | UTF-8


Formulaire d'inscription et abonne
Statistics Report for HAProxy
Non sécurisé ecommerce.fr
Formulaire d'inscription via WEB01
Basique
5€
par mois
Accès complet
Documentation
Support client
Mises à jours gratuites
Domaines illimités
S'inscrire
Standard
10€
par mois
Accès complet
Documentation
Support client
Mises à jour gratuites
Domaines illimités
S'inscrire
Premium
20€
par mois
Accès complet
Documentation
Support client
Mises à jours gratuites
Domaines illimités
S'inscrire
Activer Windows
Rechercher


Formulaire d'inscription et abonne
Statistics Report for HAProxy
Non sécurisé ecommerce.fr
Formulaire d'inscription via WEB02
Basique
5€
par mois
Accès complet
Documentation
Support client
Mises à jours gratuites
Domaines illimités
S'inscrire
Standard
10€
par mois
Accès complet
Documentation
Support client
Mises à jour gratuites
Domaines illimités
S'inscrire
Premium
20€
par mois
Accès complet
Documentation
Support client
Mises à jours gratuites
Domaines illimités
S'inscrire
Activer Windows
Rechercher

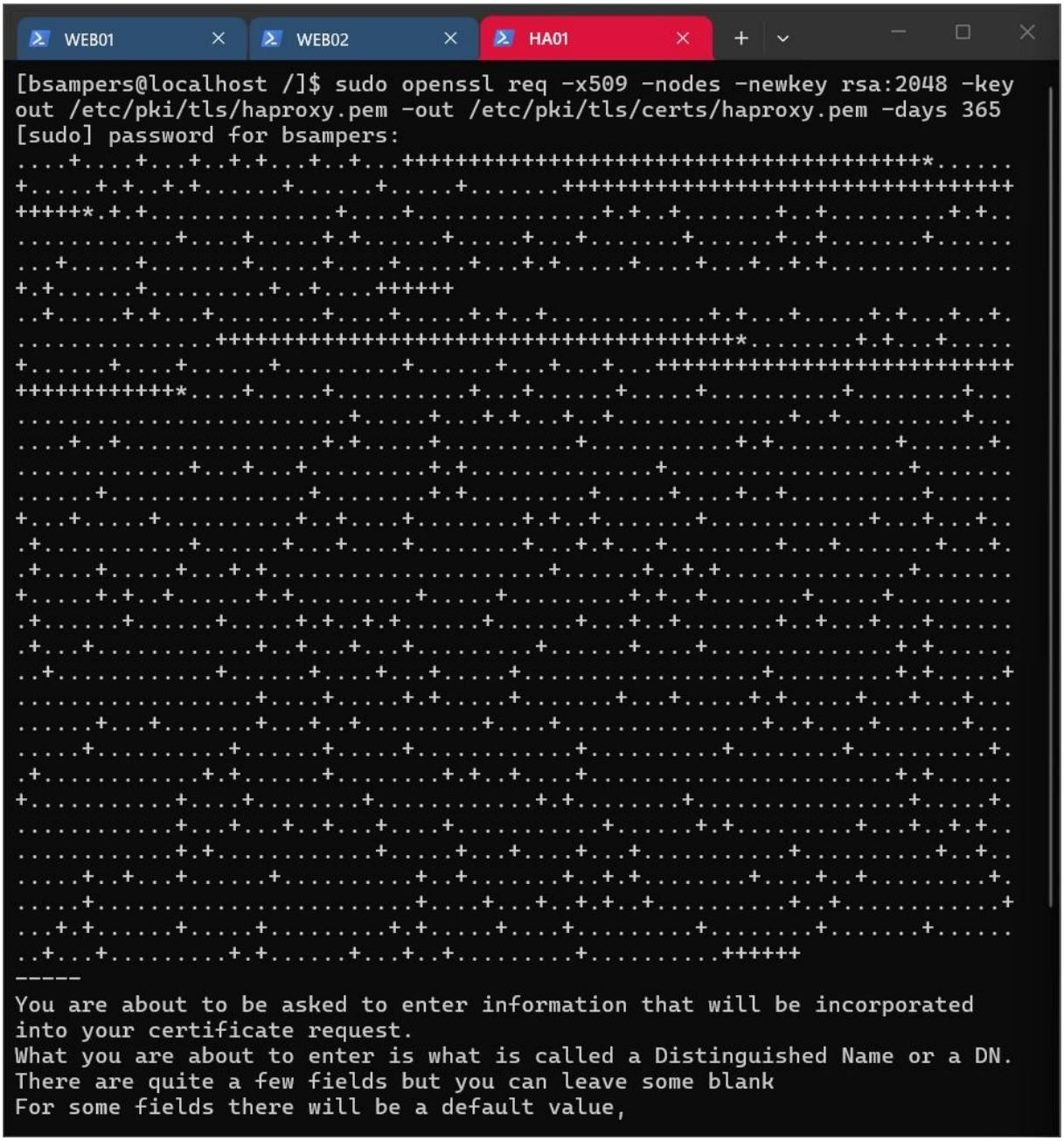


stats	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server							
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme
Frontend				0	2	-	2	2	3 000	8			30 287	1 461 502	0	0	3					OPEN							
Backend	0	0		0	0		0	0	300	0	0	0s	30 287	1 461 502	0	0		0	0	0	0	27m31s UP		0/0	0	0		0	

main	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server							
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme
Frontend				0	4	-	6	6	4 000	35			562 662	31 866 259	0	0	0					OPEN							

static	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server							
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme
static	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	27m31s DOWN	L4CON in 0ms	1/1	Y	-	1	1	27m31s
Backend	0	0		0	0		0	0	1	0	0	?	0	0	0	0		0	0	0	0	27m31s DOWN		0/0	0	0		1	27m31s

app	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server							
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme
web01	0	0	-	0	2		3	3	-	17	17	29s	365 845	17 752 098		0		0	0	0	0	22m28s UP	L6OK in 2ms	1/1	Y	-	3	1	12s
web02	0	0	-	0	2		3	3	-	18	18	15s	196 817	14 114 161		0		0	0	0	0	27m31s UP	L6OK in 2ms	1/1	Y	-	0	0	0s
Backend	0	0		0	4		6	6	400	35	35	15s	562 662	31 866 259	0	0		0	0	0	0	27m31s UP		2/2	2	0		0	0s


WEB01
WEB02
HA01
[bsampers@localhost /]$ sudo openssl req -x509 -nodes -newkey rsa:2048 -key
out /etc/pki/tls/haproxy.pem -out /etc/pki/tls/certs/haproxy.pem -days 365
[sudo] password for bsampers:

