

Converting der and pfx certificates using OPENSSL.exe

Zebra printers require that certificates that are stored on the printer are in the PEM format. Openssl.exe is an open source utility that can be used to convert certificates into the PEM format.

If one opens a certificate file that is in the PEM format, the file will contain text that includes -----BEGIN CERTIFICATE----- , -----END CERTIFICATE--- or -----BEGIN RSA PRIVATE KEY----- , ---END RSA PRIVATEKEY--- as illustrated below.

```
-----BEGIN CERTIFICATE-----
MIIEYTCCA0mgAwIBAgIJANZ1LbDiAjDMMA0GCSqGSIb3DQEBBQUAMH0xCzAJBgNV
BAYTAiVMTMRlWwEAYDVQQKEw16ZWJyYS5jb20xETAPBgNVBAsTCFRlR3R0dXBw3J0MSMw
IQYDVQQDEwpaZWJyYSB1ZWNobmljYWwgU3VwcG9ydCBDQTEiMCAGCSqGSIb3DQEJ
ARYTbWtldXRpbGxhQHplYnJhLmNvbTAeFw0xMDEwMzE1MjM1NTFaFw0yMDEwMjE1
MzE1NTFaMH0xCzAJBgNVBAYTAiVMTMRlWwEAYDVQQKEw16ZWJyYS5jb20xETAPBgNV
BAsTCFRlR3R0dXBw3J0MSMwIQYDVQQDEwpaZWJyYSB1ZWNobmljYWwgU3VwcG9ydCBD
QTEiMCAGCSqGSIb3DQEJARYTbWtldXRpbGxhQHplYnJhLmNvbTCCAS1wDQYJKoZI
hvcNAQEBBQADggEPADCCAQoCggEBAMyrmU9qHblcornk/hq+bL8lepgaeyA+fiFe
37hf0a0z4x+xRwN8u94ednBleG+hkLQrBtdlsQdEBE23j53UalyPFRMO0FC1njK
w6T9/Ai8sSZB0hkBeqN5056zCY4DSplkZ48frxgZtnnYAjKe5M9j4GTaQ1vCnAm
8hNtJLXxukipGU3XUVlhMyKdV3Vgdxf8BpQgJQZAKVWt8ecybUBJDhit8yshwc
U5KU+f0lP0E9h+NvIhie0X1nmWJz+11MNJEMOXKsbJkINWWHadxFSEHewj65ht7
DZM+204KDaPw/nT4hffWGBR5UgfyFI67Cm7gjBk3SjyRG2kx9ECAwEAaA0B4zCB
4DAdBgNVHQ4EFgQU11XLqfquITCcdCwkSx74Nj6fQqYwgbAGA1UdIwSBqDCBpYAU
11XLqfquITCcdCwkSx74Nj6fQqahgYgkfzB9MQswCQYDVQQGEwJVUzESMBAGA1UE
ChMlJemVicmEuY29lMREwDwYDVQQLEwhU3VwcG9ydDEjMCEGA1UEAxMaWmVicmEg
VGVjaG5pY2FfN1h0cHVCbnQgQ0ExIjAgBgkqhkiG9w0BCQEW21rnbV0aWxsYUB6
ZWJyYS5jb22CCQDwS2w4IwzDAMBgNVHRMERTADAQH/MA0GCSqGSIb3DQEBBQUA
A4IBAQBjYyBAWt1Nbm0OQRJ/qZCH3o7zMJLEGqCVC92AtzyVtZLvUNBveAZaBZu
ldCoXwyvmjmsGbxI78d2PWqBo5FB5/m9yFxoZ1hQnz1wBJSW5P+c3zqn4QGFvoTy
+vp0gZKGB1QhgSvCPIhQ/3RLHWFQIYeh/EVXqHXkp11Cm9g0xSZxniu88SJ4xTHI
LEnyawkCKu3mpg9YjeWd8p9OiKFqTIMUW00e5obCDtoK+i6rAWhWXBQv5HUtQBv9
Z19EAez/1+Y7zCt6HTqCcRz+ZaE2X5I33Mok7w7J/+7gECxklbON83LGPdwm3BLh
B2Ljakwyo85+6/7SqT5y+wLQVMc
-----END CERTIFICATE-----
```

