



Convert a DER Certificate File to PEM Format

A private key, root (CA) certificate and the server / client certificate can be generated using third-party tools (or purchased from a certificate authority), and may be generated as PEM (required format, extension .pem) or DER (extension .cer) format files.

Certificates must be in PEM format for use on the Expressway. Conversion from DER to PEM format is done either using OpenSSL or Windows, as documented in the following sections.

Convert a DER certificate file to a PEM file using OpenSSL

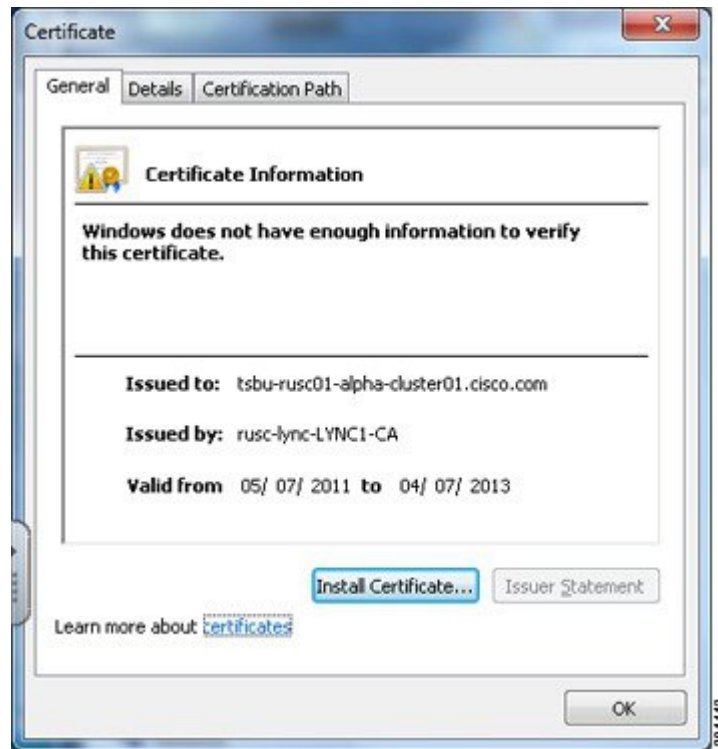
To convert from DER to PEM format, on a system running openssl, execute the command:

```
openssl x509 -in <filename>.cer -inform DER -out <filename>.pem -outform PEM
```

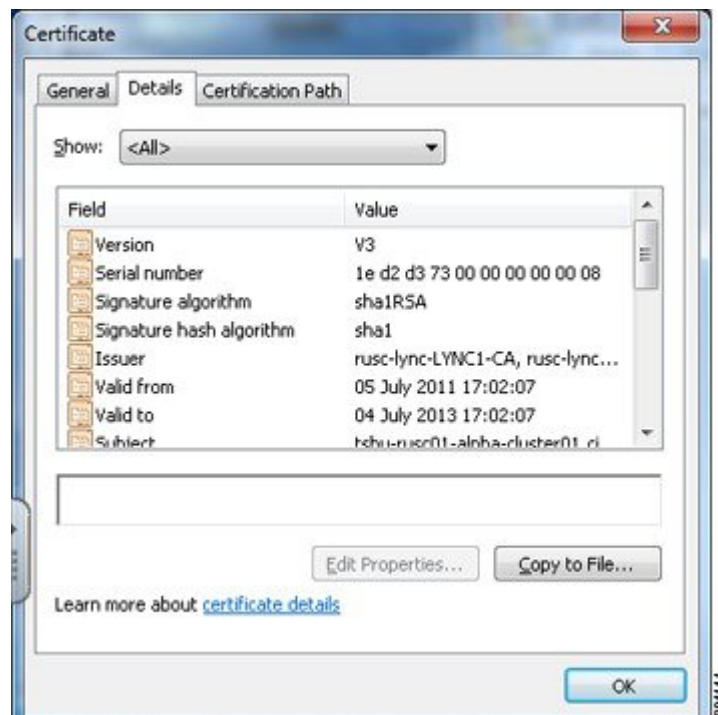
Convert a DER certificate file to a PEM file using Microsoft Windows

To convert from DER to PEM format using Microsoft Windows:

1. Double click the DER file to convert (this will likely have a '.cer' extension)

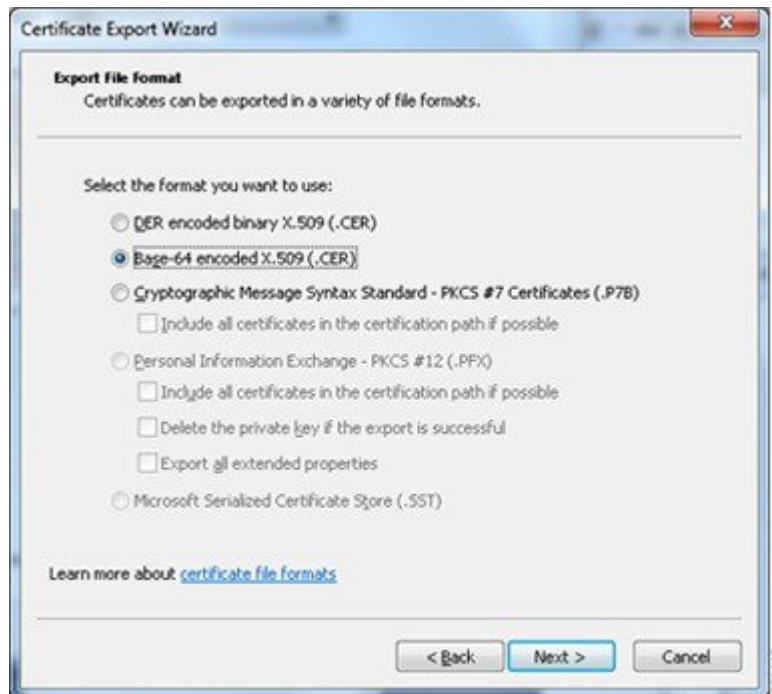


2. Select the **Details** tab



3. Click **Copy to File...**
4. On the **Welcome** page, click **Next**

5. Select *Base-64 encoded X.509 (.CER)* and click **Next**



6. Click **Browse** and select required destination for file (e.g. **server.pem**) and then click **Next**
7. Click **Finish**
8. Change the filename from **server.pem.cer** to **server.pem**
9. This is used in the [Load Certificates and Keys Onto Expressway](#) section of this document.