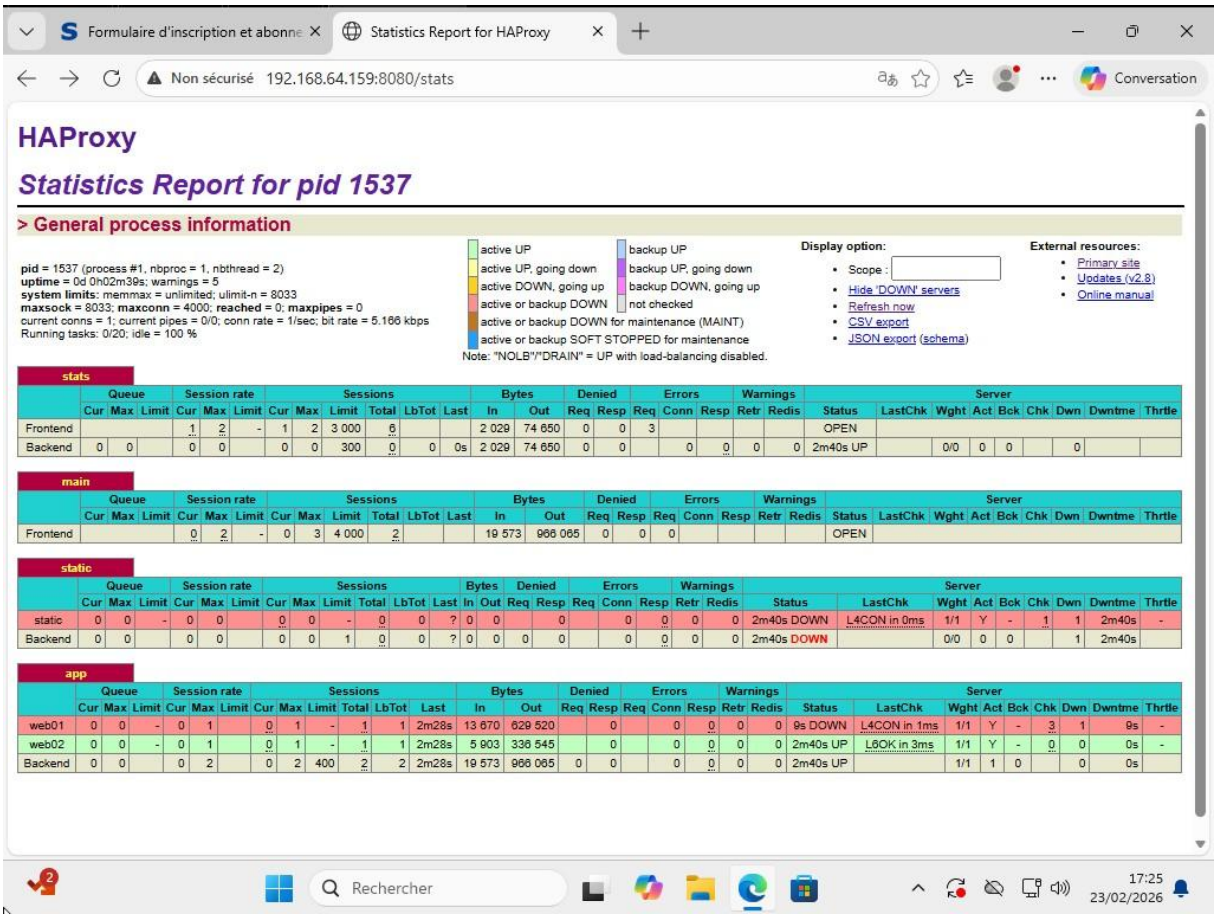
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,

WEB01 | WEB02 | HA01

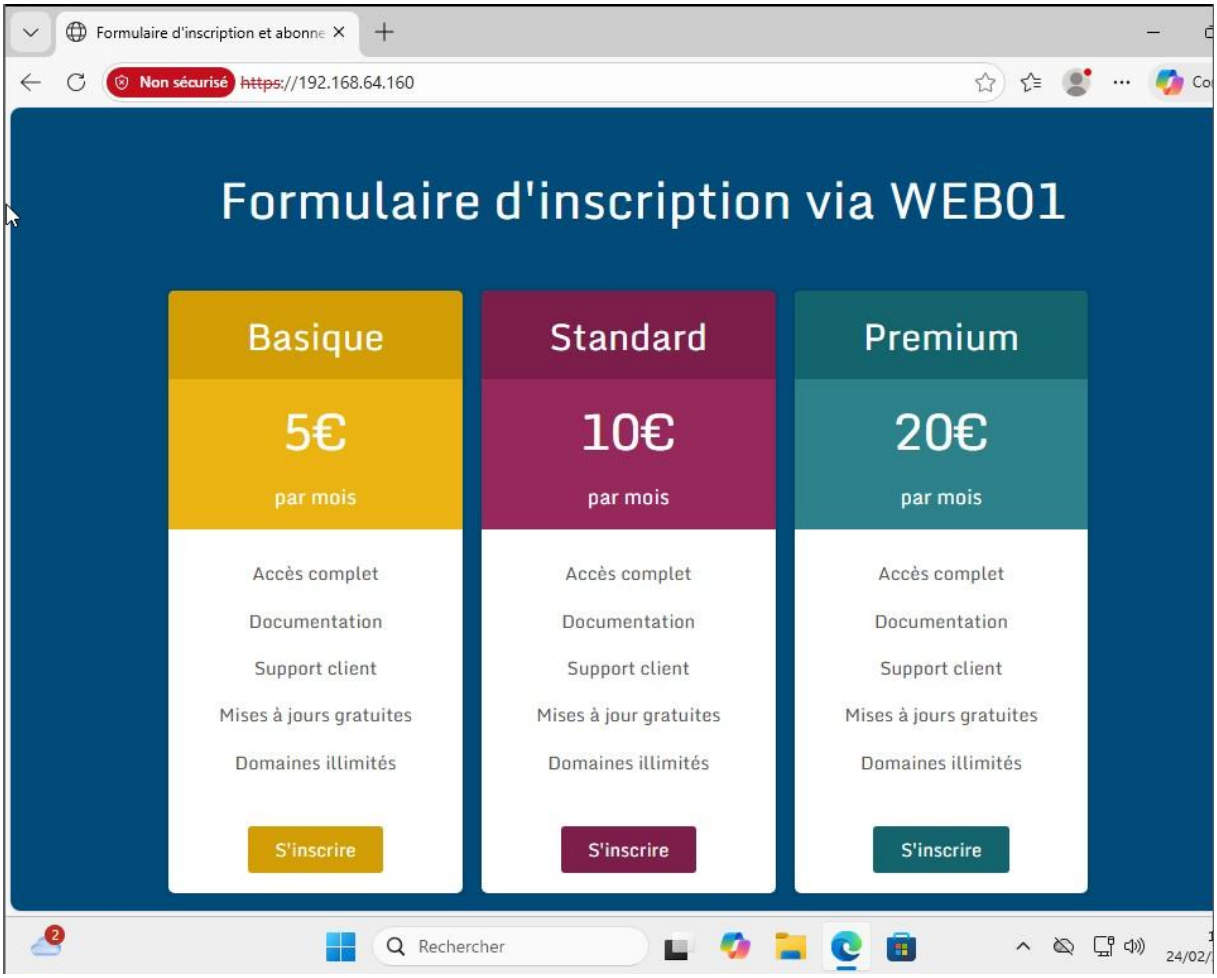
```
#---------------------------------------------------------------------
# Global settings
#---------------------------------------------------------------------
global
    # to have these messages end up in /var/log/haproxy.log you will
    # need to:
    #
    # 1) configure syslog to accept network log events.  This is done
    #    by adding the '-r' option to the SYSLOGD_OPTIONS in
    #    /etc/sysconfig/syslog
    #
    # 2) configure local2 events to go to the /var/log/haproxy.log
    #   file. A line like the following can be added to
    #   /etc/sysconfig/syslog
    #
    #    local2.*                       /var/log/haproxy.log
    #
    log         127.0.0.1 local2

    chroot      /var/lib/haproxy
    pidfile     /var/run/haproxy.pid
    maxconn     4000
    user        haproxy
    group       haproxy
    daemon

    # turn on stats unix socket
    stats socket /var/lib/haproxy/stats

    # utilize system-wide crypto-policies
    ssl-default-bind-ciphers PROFILE=SYSTEM
    ssl-default-server-ciphers PROFILE=SYSTEM

    maxsslconn 256
    tune.ssl.default-dh-param 2048
```