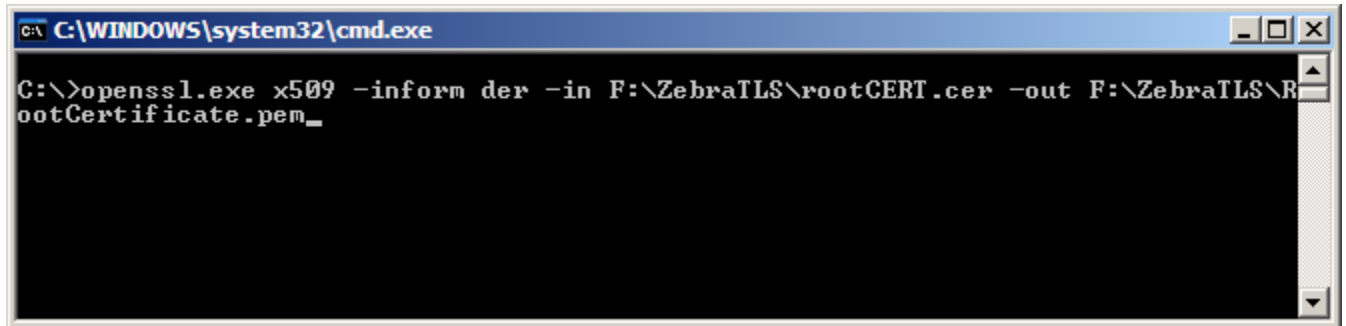
```
-----BEGIN RSA PRIVATE KEY-----
MIICXAIBAAKBgQDNfr8B8ILQ6q/shiYOI+WbdBbwjOU2GSXA51w9OBdVvikqTRo
YyNm5fU9+D1e3J4vx/Xdj2ZtvKKSngXvZD3N2CKMQ1Eude8aZjPD9wJJ6f4xM9
dNszvFS4eYf1gC3lyBw3jQRnOhHzVDgYzfOAFKAa+arXRQYRt7kVlFRdqWIDAQAB
AoGBAMwecV4KNe6m9IKXy0paoVxBFDgw/R+amsBoEpn03DTJjE5Sa9u2lk/lP+c
gT4W068kYv7472x24xBuzD94sraD015w0ErqHfA4TLedgi1RZo+BCM4L3q6sa1A
0Xom/wrZmdi6/2ccpzuAV30c6ol7PWjNeV0MXTGeVo2PNNhhAkeA7QfdBC5LxfKY
cTNy3ruyp5soV/j2DqWNDY6Qc+qOCsHHg0Lf1GP3G1aktw5dMW5pCJI/W4z4uUpM
ui0S+KSqOQJBAN3w5DI5S2pJub1UJe/rU/UmtFF3SUsaHcdd05KbckJtrRaPcvZj
+pGNafBF0L1tVUX7tATLbt9PAOoSqeVvVMCQFwnmn5toXgsgahBYH/lagVQBbdu
S/wYwFrU+sSWHpmZtAAMmAlzdDdk0FV7eDAnxR5X/doSTQF9KaeYrq+NfECQGvy
ss7RIEDKEJvJxfn/uAJRJPtKzbdqIZDuJhiSxzMq5fphb0Zu9H3ukNP2NyUrfJ
hfpmmaPLsdfjeoc1QkCQC93rBPUDmmNk9X7HFvWc715pUwU//KRL5fdmky5Zmu
nEWQBptnjo4EstdB1P6TCbqH12LAsda7XW8u705nigM=
-----END RSA PRIVATE KEY-----
```

Openssl.exe can be downloaded at www.openssl.org and can be used to convert files/certificates from various certificate formats into the PEM format. An advantage of using Openssl.exe is that it can easily be run from a windows command line and documentation is provided at <http://www.openssl.org/>. The following are examples of using the openssl.exe file to convert certificates in the der and .pfx format to the PEM format.

