

OpenSSL

! OpenSSL 1.1.0

1. (rtengine) .
2. PKCS#11 .
3. OpenSSL 1.1.0 .
4. OpenSSL (Linux: /usr/lib/ssl/openssl.cnf, Windows OpenSSL). :

```
openssl_conf = openssl_def
```

```
:
```

```
[ openssl_def ]
```

```
engines = engine_section
```

```
[ engine_section ]
```

```
rtengine = gost_section
```

```
[ gost_section ]
```

```
dynamic_path = /path/to/librtengine.so
```

```
MODULE_PATH = /path/to/librtpkcs11lecp.so
```

```
RAND_TOKEN = pkcs11:manufacturer=Aktiv%20Co.;model=Rutoken%20ECP
```

```
default_algorithms = CIPHERS, DIGEST, PKEY, RAND
```

```
dynamic_path — rtengine.
```

```
MODULE_PATH — librtpkcs11lecp.
```

```
RAND_TOKEN — pkcs11 uri.
```

```
:
```

```
manufacturer: ID ;
```

```
model: ;
```

```
serial: ;
```

```
token: ( "label" ).
```

Windows .

5. OPENSSL_CONF, .

Linux, , bash:

```
export OPENSSL_CONF=/path/to/openssl.cnf
```

Windows, cmd:

```
set OPENSSL_CONF=C:\path\to\openssl.cnf
```

OpenSSL

```
# rtengine
```

```
openssl_conf = openssl_def
```

```
[ openssl_def ]
```

```
engines = engine_section
```

```
[ engine_section ]
```

```
rtengine = gost_section

[ gost_section ]
dynamic_path = /path/to/librtengine.so
MODULE_PATH = /path/to/librtpkcs11ecp.so
RAND_TOKEN = pkcs11:manufacturer=Aktiv%20Co.;model=Rutoken%20ECP;serial=2adc8d87
default_algorithms = CIPHERS, DIGEST, PKEY, RAND

#
[ req ]
prompt = no
distinguished_name = req_distinguished_name
req_extensions = ext

#
[ req_distinguished_name ]
countryName = RU
commonName = Ivanov
emailAddress = ivanov@mail.ru
stateOrProvinceName = Moscow

#
[ ext ]
subjectSignTool = ASN1:FORMAT:UTF8,UTF8String: \" 2.0\"
extendedKeyUsage=emailProtection
keyUsage=digitalSignature,nonRepudiation,keyEncipherment,dataEncipherment

#
[ ca ]
default_ca = CA_default
[ CA_default ]
dir = ./demoCA #
database = $dir/index.txt
new_certs_dir = $dir/newcerts # ,
certificate = $dir/cacert.pem #
serial = $dir/serial
private_key = $dir/private/cakey.pem #
RANDFILE = $dir/private/.rand
default_days = 365 #
default_crl_days = 30
```

```
default_md = md_gost12_256 #
policy = policy_any
email_in_dn = no
name_opt = ca_default
cert_opt = ca_default
copy_extensions = copy

#
[ policy_any ]
countryName = supplied
stateOrProvinceName = optional
organizationName = optional
organizationalUnitName = optional
commonName = supplied
emailAddress = optional
```