Raytec HTTPS Setup Guide

V1

Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@rayteccctv.com

Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@rayteccctv.com

www.rayteccctv.com

Contents

Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@rayteccctv.com

Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@rayteccctv.com

www.rayteccctv.com

Introduction

The latest Raytec lamps now have HTTPS functionality (using encryption algorithm ECDSA with 256-bit private keys). It is now possible to upload a security certificate to lamps to enable a secure connection.

This document will show the changes you will see to firmware, software and also how to ensure that your browser doesn't throw warnings when trying to access your lamps over a secure connection.

Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@rayteccctv.com

Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@rayteccctv.com

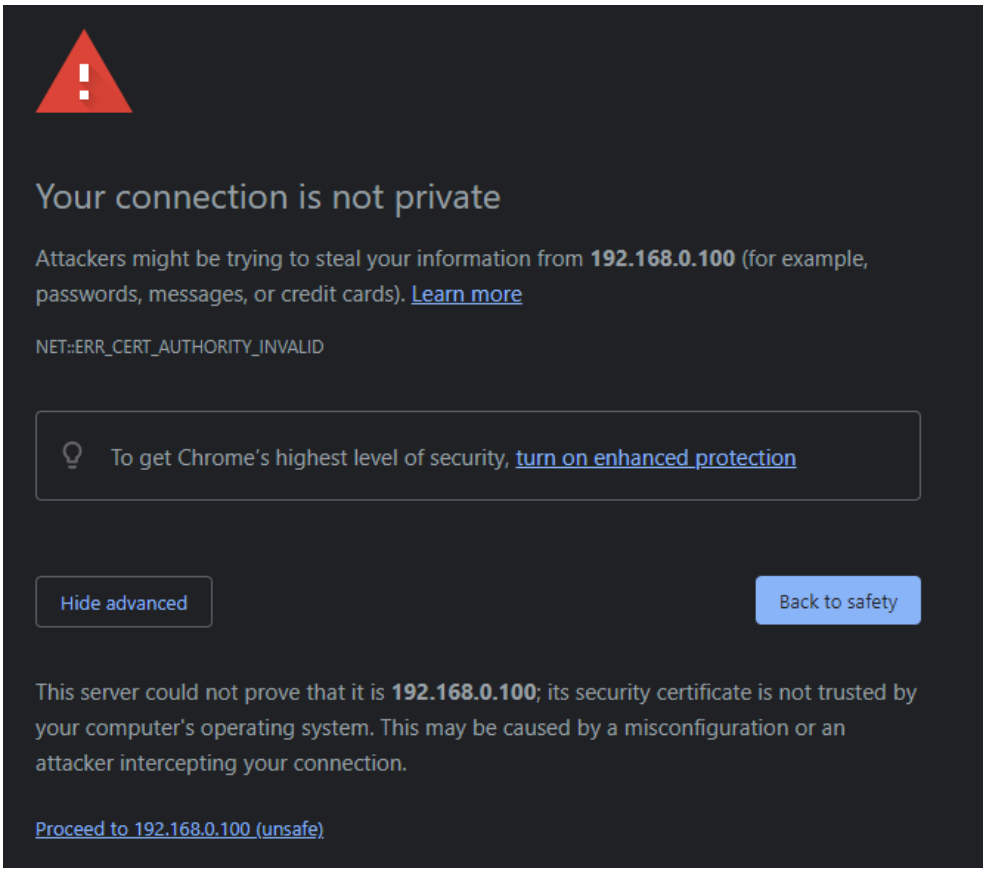
www.rayteccctv.com

Firmware change

To benefit from the HTTPS functionality, your lamp needs to be running one of the below firmware versions or newer.

Lamp Type	Firmware revision
Single wavelength lamps – 4,6 and 8 size	v2.7.1 and above
Single wavelength lamps – 16 size	v6.2.0 and above
Hybrid lamps – 4,6 and 8 size	v3.6.9 and above
Hybrid lamps – 16 size	v7.2.0 and above

If you attempt to navigate to a lamp running one of these firmware versions (or newer) prior to uploading a certificate, you will likely be presented with trust errors from your browser like below.



