ADVANTECH
Enabling an Intelligent Planet

How to Enable HTTPS on EKI-152x & EKI-122x Series

For Firmware Version:
· EKI-1521/2/4: v1.21 or later
· EKI-1221/2/4: v1.09 or later

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Introduction

- HTTPS with Certificates:
  1. The HTTPS is a more secure way to access a website, with the communication content encrypted. The encryption is done by using correct certificates.
  2. For EKI-122x/152x series supports HTTPS function, but the certificates required are not built-in by default. Users will need to import corresponding certificate files to the device to correctly enable the HTTPS function.
  3. Firmware Version:

     · EKI-1521/2/4: v1.21 or later

     · EKI-1221/2/4: v1.09 or later

     * HTTPS function currently only on models with lower port numbers.
       For standard 8 & 16 port model, currently not supported.

     **With Encryption by Certificates, the system would require around 80s to collect sufficient “entropy” to fully boot up after powered/rebooted.

Generate the Certificates by EKI Utility on Windows (1/5)

- Download OpenSSL for Windows
  - EKI Utility version should be **v3.07** or later to support this function.
  - Go to website for the OpenSSL installation file, and install it to the computer:

    https://slproweb.com/products/Win32OpenSSL.html

Download Win32/Win64 OpenSSL

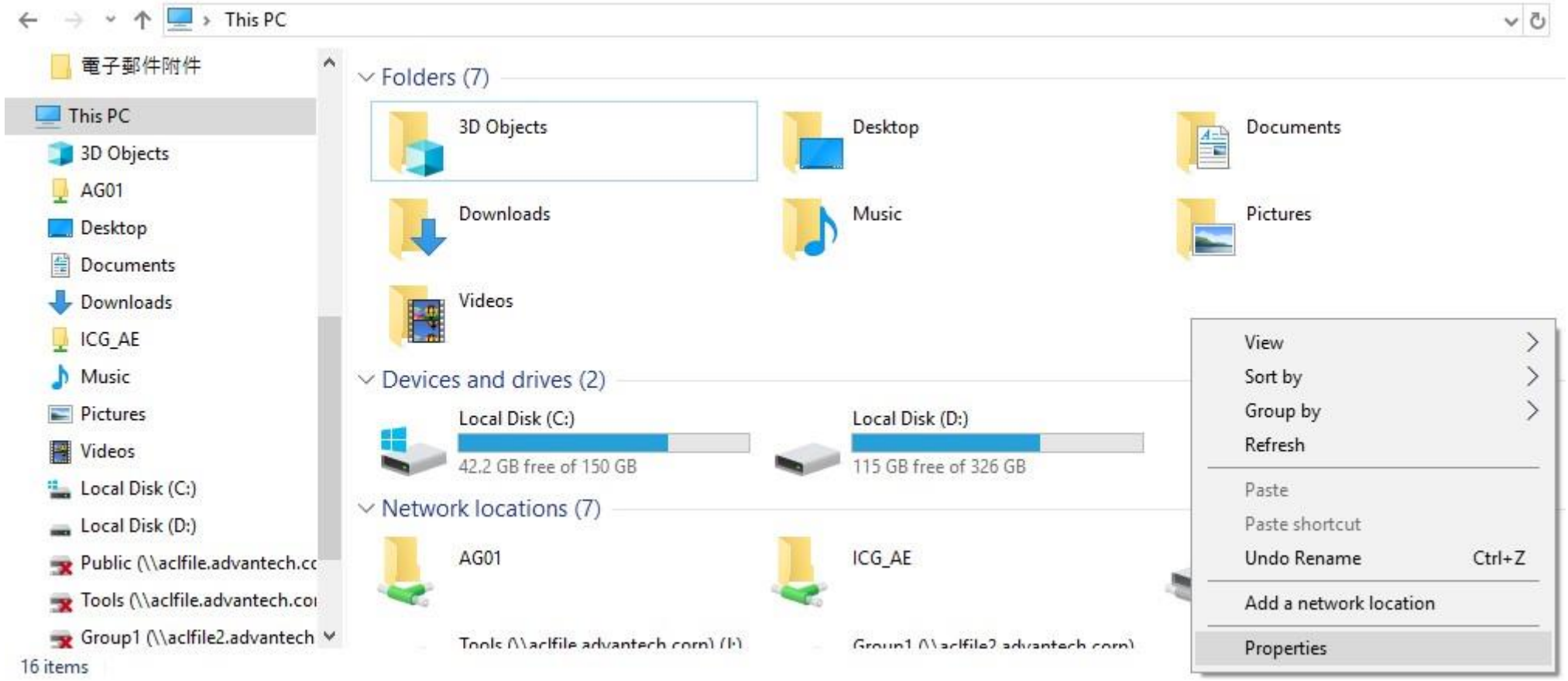
Download Win32/Win64 OpenSSL today using the links below!