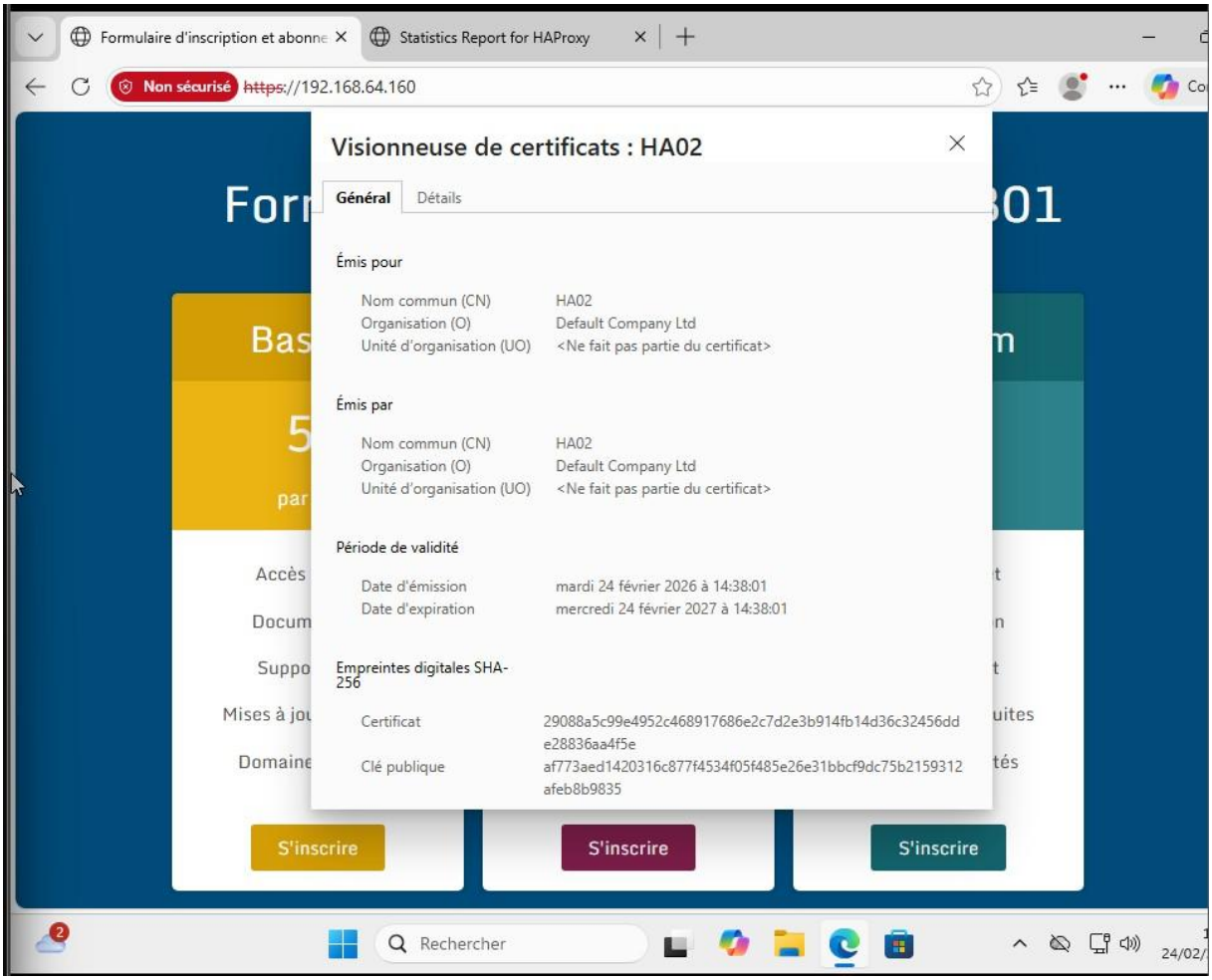
```
#---------------------------------------------------------------------
# main frontend which proxys to the backends
#---------------------------------------------------------------------
frontend main
    bind *:443 ssl crt /etc/pki/tls/certs/haproxy.pem
    acl url_static       path_beg       -i /static /images /javascript /sty
lesheets
    acl url_static       path_end       -i .jpg .gif .png .css .js

#    use_backend static          if url_static
    default_backend             app
```

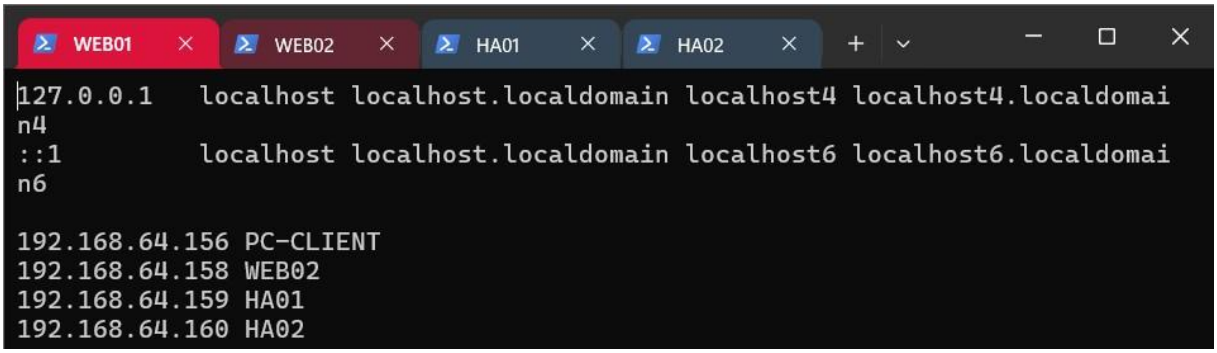
Voici ce qu'il se passe quand nous décidons d'arrêter un des deux serveurs WEB, ici le serveur WEB01.

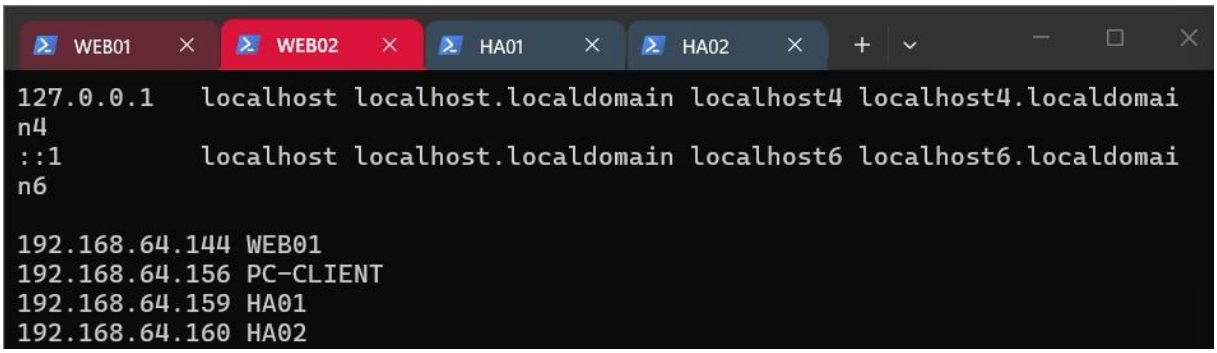



```
#---------------------------------------------------------------------
# round robin balancing between the various backends
#---------------------------------------------------------------------
backend app
    balance     leastconn
    server  web01 192.168.64.144:443 ssl verify none check
    server  web02 192.168.64.158:443 ssl verify none check
```


Formulaire d'inscription et abonne
Non sécurisé
https://192.168.64.160
Formulaire d'inscription via WEB01
Basique
5€
par mois
Accès complet
Documentation
Support client
Mises à jours gratuites
Domaines illimités
S'inscrire
Standard
10€
par mois
Accès complet
Documentation
Support client
Mises à jour gratuites
Domaines illimités
S'inscrire
Premium
20€
par mois
Accès complet
Documentation
Support client
Mises à jours gratuites
Domaines illimités
S'inscrire
Rechercher


Formulaire d'inscription et abonne
Statistics Report for HAProxy
Non sécurisé
https://192.168.64.160
Visionneuse de certificats : HA02
Général
Détails
Émis pour
Nom commun (CN) HA02
Organisation (O) Default Company Ltd
Unité d'organisation (UO) <Ne fait pas partie du certificat>
Émis par
Nom commun (CN) HA02
Organisation (O) Default Company Ltd
Unité d'organisation (UO) <Ne fait pas partie du certificat>
Période de validité
Date d'émission mardi 24 février 2026 à 14:38:01
Date d'expiration mercredi 24 février 2027 à 14:38:01
Empreintes digitales SHA-256
Certificat 29088a5c99e4952c468917686e2c7d2e3b914fb14d36c32456dde28836aa4f5e
Clé publique af773aed1420316c877f4534f05f485e26e31bbcf9dc75b2159312afeb8b9835
S'inscrire
S'inscrire
S'inscrire
Rechercher


WEB01
WEB02
HA01
HA02
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
192.168.64.156 PC-CLIENT
192.168.64.158 WEB02
192.168.64.159 HA01
192.168.64.160 HA02


WEB01
WEB02
HA01
HA02
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
192.168.64.144 WEB01
192.168.64.156 PC-CLIENT
192.168.64.159 HA01
192.168.64.160 HA02

WEB01 | WEB02 | HA01 | HA02

```
127.0.0.1   localhost localhost.localdomain localhost4 localhost4.localdomai
n4
::1         localhost localhost.localdomain localhost6 localhost6.localdomai
n6

192.168.64.144 WEB01
192.168.64.156 PC-CLIENT
192.168.64.158 WEB02
192.168.64.160 HA02
```

WEB01 | WEB02 | HA01 | HA02

```
127.0.0.1   localhost localhost.localdomain localhost4 localhost4.localdomai
n4
::1         localhost localhost.localdomain localhost6 localhost6.localdomai
n6

192.168.64.144 WEB01
192.168.64.156 PC-CLIENT
192.168.64.158 WEB02
192.168.64.159 HA01
```