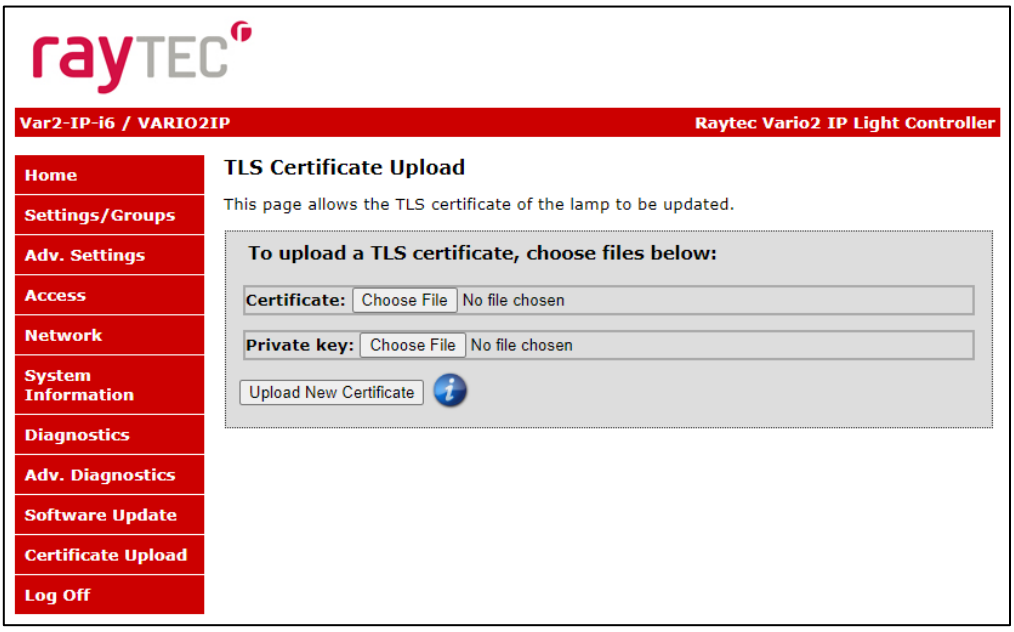
The updated firmware has a self-signed certificate which should be changed at the earliest opportunity. The reason for the browser error is that the certificate is generated from within Raytec and there is no chain of trust like with other certificates and as such the browser (rightfully) states that this connection could be problematic.

Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@rayteccctv.com

Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@rayteccctv.com

www.rayteccctv.com

The updated firmware adds a new web page to the lamp web interface called “Certificate Upload”, on clicking this option you will see the following:



To enable secure communications you must upload certificate and private key files in .der format. This format has been chosen to minimise the size of the file to upload.

Warning: Raytec have opted to use ECDSA encryption with 256-bit private keys. Ensure that your files comply with this or you will encounter issues on upload and/or when attempting to access the lamp using HTTPS.

Certificate and private key files will not always be in .der format when you have them therefore some conversion tool will be required to convert the files to .der format to enable you to upload them to the lamp.

Raytec have made changes to DiscoMan to make this whole process a lot easier for users.

Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@rayteccctv.com

Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@rayteccctv.com

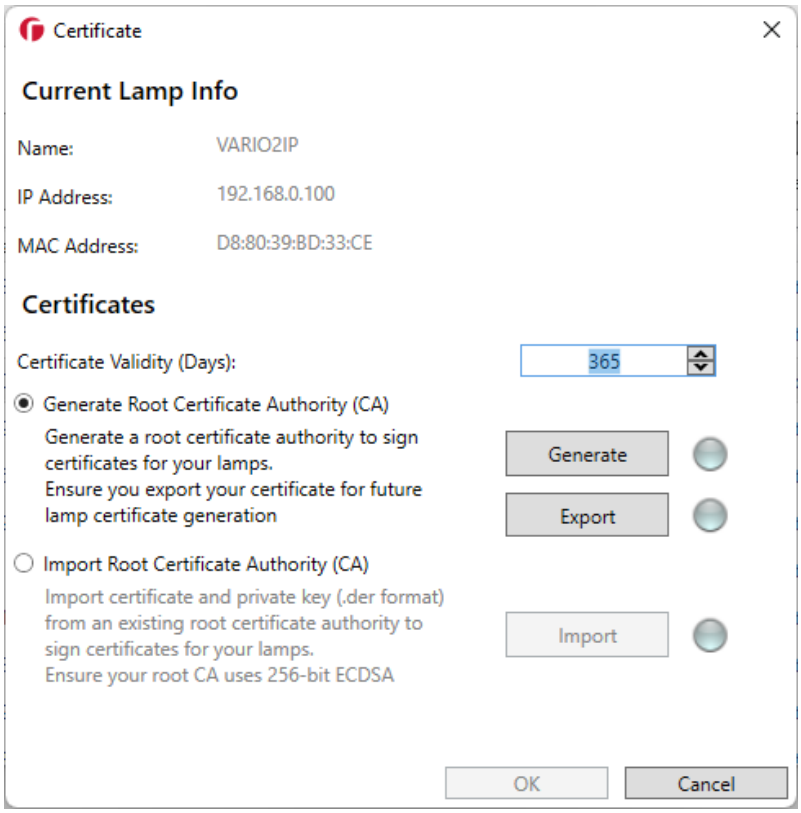
www.rayteccctv.com

DiscoMan Change (v2)

After the update to the firmware, some questions that came out of the initial testing phase were:

- How do I generate the certificate and private key files?
- How do I convert these files to .der format?
- How do I know when a certificate is due to expire?