File	Type	Description
Win64 OpenSSL v3.1.4 Light EXE | MSI	5MB Installer	Installs the most commonly used essentials of Win64 OpenSSL v3.1.4 (Recommended for users by the creators of OpenSSL). Only installs on 64-bit versions of Windows and targets Intel x64 chipsets. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win64 OpenSSL v3.1.4 EXE | MSI	140MB Installer	Installs Win64 OpenSSL v3.1.4 (Recommended for software developers by the creators of OpenSSL). Only installs on 64-bit versions of Windows and targets Intel x64 chipsets. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win32 OpenSSL v3.1.4 Light EXE | MSI	4MB Installer	Installs the most commonly used essentials of Win32 OpenSSL v3.1.4 (Only install this if you need 32-bit OpenSSL for Windows. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win32 OpenSSL v3.1.4 EXE | MSI	116MB Installer	Installs Win32 OpenSSL v3.1.4 (Only install this if you need 32-bit OpenSSL for Windows. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.

Generate the Certificates by EKI Utility on Windows (2/5)

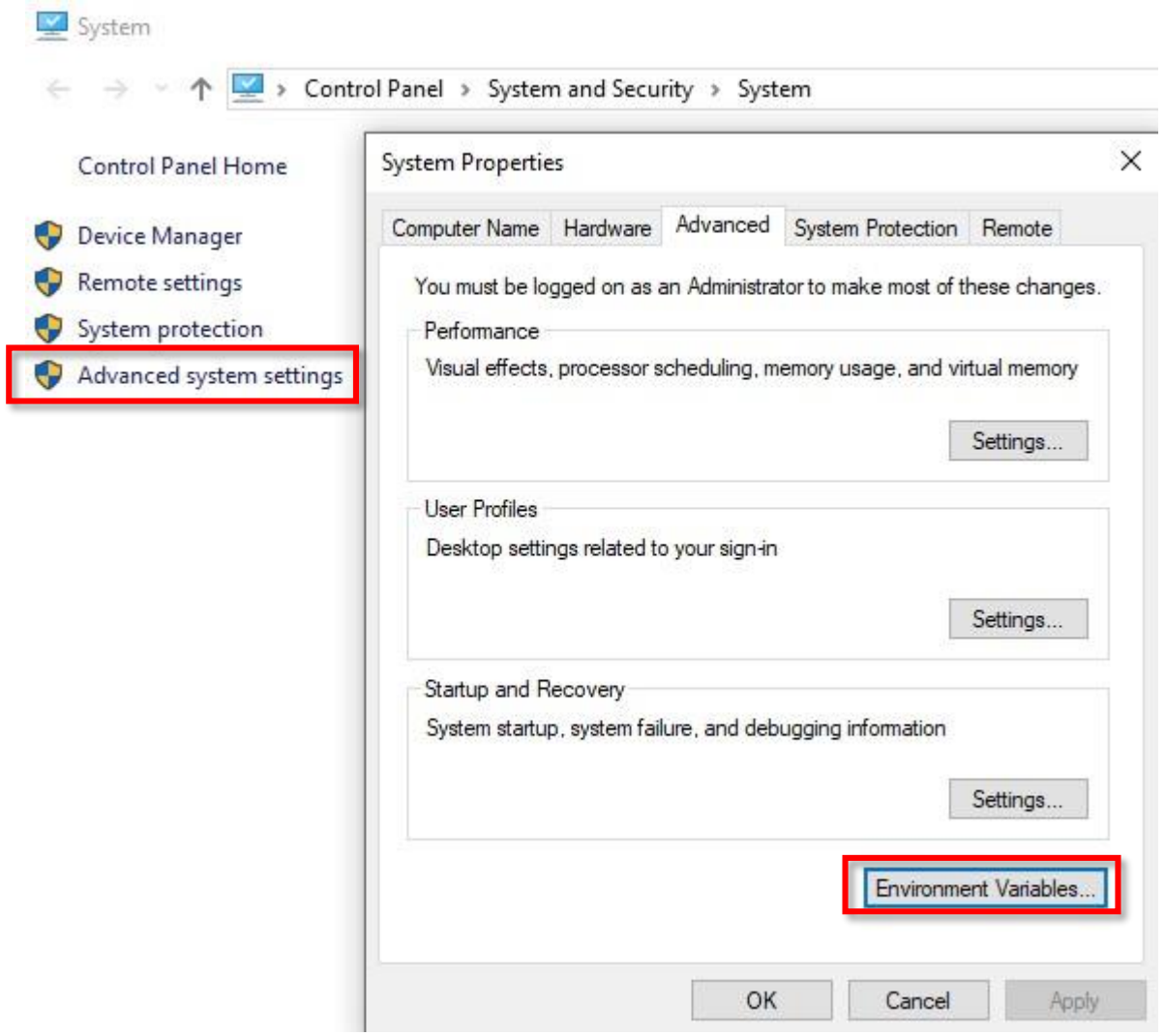
- Check System Settings
  - Right click on “This PC” to find option “Properties”.

