Purpose

To establish connectivity to EDX's production environment over the internet a certificate must be generated and the *.crt file* must be shared with EDX Market Operations team to load into the production environment.

In addition to the certificate management process, IP addresses must be shared with Market Operations to whitelist the required IPs.

Once Market Operations has loaded your .crt file you will need to utilize your corresponding private key to establish connectivity with your FIX client or through a tool like stunnel.

Generating a certificate

To generate a self-signed certificate and a private key you can run the following command, replacing the subject fields with the information relevant to the issuer of the certificate:

```
openssl req \
 -newkey rsa:4096 -noenc -sha256 -keyout replace_me.pem \
 -x509 -days 3650 -addext "extendedKeyUsage=clientAuth" -out replace_me.crt \
 -subj "/C=REPLACE_ME/ST= REPLACE_ME/L= REPLACE_ME/O=REPLACE_ME/OU=
REPLACE_ME/CN=REPLACE_ME"
```

The extendedKeyUsage=clientAuth X.509 extension is one of the most important bits. It designates the certificate for client authentication. Some servers may reject a certificate if it does not have that extension.

You only share the .crt file with Market Operations. **You always keep the private key secured in your own organization.** You will need the private key later when connecting to the mTLS endpoint.

To check the information encoded in the certificate you run:

```
openssl x509 -noout -text -in replace_me.crt
```