WEB01 | WEB02 | HA01 | HA02

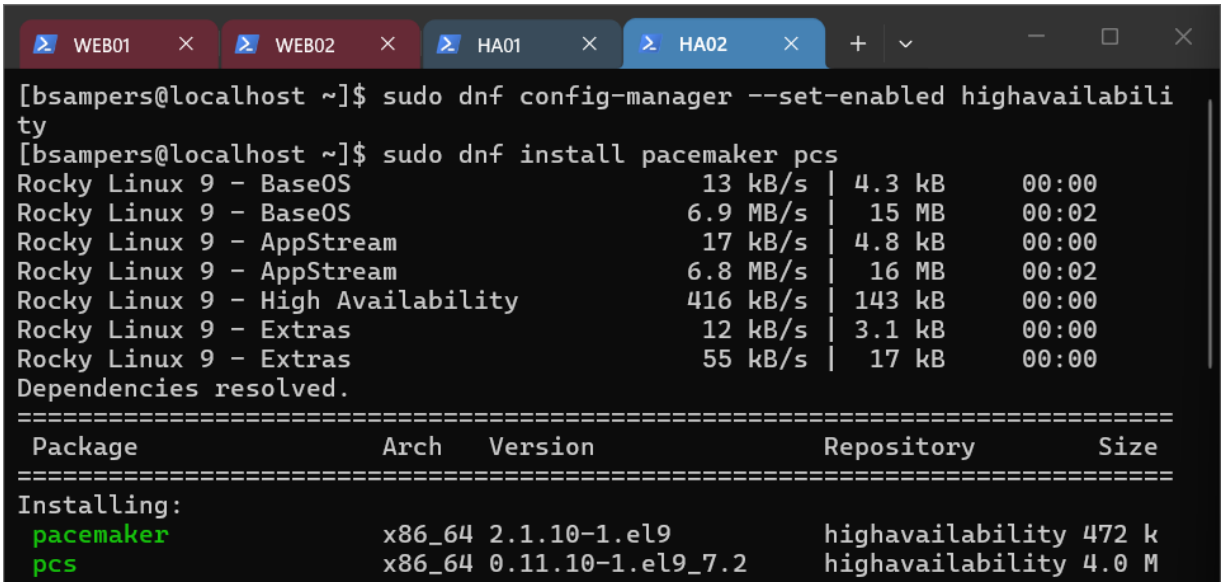
```
[bsampers@localhost ~]$ sudo dnf config-manager --set-enabled highavailabili
ty
[sudo] password for bsampers:
[bsampers@localhost ~]$
```

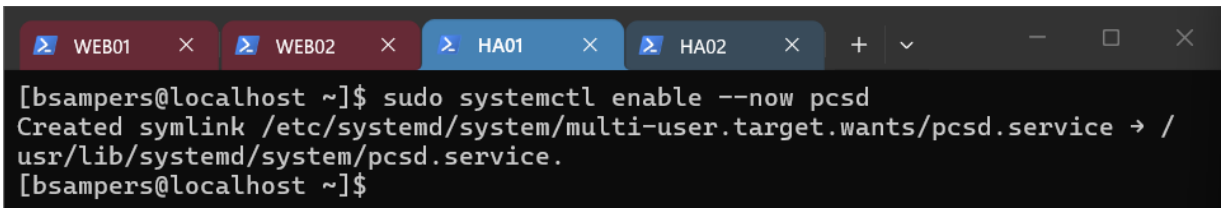
WEB01 | WEB02 | HA01 | HA02

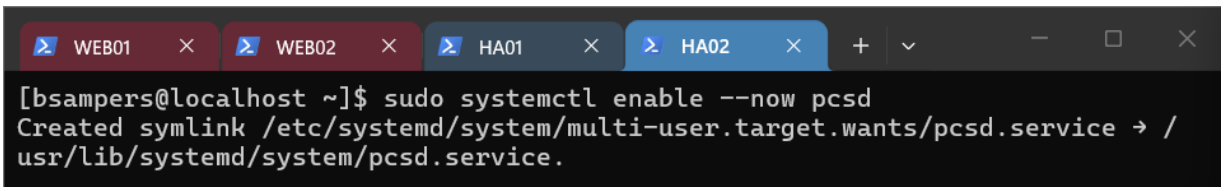
```
[bsampers@localhost ~]$ sudo dnf config-manager --set-enabled highavailabili
ty
[bsampers@localhost ~]$
```

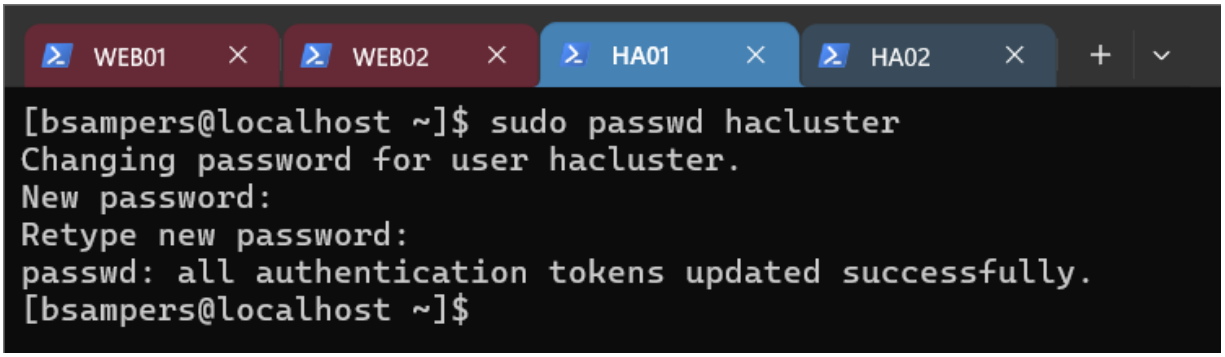
WEB01 | WEB02 | HA01 | HA02

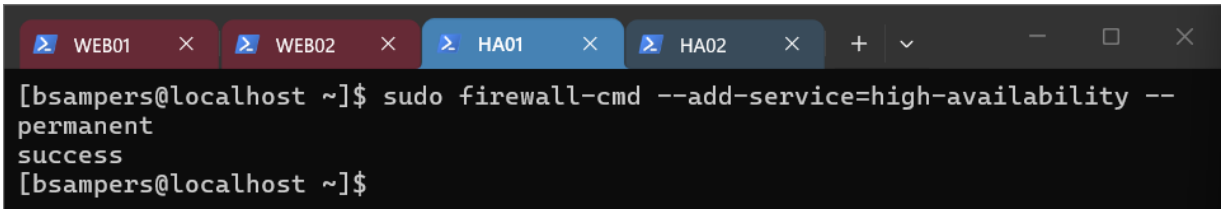
```
[bsampers@localhost ~]$ sudo dnf install pacemaker pcs
Rocky Linux 9 - BaseOS                          6.2 kB/s | 4.3 kB     00:00
Rocky Linux 9 - BaseOS                          6.5 MB/s |  15 MB     00:02
Rocky Linux 9 - AppStream                        18 kB/s | 4.8 kB     00:00
Rocky Linux 9 - AppStream                       5.9 MB/s |  16 MB     00:02
Rocky Linux 9 - High Availability               385 kB/s | 143 kB     00:00
Rocky Linux 9 - Extras                           12 kB/s | 3.1 kB     00:00
Rocky Linux 9 - Extras                           55 kB/s |  17 kB     00:00
Dependencies resolved.
================================================================================
 Package                Arch    Version                Repository         Size
================================================================================
Installing:
 pacemaker              x86_64 2.1.10-1.el9           highavailability 472 k
 pcs                    x86_64 0.11.10-1.el9_7.2      highavailability 4.0 M
```