(This Step is to open up System page in the Control Panel. Other approach would also do.)



Generate the Certificates by EKI Utility on Windows (3/5)

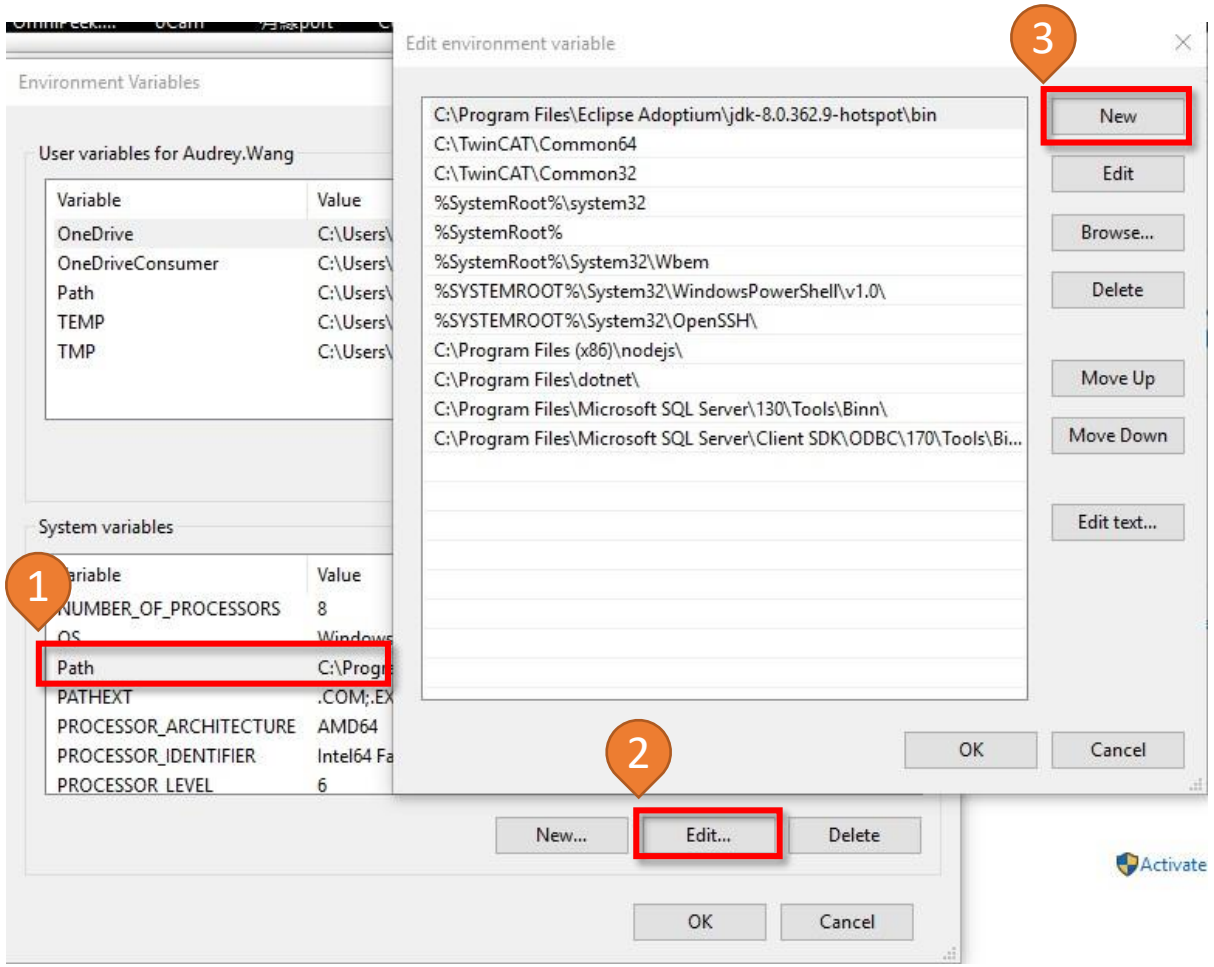
- Advanced System Settings
  - In System page, click on the Advanced System Settings to check it.
  - Go to tab “Advanced”, and click the button “Environment Variables…” for further editing.



