Información sobre PKI

Construir un certificado auto-firmado en WSL

*Los comandos que están entre paréntesis con los pasos, es para hacerlo en Fedora.

1-Instalar el paquete "easy-rsa" que es para crear los certificados:

En Fedora: dnf install easy-rsa

En WSL: sudo apt update

sudo apt install easy-rsa

```
alfanath@Alfa:~$ sudo apt install easy-rsa
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

2-Iniciar PKI (/usr/share/easy-rsa/3.2.2/easyrsa init-pki):

Primero hago una carpeta donde trabajo:

mkdir ~/easy-rsa

cp -r /usr/share/easy-rsa/* ~/easy-rsa/

cd ~/easy-rsa

Inicio PKI: ./easyrsa init-pki

```
Processing triggers for man-db (2.10.2-1) ...
alfanath@Alfa:~$ mkdir ~/easy-rsa
alfanath@Alfa:~$ cp -r /usr/share/easy-rsa/* ~/easy-rsa/
alfanath@Alfa:~$ cd ~/easy-rsa
alfanath@Alfa:~/easy-rsa$ ./easyrsa init-pki

init-pki complete; you may now create a CA or requests.
Your newly created PKI dir is: /home/alfanath/easy-rsa/pki
```

3-Crear la autoridad certificadora [CA] (/usr/share/easy-rsa/3.2.2/easyrsa build-ca [puede usar CI0123 CA para el nombre]):

./easyrsa build-ca

Si solicita un nombre, poner: CI0123 CA

```
alfanath@Alfa:~/easy-rsa$ ./easyrsa build-ca
Using SSL: openssl OpenSSL 3.0.2 15 Mar 2022 (Library: OpenSSL 3.0.2 15 Mar 2022)

Enter New CA Key Passphrase:
Re-Enter New CA Key Passphrase:
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.
-----
Common Name (eg: your user, host, or server name) [Easy-RSA CA]:CI0123 CA

CA creation complete and you may now import and sign cert requests.
Your new CA certificate file for publishing is at:
/home/alfanath/easy-rsa/pki/ca.crt
```

1234

4-Generar la llave de encripcion [DH] Diffie-Hellman (/usr/share/easy-rsa/3.2.2/easyrsa gen-dh):

./easyrsa gen-dh

```
alfanath@Alfa:~/easy-rsa$ ./easyrsa gen-dh
Using SSL: openssl OpenSSL 3.0.2 15 Mar 2022 (Library: OpenSSL 3.0.2 15 Mar 2022)

*** File /home/alfanath/easy-rsa/pki/dh.pem already exists! ***

Type the word 'yes' to continue, or any other input to abort.
  Overwrite?  yes
Generating DH parameters, 2048 bit long safe prime
.....
.....
```

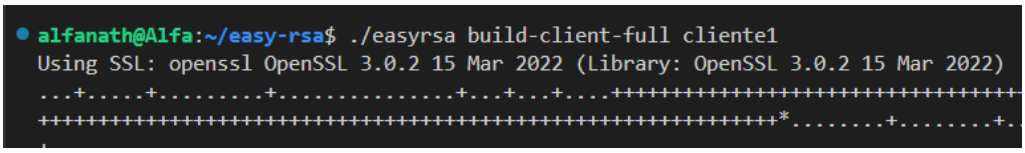
5-Generar la llave para el servidor (/usr/share/easy-rsa/3.2.2/easyrsa build-server-full redes) que es el certificado del servidor:

./easyrsa build-server-full redes

```
alfanath@Alfa:~/easy-rsa$ ./easyrsa build-server-full redes
Using SSL: openssl OpenSSL 3.0.2 15 Mar 2022 (Library: OpenSSL 3.0.2 15 Mar 2022)
.....+..+.........+....+.....+.+......+...+......+.....+...+......+.......+.....+..
.+.....+.+......+.....+.......+......++++++++++++++++++++++++++++++++++++++++++++++++
```

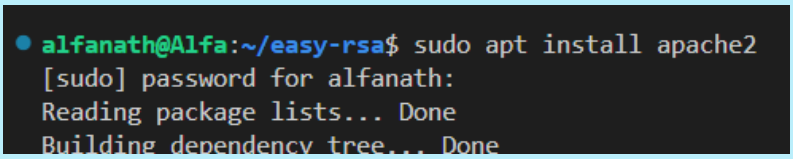
6-Generar la llave para el cliente (/usr/share/easy-rsa/3.2.2/easyrsa build-client-full) que es el certificado del cliente:

./easyrsa build-client-full cliente1



7-Instalar Apache (dnf install httpd):

sudo apt install apache2

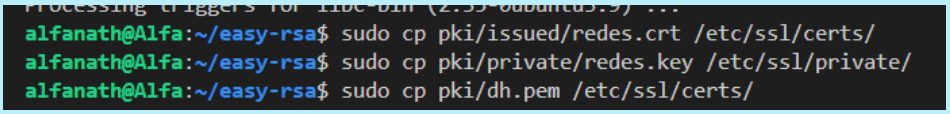


8-Construir un certificado auto-firmado para Apache:

sudo cp pki/issued/redes.crt /etc/ssl/certs/

sudo cp pki/private/redes.key /etc/ssl/private/

sudo cp pki/dh.pem /etc/ssl/certs/



9-Configurar el Apache:

sudo nano /etc/apache2/sites-available/default-ssl.conf

En el nano verifico que estas líneas estén y si no las agrego:

SSLEngine on

SSLCertificateFile /etc/ssl/certs/redes.crt

SSLCertificateKeyFile /etc/ssl/private/redes.key

SSLOpenSSLConfCmd DHParameters /etc/ssl/certs/dh.pem

Luego cierro el nano. Con el cat puedo ver que el nano se guardó bien.

```
alfanath@Alfa:~/easy-rsa$ sudo nano /etc/apache2/sites-available/default-ssl.conf
alfanath@Alfa:~/easy-rsa$ cat
^C
alfanath@Alfa:~/easy-rsa$ cat /etc/apache2/sites-available/default-ssl.conf
<IfModule mod_ssl.c>
        <VirtualHost _default_:443>
                ServerAdmin webmaster@localhost

                DocumentRoot /var/www/html

                # Available loglevels: trace8, ..., trace1, debug, info, notice, wa
```

10-Para habilitar el sitio y el SSL:

sudo a2enmod ssl

sudo a2ensite default-ssl

sudo systemctl restart apache2

```
alfanath@Alfa:~/easy-rsa$ sudo a2enmod ssl
Considering dependency setenvif for ssl:
Module setenvif already enabled
Considering dependency mime for ssl:
Module mime already enabled
Considering dependency socache_shmcb for ssl:
Enabling module socache_shmcb.
Enabling module ssl.
See /usr/share/doc/apache2/README.Debian.gz on how to configure SSL and create self-signed certificates.
To activate the new configuration, you need to run:
  systemctl restart apache2
alfanath@Alfa:~/easy-rsa$ sudo a2ensite default-ssl
Enabling site default-ssl.
To activate the new configuration, you need to run:
  systemctl reload apache2
alfanath@Alfa:~/easy-rsa$ sudo systemctl restart apache2
Enter passphrase for SSL/TLS keys for Alfa.:443 (RSA): ****
```

11-Apache usando el certificado ingresando el link en el navegador:

https://localhost