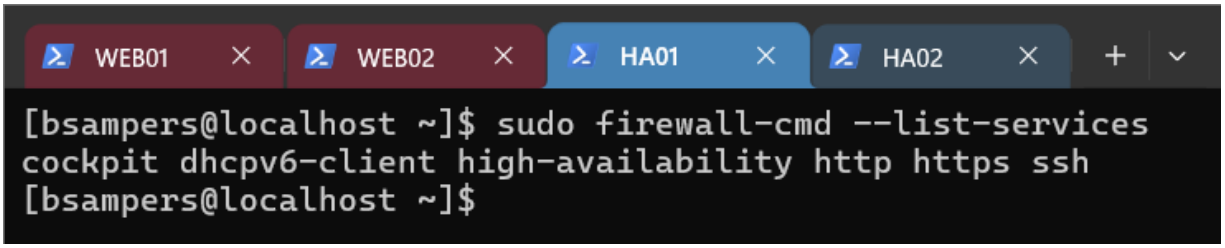

WEB01
WEB02
HA01
HA02
[bsampers@localhost ~]$ sudo dnf config-manager --set-enabled highavailabili
ty
[bsampers@localhost ~]$ sudo dnf install pacemaker pcs
Rocky Linux 9 - BaseOS 13 kB/s | 4.3 kB 00:00
Rocky Linux 9 - BaseOS 6.9 MB/s | 15 MB 00:02
Rocky Linux 9 - AppStream 17 kB/s | 4.8 kB 00:00
Rocky Linux 9 - AppStream 6.8 MB/s | 16 MB 00:02
Rocky Linux 9 - High Availability 416 kB/s | 143 kB 00:00
Rocky Linux 9 - Extras 12 kB/s | 3.1 kB 00:00
Rocky Linux 9 - Extras 55 kB/s | 17 kB 00:00
Dependencies resolved.
Package Arch Version Repository Size
Installing:
pacemaker x86_64 2.1.10-1.el9 highavailability 472 k
pcs x86_64 0.11.10-1.el9_7.2 highavailability 4.0 M


WEB01
WEB02
HA01
HA02
[bsampers@localhost ~]$ sudo systemctl enable --now pcsd
Created symlink /etc/systemd/system/multi-user.target.wants/pcsd.service → /
usr/lib/systemd/system/pcsd.service.
[bsampers@localhost ~]$

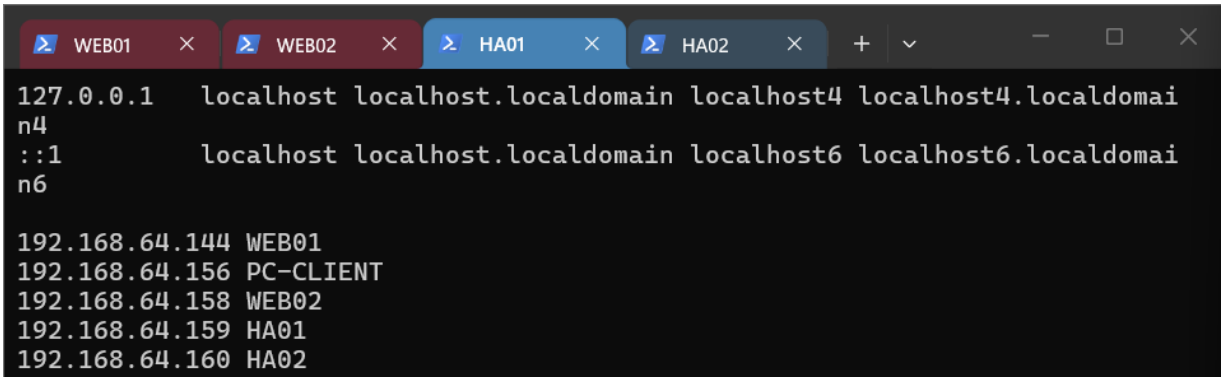

WEB01
WEB02
HA01
HA02
[bsampers@localhost ~]$ sudo systemctl enable --now pcsd
Created symlink /etc/systemd/system/multi-user.target.wants/pcsd.service → /
usr/lib/systemd/system/pcsd.service.

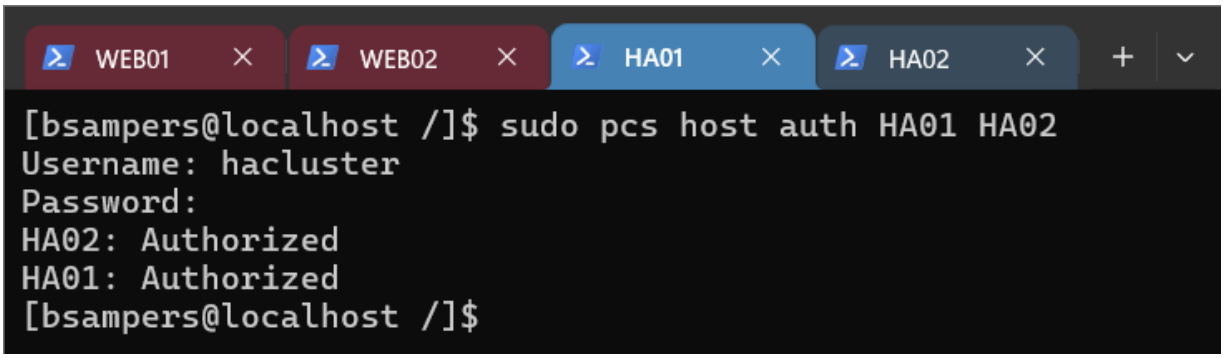

WEB01
WEB02
HA01
HA02
[bsampers@localhost ~]$ sudo passwd hacluster
Changing password for user hacluster.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[bsampers@localhost ~]$

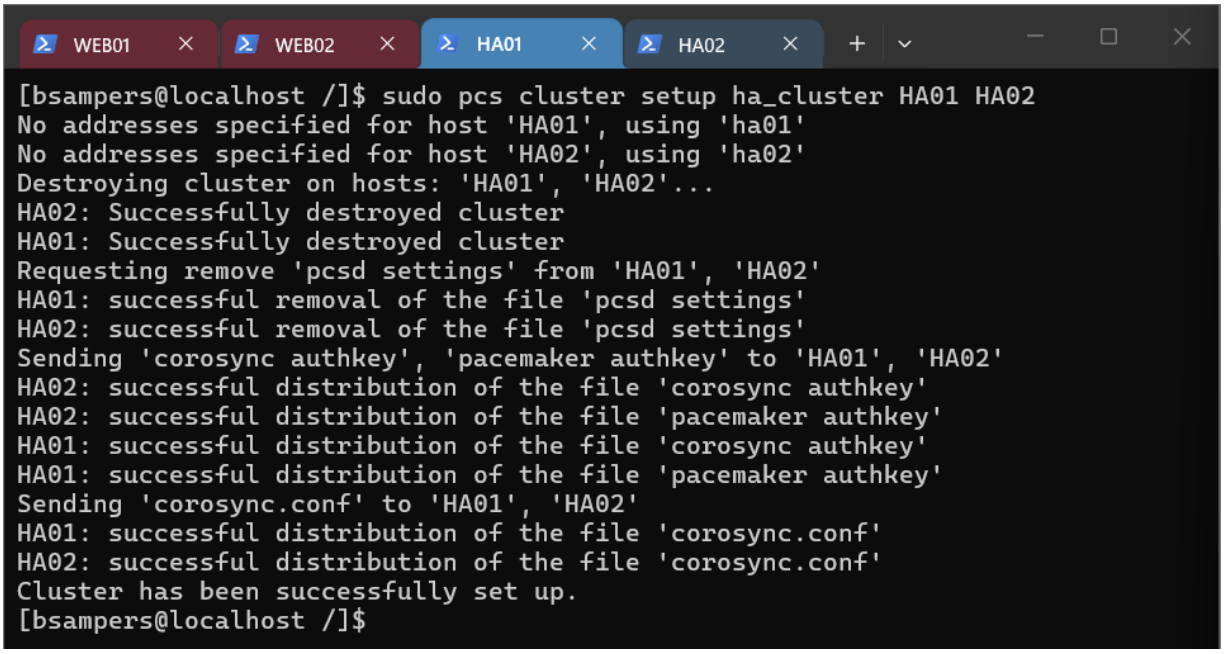

WEB01
WEB02
HA01
HA02
[bsampers@localhost ~]$ sudo firewall-cmd --add-service=high-availability --
permanent
success
[bsampers@localhost ~]$