Generate the Certificates by EKI Utility on Windows (4/5)

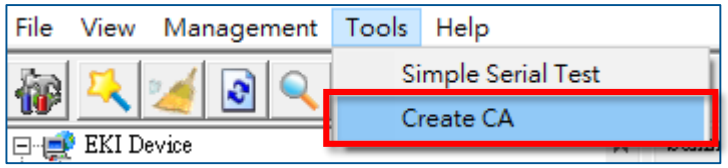
- Modify Environment Variable
  - Select “Path” in the System Variables for Edit, and click “New” to add path inside.

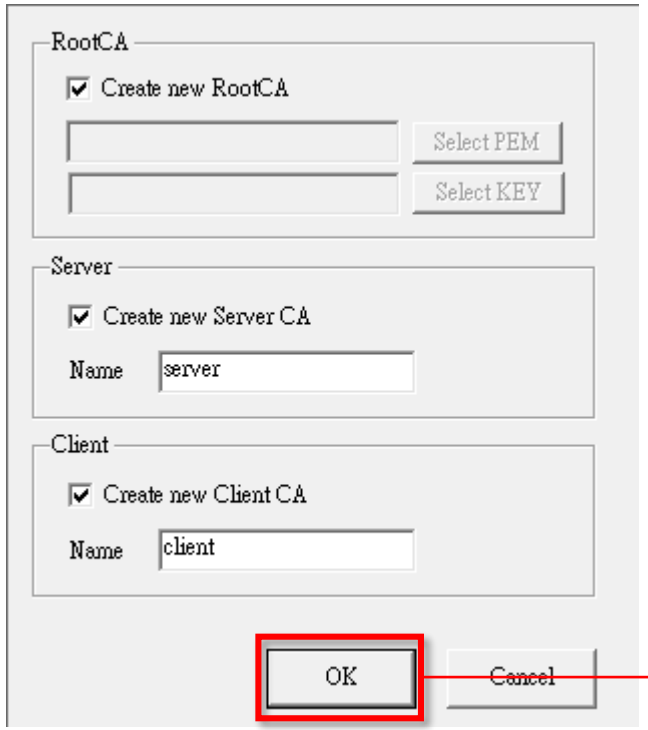
Path adding: C:\Program Files\OpenSSL-Win64\bin

