

# Créer sa CA et signer ses certificats

## Création de la CA

Pour cela, on va se rendre dans un dossier isolé :

```
# mkdir /root/ca && cd /root/ca
```

puis on va créer l'organisation de dossier suivante:

```
# mkdir certs crl newcerts private csr  
# chmod 700 private
```

Et on créer les fichiers de contrôle :

```
# touch index.txt  
# echo 1000 > serial
```

puis on créer le fichier :

[openssf.cnf](#)

```
[ ca ]  
# `man ca`  
default_ca = CA_default  
  
[ CA_default ]  
# Directory and file locations.  
dir                = .  
certs              = $dir/certs  
crl_dir            = $dir/crl  
new_certs_dir      = $dir/newcerts  
database           = $dir/index.txt  
serial             = $dir/serial  
RANDFILE           = $dir/private/.rand  
  
# The root key and root certificate.  
private_key        = $dir/private/ca.key.pem  
certificate        = $dir/certs/ca.cert.pem  
  
# For certificate revocation lists.  
crlnumber          = $dir/crlnumber  
crl                = $dir/crl/ca.crl.pem  
crl_extensions     = crl_ext  
default_crl_days   = 30  
  
# SHA-1 is deprecated, so use SHA-2 instead.  
default_md         = sha256
```

```
name_opt          = ca_default
cert_opt          = ca_default
default_days      = 375
preserve          = no
policy            = policy_loose

[ req ]
# Options for the `req` tool (`man req`).
default_bits      = 4096
distinguished_name = req_distinguished_name
string_mask       = utf8only

# SHA-1 is deprecated, so use SHA-2 instead.
default_md        = sha256

# Extension to add when the -x509 option is used.
x509_extensions   = v3_ca

[ req_distinguished_name ]
countryName              = Country Name (2 letter code)
stateOrProvinceName      = State or Province Name
localityName             = Locality Name
0.organizationName       = Organization Name
organizationalUnitName    = Organizational Unit Name
commonName               = Common Name
emailAddress              = Email Address

countryName_default      = FR
stateOrProvinceName_default = Deux-S  vres
localityName_default     = Niort
0.organizationName_default = VirtIT
#organizationalUnitName_default =
emailAddress_default     = contact@virtit.fr

[ v3_ca ]
# Extensions for a typical CA (`man x509v3_config`).
subjectKeyIdentifier = hash
authorityKeyIdentifier = keyid:always,issuer
basicConstraints = critical, CA:true
keyUsage = critical, digitalSignature, cRLSign, keyCertSign

[ policy_loose ]
# Allow the intermediate CA to sign a more diverse range of
certificates.
# See the POLICY FORMAT section of the `ca` man page.
countryName          = optional
stateOrProvinceName  = optional
localityName         = optional
```

```
organizationName      = optional
organizationalUnitName = optional
commonName             = supplied
emailAddress           = optional

[ server_cert ]
# Extensions for server certificates (`man x509v3_config`).
basicConstraints = CA:FALSE
nsCertType = server
nsComment = "OpenSSL Generated Server Certificate"
subjectKeyIdentifier = hash
authorityKeyIdentifier = keyid,issuer:always
keyUsage = critical, digitalSignature, keyEncipherment
extendedKeyUsage = serverAuth

[ usr_cert ]
# Extensions for client certificates (`man x509v3_config`).
basicConstraints = CA:FALSE
nsCertType = client, email
nsComment = "OpenSSL Generated Client Certificate"
subjectKeyIdentifier = hash
authorityKeyIdentifier = keyid,issuer
keyUsage = critical, nonRepudiation, digitalSignature, keyEncipherment
extendedKeyUsage = clientAuth, emailProtection
```

On génère ensuite la clé privé du CA root :

```
# openssl genrsa -out private/ca.key.pem 4096
```

et puis le certificat :

```
# openssl req -config openssl.cnf \
    -key private/ca.key.pem \
    -new -x509 -days 7300 -extensions v3_ca \
    -out certs/ca.cert.pem
```

## Création d'un certificat

Il faut d'abord créer la clé privée du certificat :

```
# openssl genrsa -out private/server.key.pem 4096
```

puis le CSR :

```
# openssl req -key private/server.key.pem -new -out csr/server.csr.pem
```

Et puis on le signe :

```
# openssl ca -config openssl.cnf -extensions server_cert -days 375 -notext -  
in csr/server.csr.pem -out certs/server.cert.pem
```

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