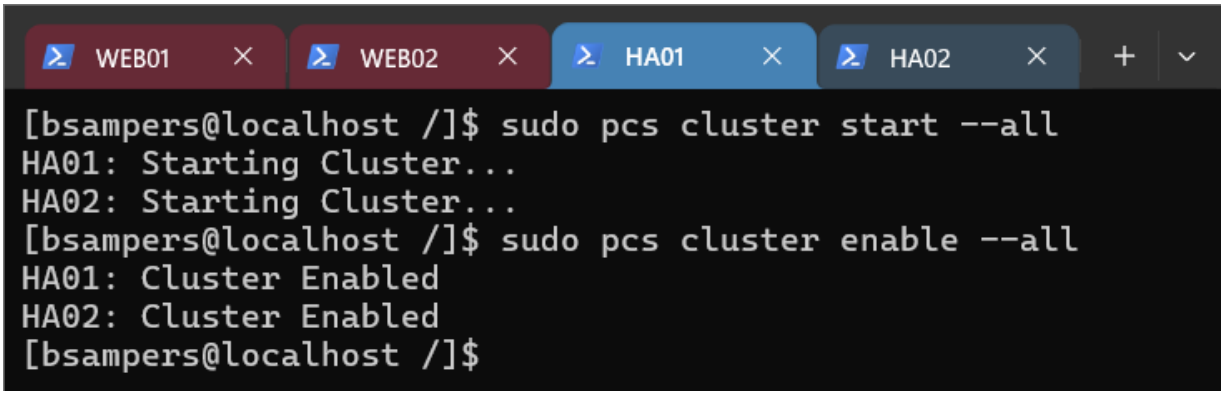


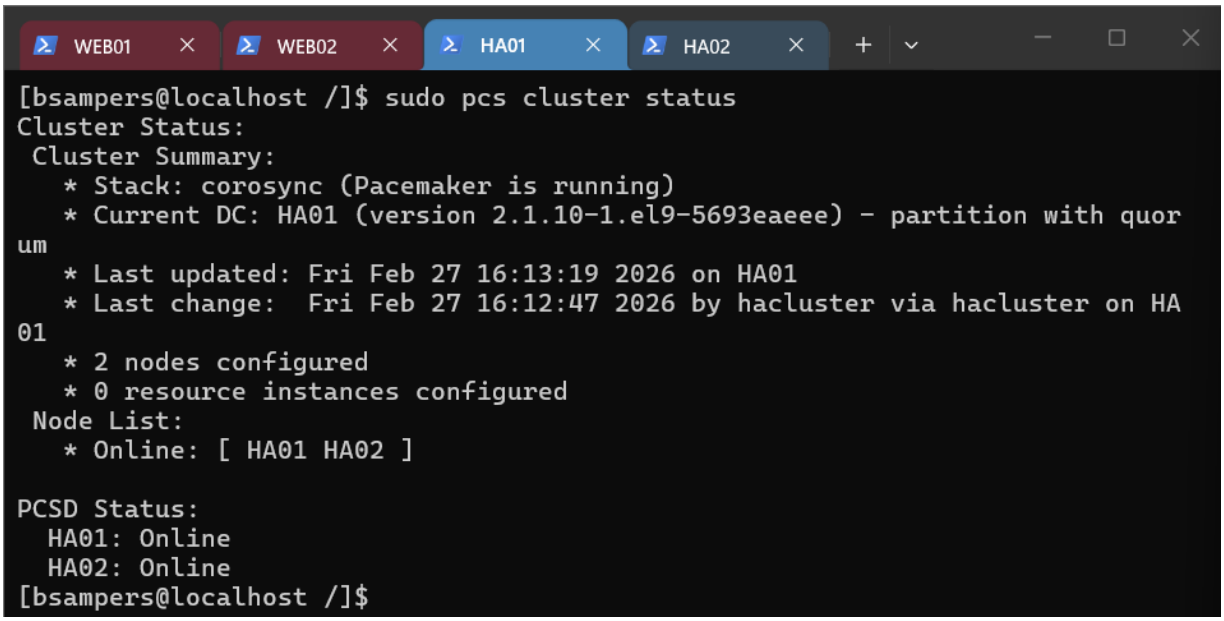
Modification du fichier hosts afin d'ajouter HA01 avec sa propre adresse IP

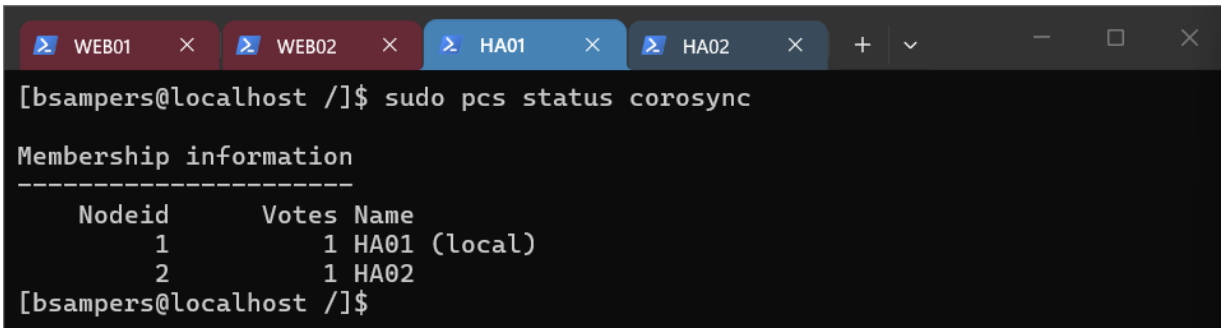




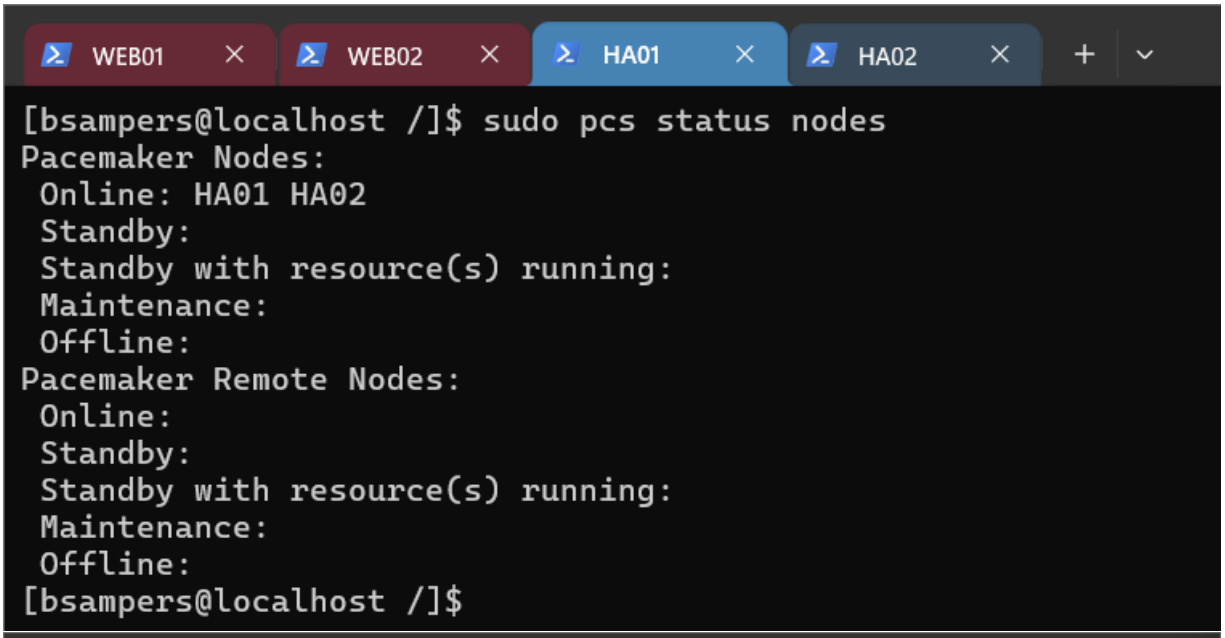


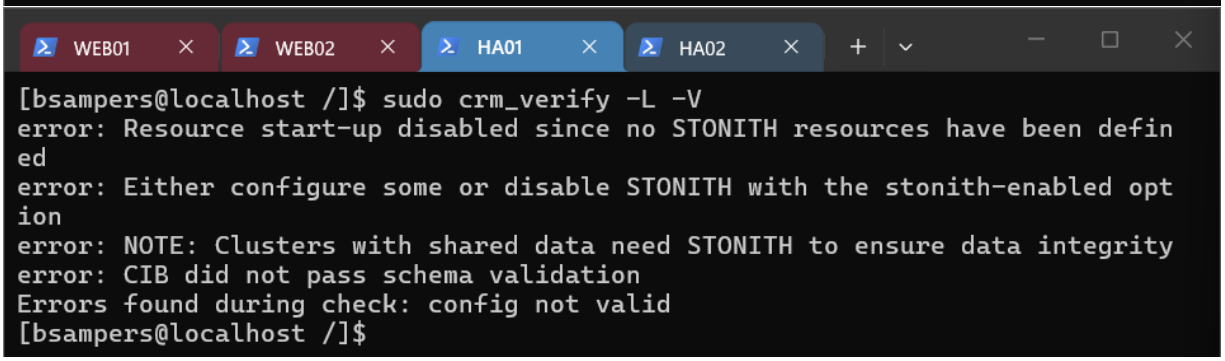

WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo pcs cluster start --all
HA01: Starting Cluster...
HA02: Starting Cluster...
[bsampers@localhost /]$ sudo pcs cluster enable --all
HA01: Cluster Enabled
HA02: Cluster Enabled
[bsampers@localhost /]$