All of these questions have been addressed by the latest DiscoMan update. On selecting a lamp in DiscoMan, click the Certificates button.



DiscoMan presents users with two options to secure their lamps:

- Generate Root Certificate Authority (CA)

  If the user doesn't have a CA with which they can generate certificates then they can become their own via DiscoMan.

  DiscoMan asks the user to select how long certificates should be valid and then the user can generate and export the root CA and private key before clicking OK to upload the certificate and private key to the lamp.

  The exported certificate and private key can be re-imported (using the import feature) to create certificates for other lamps.

Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@rayteccctv.com

Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@rayteccctv.com

www.rayteccctv.com

- Import Root Certificate Authority (CA)

  The user can also choose to import a certificate and private key from an existing CA if they wish. The files must be in .der format for upload.

  This may be useful in the scenario where the user has a root CA that they use to sign certificates for all network devices and therefore they already have the chain of trust established and the certificate installed in the trusted root certificate store of all machines that require access to the secure devices.

  Warning: Raytec have opted to use ECDSA encryption with 256-bit private keys. Ensure that your files comply with this or you will encounter issues on upload and/or when attempting to access the lamp using HTTPS.

If the user selects multiple lamps and clicks “Certificates” then they can update the certificate and private key of multiple lamps at once.

If you imported a CA, the lamp will now be accessible over HTTPS. If you click “Refresh”, you will now see an expiry date in the lamp’s status message column in DiscoMan.

Status Message
HTTPS Certificate Expires 13/01/2024
HTTPS Certificate Expires 13/01/2024
HTTPS Certificate Expires 13/01/2024
HTTPS Certificate Expires 13/01/2024
HTTPS Certificate Expires 13/01/2024
HTTPS Certificate Expires 13/01/2024
HTTPS Certificate Expires 13/01/2024
HTTPS Certificate Expires 13/01/2024

If you generated a new CA then you’ll need to install the generated certificate in the trusted root certificate store of all machines that will need to access the lamp over HTTPS. See the next section for instructions on how to do this.

Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@rayteccctv.com

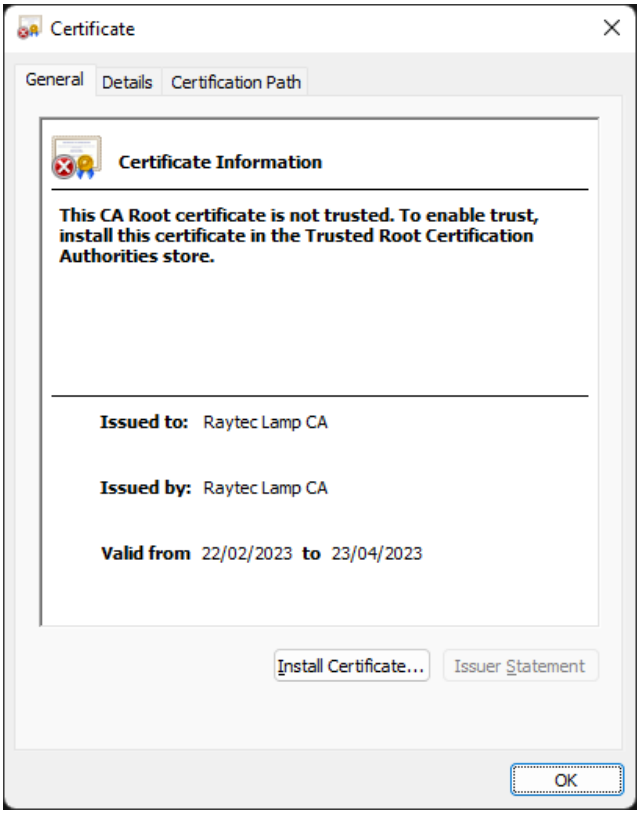
Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@rayteccctv.com