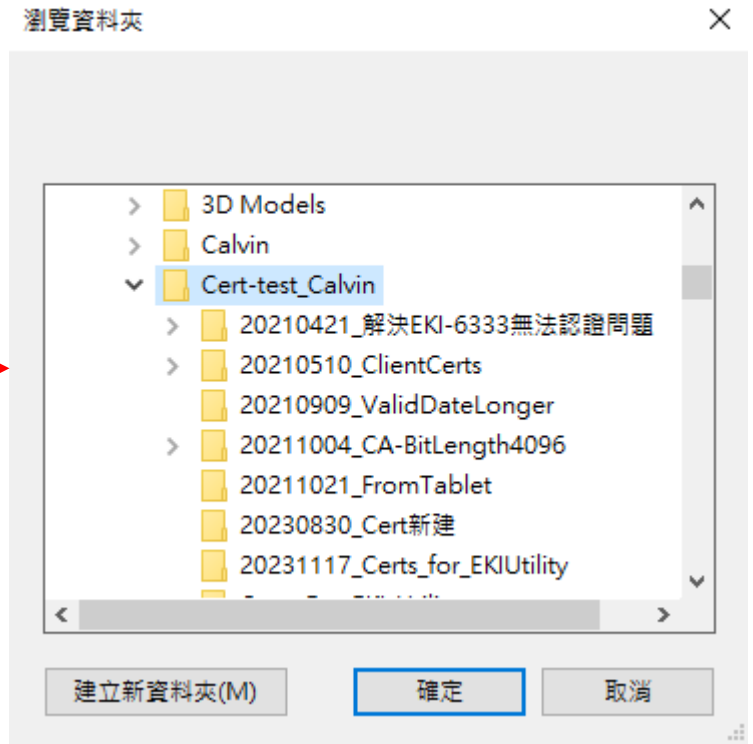


Generate the Certificates by EKI Utility on Windows (5/5)

- Generate the Certificates by EKI Utility
  - After adding the Environment Variable, start EKI Utility and go to Create CA under Tools.
  - Select the folder to store the generated certificate files.







Generate the Certificates by VCOM-Driver on Ubuntu

- VCOM Driver with OpenSSL embedded
  - VCOM Driver version should be **v2.2.3** or later to support this function.
  - Using command below to create related certificates:

    #sudo adv-eki-tls-create -n eki1234abcd ← Certificate File Name
  - Default RootCA file will be created during the process, if it was not there before.
  - Sample as the screenshot on the right.
    Users will need to input some information during the creating of the certificate files, such as Country Name, Organization Name, password, etc.
  - Users can edit the /usr/local/advtty/ssl.json to customize the files:
    - Password, file path of the RootCA public key, and the key pair can be customized in this file.