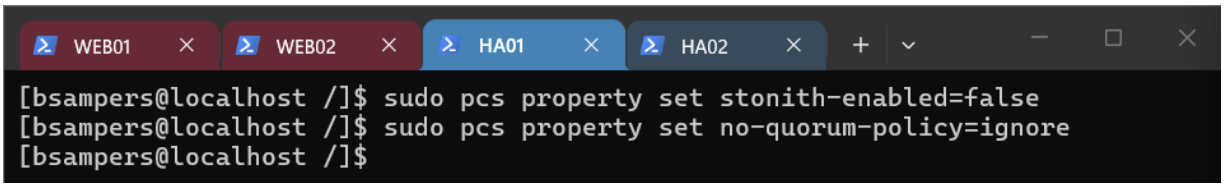

WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo pcs cluster status
Cluster Status:
 Cluster Summary:
   * Stack: corosync (Pacemaker is running)
   * Current DC: HA01 (version 2.1.10-1.el9-5693eaeee) - partition with quor
um
   * Last updated: Fri Feb 27 16:13:19 2026 on HA01
   * Last change: Fri Feb 27 16:12:47 2026 by hacluster via hacluster on HA
01
   * 2 nodes configured
   * 0 resource instances configured
 Node List:
   * Online: [HA01 HA02]
PCSD Status:
  HA01: Online
  HA02: Online
[bsampers@localhost /]$

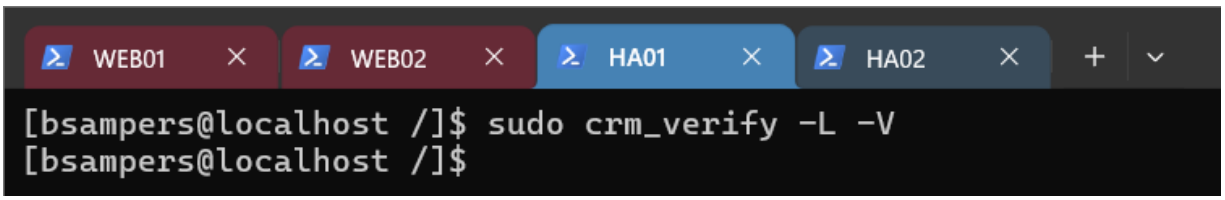

WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo pcs status corosync
Membership information

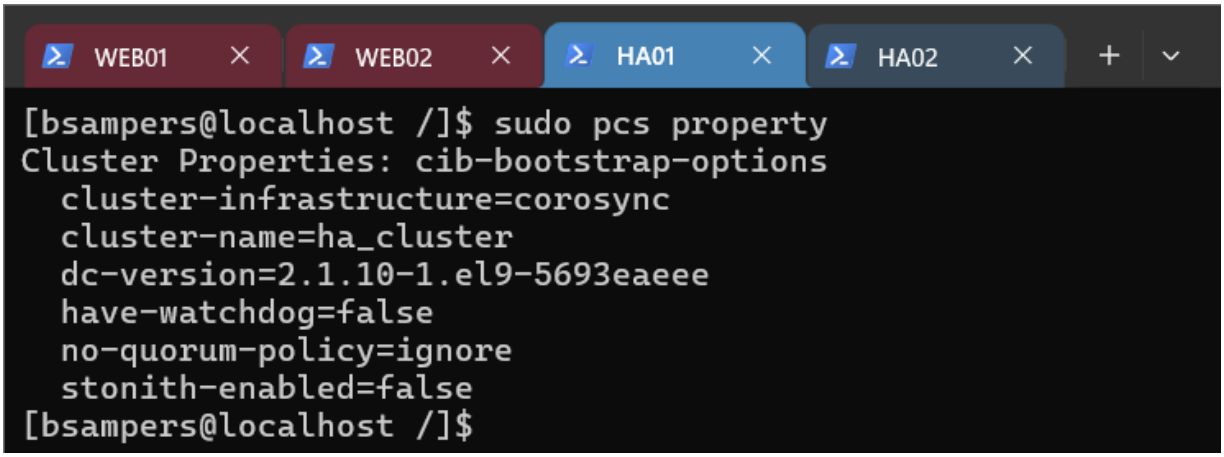
    Nodeid   Votes Name
         1   1 HA01 (local)
         2   1 HA02
[bsampers@localhost /]$


WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo pcs status nodes
Pacemaker Nodes:
 Online: HA01 HA02
 Standby:
 Standby with resource(s) running:
 Maintenance:
 Offline:
Pacemaker Remote Nodes:
 Online:
 Standby:
 Standby with resource(s) running:
 Maintenance:
 Offline:
[bsampers@localhost /]$

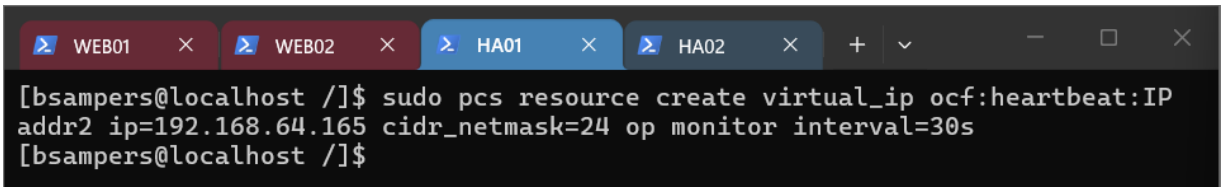

WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo crm_verify -L -V
error: Resource start-up disabled since no STONITH resources have been defin
ed
error: Either configure some or disable STONITH with the stonith-enabled opt
ion
error: NOTE: Clusters with shared data need STONITH to ensure data integrity
error: CIB did not pass schema validation
Errors found during check: config not valid
[bsampers@localhost /]$

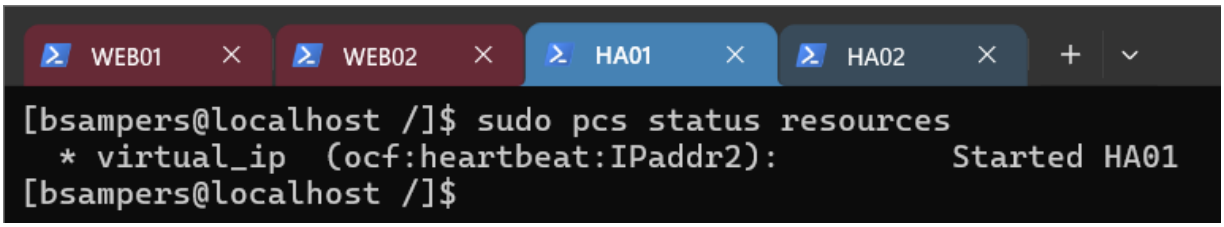

WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo pcs property set stonith-enabled=false
[bsampers@localhost /]$ sudo pcs property set no-quorum-policy=ignore
[bsampers@localhost /]$