www.rayteccctv.com

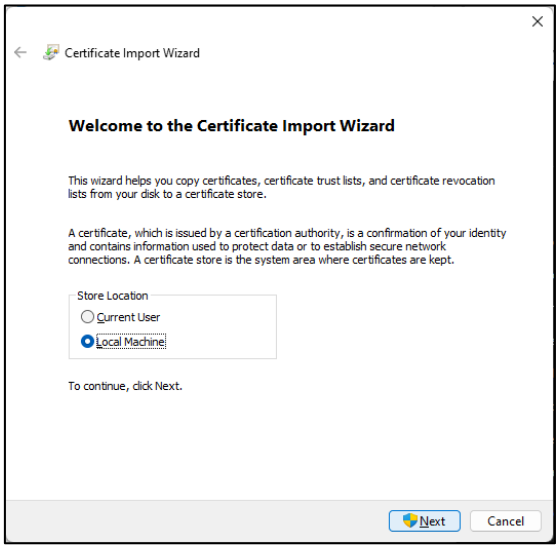
Managing Computer Certificates

After generating your own CA and exporting the resulting certificate and private key files, you need to install the Certificate.der file into the trusted root certificate store on all machines that require secure access the lamp. Follow the steps below for each machine to do this.

1. Double-click the certificate.der file in the directory where you exported it to. You should see the following. Click “Install Certificate…”



2. You will be presented with the first page of the Certificate Import Wizard, select “Local Machine” and click “Next”

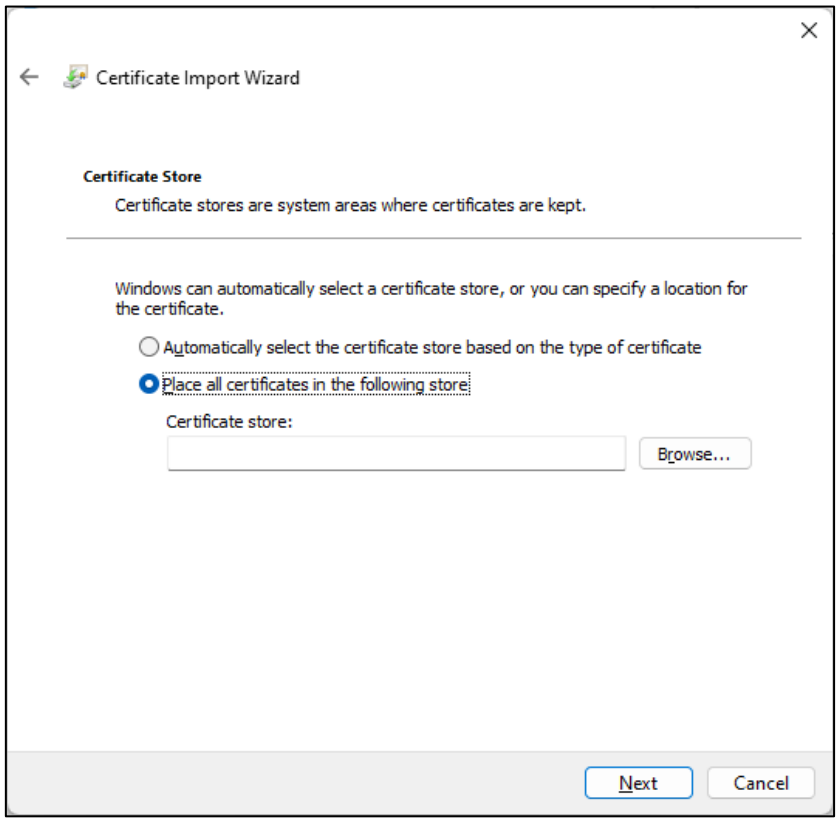


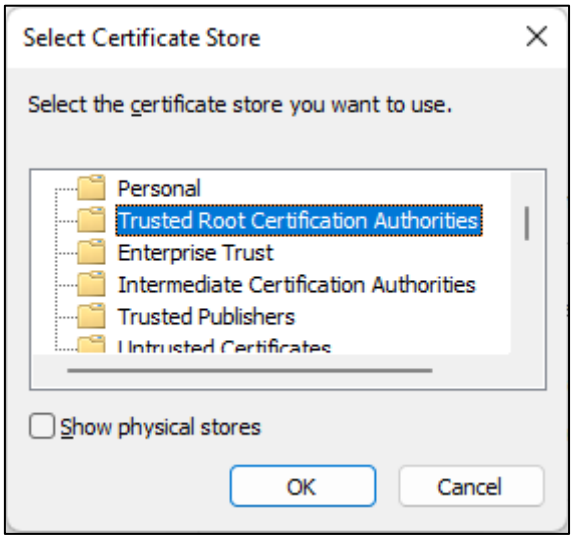
Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@rayteccctv.com

Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@rayteccctv.com

www.rayteccctv.com

3. Select “Place all certificates in the following store”, select “Browse…” and select *Trusted Root Certification Authorities.*





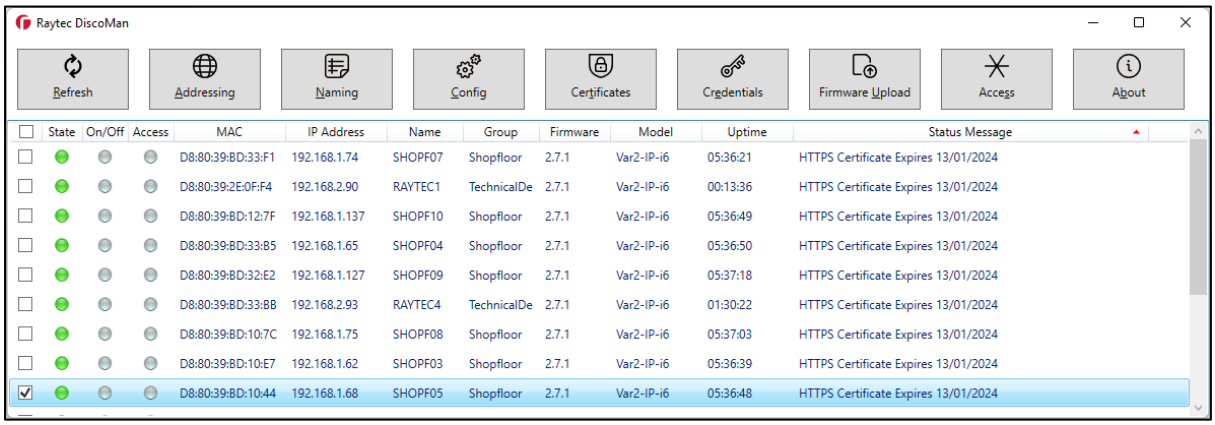
4. Click “Next” and on the last page click “Finish”.

Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@raytecccctv.com

Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@raytecccctv.com

www.raytecccctv.com

5. You can now communicate with the lamp(s) using HTTPS and DiscoMan will now display the expiry date of the HTTPS certificate in the Status Messages column.



State	On/Off	Access	MAC	IP Address	Name	Group	Firmware	Model	Uptime	Status Message
			D8:80:39:BD:33:F1	192.168.1.74	SHOPF07	Shopfloor	2.7.1	Var2-IP-i6	05:36:21	HTTPS Certificate Expires 13/01/2024
			D8:80:39:2E:0F:F4	192.168.2.90	RAYTEC1	TechnicalDe	2.7.1	Var2-IP-i6	00:13:36	HTTPS Certificate Expires 13/01/2024
			D8:80:39:BD:12:7F	192.168.1.137	SHOPF10	Shopfloor	2.7.1	Var2-IP-i6	05:36:49	HTTPS Certificate Expires 13/01/2024
			D8:80:39:BD:33:B5	192.168.1.65	SHOPF04	Shopfloor	2.7.1	Var2-IP-i6	05:36:50	HTTPS Certificate Expires 13/01/2024
			D8:80:39:BD:32:E2	192.168.1.127	SHOPF09	Shopfloor	2.7.1	Var2-IP-i6	05:37:18	HTTPS Certificate Expires 13/01/2024
			D8:80:39:BD:33:BB	192.168.2.93	RAYTEC4	TechnicalDe	2.7.1	Var2-IP-i6	01:30:22	HTTPS Certificate Expires 13/01/2024
			D8:80:39:BD:10:7C	192.168.1.75	SHOPF08	Shopfloor	2.7.1	Var2-IP-i6	05:37:03	HTTPS Certificate Expires 13/01/2024
			D8:80:39:BD:10:E7	192.168.1.62	SHOPF03	Shopfloor	2.7.1	Var2-IP-i6	05:36:39	HTTPS Certificate Expires 13/01/2024
☑			D8:80:39:BD:10:44	192.168.1.68	SHOPF05	Shopfloor	2.7.1	Var2-IP-i6	05:36:48	HTTPS Certificate Expires 13/01/2024

Raytec Global (excluding Americas)
Tel: +44 (0) 01670 520055
Fax: +44 (0)1670 819760
sales@rayteccctv.com

Raytec Americas:
Tel: +1 613 270 9990
Toll Free: +1 888 505 8335
ussales@rayteccctv.com

www.rayteccctv.com