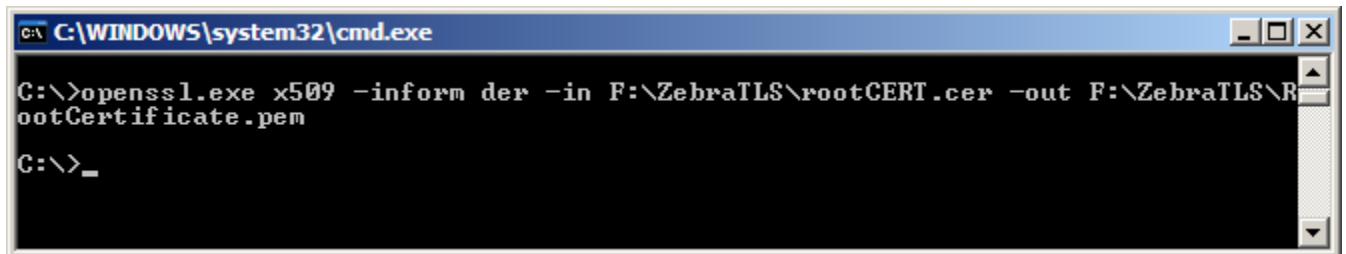
Converting a certificate from DER format to the PEM format:

`Openssl.exe x509 -inform der -in filename -out filename_to_be_created`

`C:\>openssl.exe x509 -inform der -in F:\ZebraTLS\rootCERT.cer -out F:\ZebraTLS\RootCertificate.pem`



```
C:\WINDOWS\system32\cmd.exe
C:\>openssl.exe x509 -inform der -in F:\ZebraTLS\rootCERT.cer -out F:\ZebraTLS\RootCertificate.pem
```

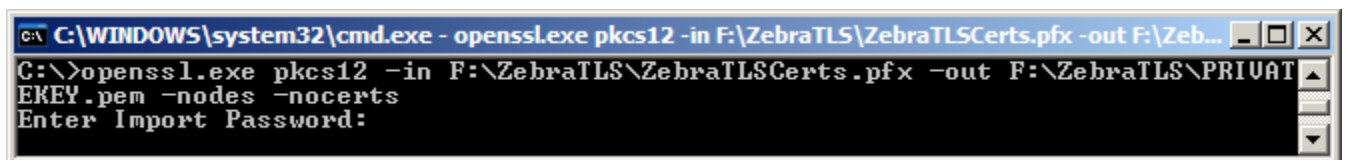


```
C:\WINDOWS\system32\cmd.exe
C:\>openssl.exe x509 -inform der -in F:\ZebraTLS\rootCERT.cer -out F:\ZebraTLS\RootCertificate.pem
C:\>
```

To convert from PFX to PEM

A private key is illustrated first.

`C:\>openssl.exe pkcs12 -in F:\ZebraTLS\ZebraTLSCerts.pfx -out F:\ZebraTLS\PRIVATEKEY.pem -nodes -nocerts`



```
C:\WINDOWS\system32\cmd.exe - openssl.exe pkcs12 -in F:\ZebraTLS\ZebraTLSCerts.pfx -out F:\ZebraTLS\PRIVATEKEY.pem -nodes -nocerts
Enter Import Password:
```

The password was entered that was required for this certificate.

```
C:\WINDOWS\system32\cmd.exe

C:\>openssl.exe pkcs12 -in F:\ZebraTLS\ZebraTLSCerts.pfx -out F:\ZebraTLS\PRIVATEKEY.pem -nodes -nocerts
Enter Import Password:
MAC verified OK

C:\>
```

The client certificate from the pfx certificate is illustrated below.

```
C:\>openssl.exe pkcs12 -in F:\ZebraTLS\ZebraTLSCerts.pfx -out F:\ZebraTLS\CLIENTCERT.pem -nodes -nokeys
```

```
C:\WINDOWS\system32\cmd.exe - openssl.exe pkcs12 -in F:\ZebraTLS\ZebraTLSCerts.pfx -out F:\Zebra...

C:\>openssl.exe pkcs12 -in F:\ZebraTLS\ZebraTLSCerts.pfx -out F:\ZebraTLS\CLIENTCERT.pem -nodes -nokeys
Enter Import Password:
```

Once again I entered the password that was required for this .pfx file.

```
C:\WINDOWS\system32\cmd.exe

C:\>openssl.exe pkcs12 -in F:\ZebraTLS\ZebraTLSCerts.pfx -out F:\ZebraTLS\CLIENTCERT.pem -nodes -nokeys
Enter Import Password:
MAC verified OK

C:\>
```