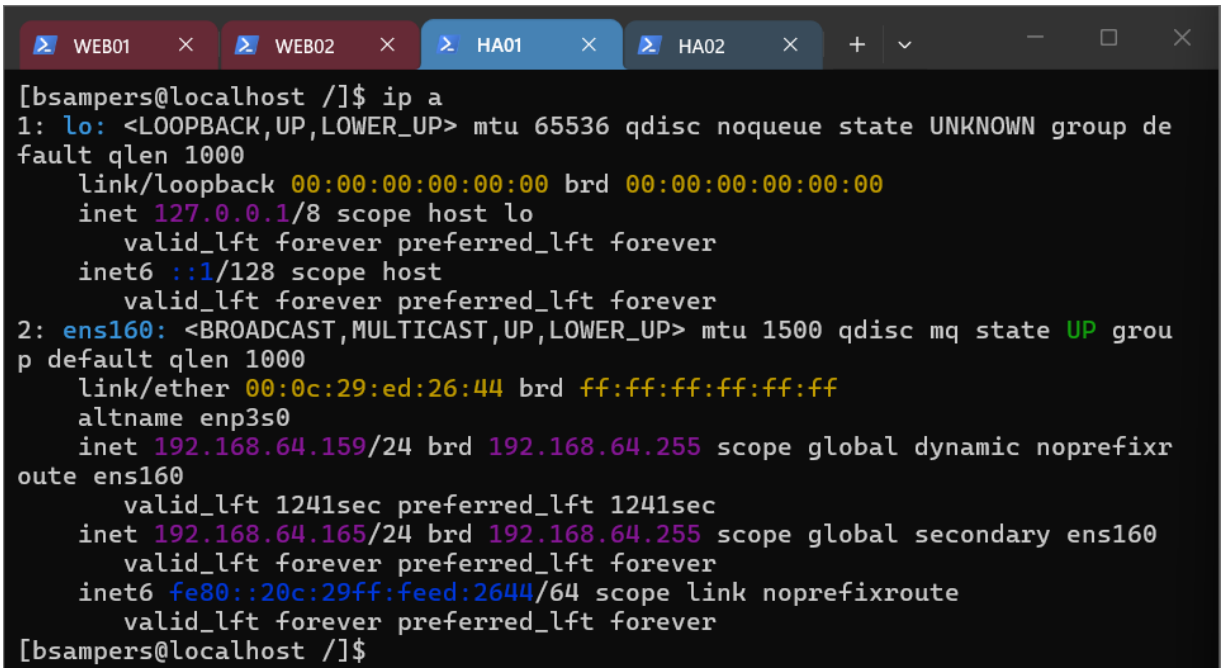

WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo crm_verify -L -V
[bsampers@localhost /]$

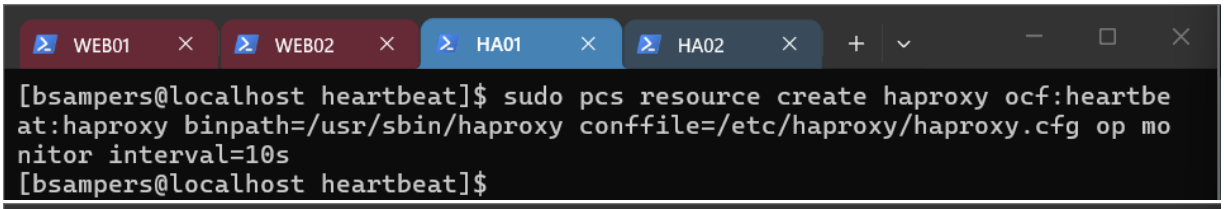

WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo pcs property
Cluster Properties: cib-bootstrap-options
cluster-infrastructure=corosync
cluster-name=ha_cluster
dc-version=2.1.10-1.el9-5693eaeee
have-watchdog=false
no-quorum-policy=ignore
stonith-enabled=false
[bsampers@localhost /]$

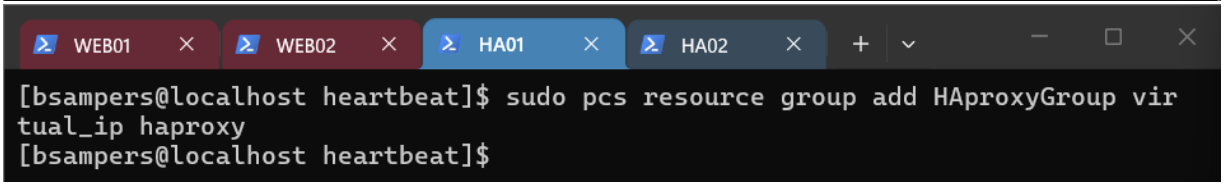

WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo pcs resource create virtual_ip ocf:heartbeat:IPaddr2 ip=X.X.X.X cidr_netmask=24 op monitor interval=30s
[bsampers@localhost /]$

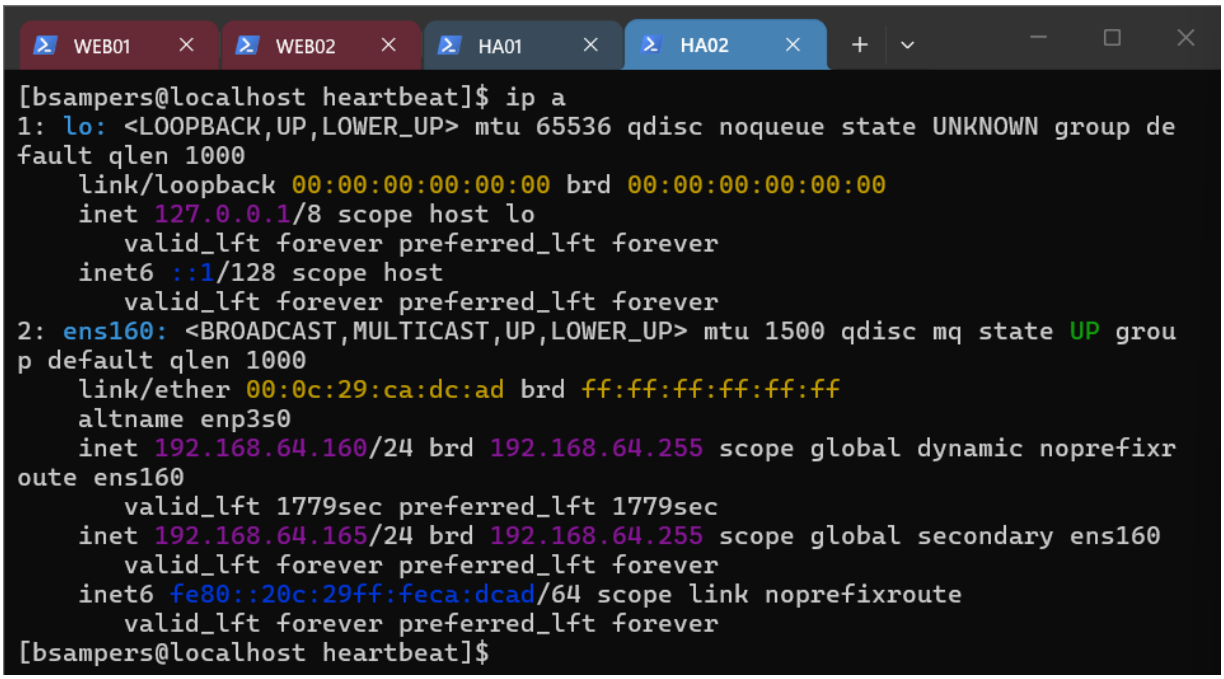

WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo pcs resource create virtual_ip ocf:heartbeat:IP
addr2 ip=192.168.64.165 cidr_netmask=24 op monitor interval=30s
[bsampers@localhost /]$


WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ sudo pcs status resources
* virtual_ip (ocf:heartbeat:IPaddr2): Started HA01
[bsampers@localhost /]$


WEB01
WEB02
HA01
HA02
[bsampers@localhost /]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group de
fault 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: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP grou
p default qlen 1000
link/ether 00:0c:29:ed:26:44 brd ff:ff:ff:ff:ff:ff
altname enp3s0
inet 192.168.64.159/24 brd 192.168.64.255 scope global dynamic noprefixr
oute ens160
valid_lft 1241sec preferred_lft 1241sec
inet 192.168.64.165/24 brd 192.168.64.255 scope global secondary ens160
valid_lft forever preferred_lft forever
inet6 fe80::20c:29ff:feed:2644/64 scope link noprefixroute
valid_lft forever preferred_lft forever
[bsampers@localhost /]$







L’adresse IP virtuelle bascule bien entre les deux serveurs haproxy, mais l’accès au site ne fonctionne pas.