

### Certificate Signing Request (CSR)

#### Generate a new private key and Certificate Signing Request

```
openssl req -out CSR.csr -new -newkey rsa:2048 -nodes -sha256 -keyout privat eKe y.key
```

#### Generate a self-signed certificate

```
openssl req -x509 -sha256 -nodes -days 365 -newkey rsa:2048 -keyout privat eKe y.key -out certifi ca te. crt
```

#### Generate a certificate signing request (CSR) for an existing private key

```
openssl req -out CSR.csr -key privat eKe y.key -new
```

#### Generate a certificate signing request based on an existing certificate

```
openssl x509 -x509toreq -in certifi ca te.crt -out CSR. csr -signkey privat eKe y.key
```

#### Remove a passphrase from a private key

```
openssl rsa -in privat eKe y.pem -out newPri vat eKe y. pem
```

### Check Files

#### Check a Certificate Signing Request (CSR)

```
openssl req -text -noout -verify -in CSR.csr
```

#### Check a private key

```
openssl rsa -in privat eKe y.key -check
```

#### Check a certificate

```
openssl x509 -in certifi ca te.crt -text -noout
```

#### Check a PKCS#12 file (.pfx or .p12)

```
openssl pkcs12 -info -in keySto re.p12
```

### Debugging

#### Print certificate

```
openssl x509 -noout -text -in certifi ca te.crt
```

#### Check an SSL connection. All the certificates (including Intermediates) should be displayed

```
openssl s_client -connect www.pa ypa l.c om:443
```

### Remove Passphrase

#### Convert a PKCS#12 file (.pfx .p12) containing a private key and certificates to PEM

```
openssl pkcs12 -in keySto re.p12 -out keySto re.pem -nodes
```

#### Remove Passphrase from key-file

```
openssl rsa -in exampl e.key -out exampl e.n ocr ypt.key
```

### Performance

#### Check the SSL performance

```
openssl speed -evp aes-256-gcm
```

```
openssl speed aes-256-cbc
```

```
openssl speed -evp aes-256-gcm -out certifi ca te. pem
```

### How to get a A+ at SSL-Labs

#### Check versions

```
# openssl version
OpenSSL 1.0.1f 11 Feb 2013

# apache2 -v
Server version: Apache /2.2.22 (Debian)
Server built: Aug 18 2015 09:50:52
```

#### Enable mods

```
a2enmod ssl
a2enmod headers
a2enmod setenvif
```

#### Configure virtual host

```
SSLEngine on

SSLHon orC iph erOrder On
SSLCip her Suite ECDHE- RSA -AE S12 8-G CM- SHA 2
6 :ke DH+ AES GCM :EC DHE -RS A-A ES1 28- SHA 256 :EC
SSLPro tocol -ALL +TLsv1 +TLsv1.1 +TLsv1.2
SSLCer tif ica teFile /etc/s sl/ www.ex amp
SSLCer tif ica teK eyFile /etc/s sl/ www.ex amp
SSLCer tif ica teC hai nFile /etc/s sl/ cha in. pem

SSLStr ict SNI VHo stCheck On

Header always set Strict -Tr ans por t-S ecurity

<Fi les Match " \.( cgi |sh tml |ph tml |ph p)$ " >
    SSLOptions +StdEn vVars
</F ile sMa tch>
<Di rectory /usr/l ib/ cgi -bi n>
    SSLOptions +StdEn vVars
</D ire cto ry>

Browse rMatch "MSIE [2-6]" \
    nokeep alive ssl-un cle an- shu tdown \
    downgr ade-1.0 force- res pon se-1.0
# MSIE 7 and newer should be able to use keepaliv
Browse rMatch "MSIE [17-9]" ssl-un cle an- shu t
```