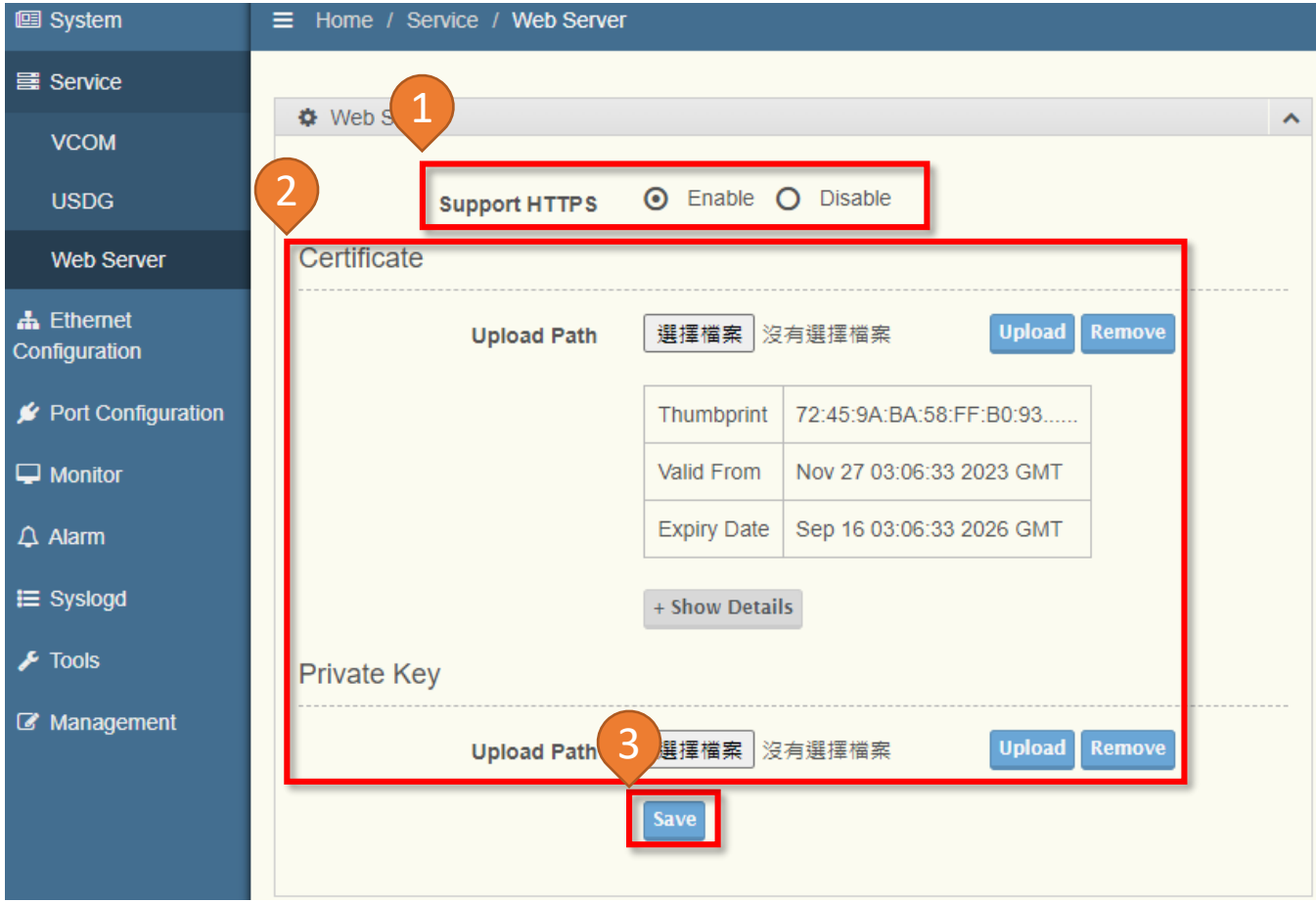
```
root@calvin-VirtualBox:/home/calvin# adv-eki-tls-create -n eki1234abcd
checking for rootCA files:
public key /usr/local/advtty/rootCA.pem found.
private key /usr/local/advtty/rootCA.key found.
serial /usr/local/advtty/rootCA.srl found.
Generating DH parameters, 1024 bit long safe prime, generator 2
This is going to take a long time
...+.....................+..+.....................................................
.....................................................................+.
..+.....................................+.....................................
.....................................................................
Can't load /root/.rnd into RNG
140351476867520:error:2406F079:random number generator:RAND_load_file:Cannot ope
n file:../crypto/rand/randfile.c:88:Filename=/root/.rnd
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]:TW
State or Province Name (full name) [Some-State]:Taipei
Locality Name (eg, city) []:Taipei
Organization Name (eg, company) [Internet Widgits Pty Ltd]:Advantech
Organizational Unit Name (eg, section) []:ICG
Common Name (e.g. server FQDN or YOUR name) []:calvin
Email Address []:calvin.lin@advantech.com

Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:whatever
An optional company name []:
read EC key
writing EC key
Copy the following files to the corresponding EKI device server

* key-pair(pub/priv): eki1234abcd.pem   ← Certificate File for HTTPS
* diffi-hellman: eki1234abcd_dh1024.pem
* rootCA: /usr/local/advtty/rootCA.pem
```

Upload the Certificates to EKI Device

- Service / Web Server
  1. Change the HTTPS support option to Enable.
     This enable the HTTPS function on EKI, while the HTTP still available.
  2. Select the created certificate file and upload.
     File should be used: *.pem
     - Use the same file for **both**, ex. client.pem, and upload it to both “Certificate” and “Private Key”.
  3. Click the Save button below to store the configuration, and reboot.



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