

Generating a certificate

To request a certificate from a Certificate Authority (CA), you will need to give them a Certificate Signing Request (CSR).

For instructions on how to generate a certificate please see

https://docs.google.com/document/d/1FPXAE7U2yOGPUuQwE56ZwGEYkMEDTyf_8fqzdvrNwMw

Located at

LAVA Drive > Information, Guides, and How To > Certificate Generation

Install

SAGE2 doesn't use the built in Windows hosting services, it uses Nodejs.

Nodejs handles certificates itself using the **sage_install_folder/keys** folder.

Someone might normally double click on a **.crt** or **.key** file to install into the default Windows service, this does not work for SAGE2.

Within the keys folder, each hostname/IP address will come in sets of three.

Two **.crt** and one **.key**.

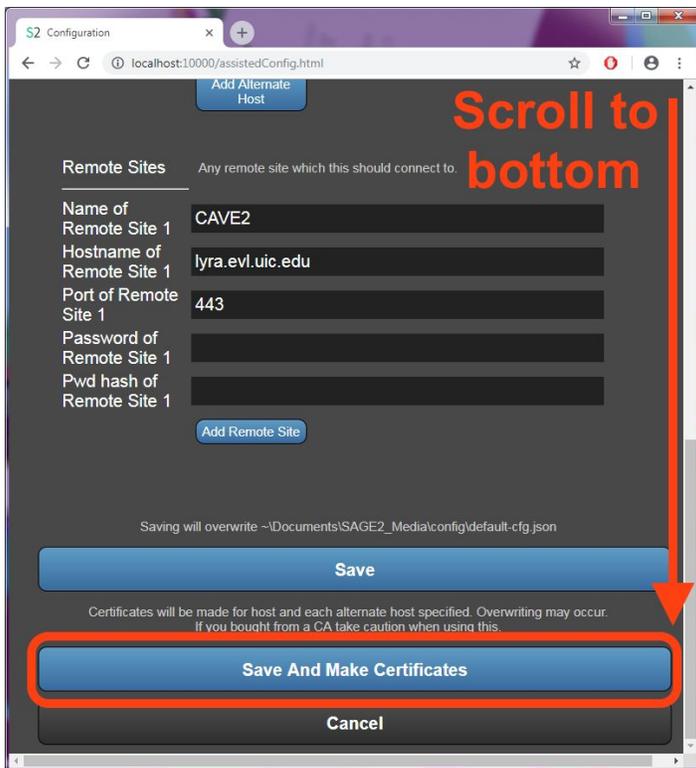
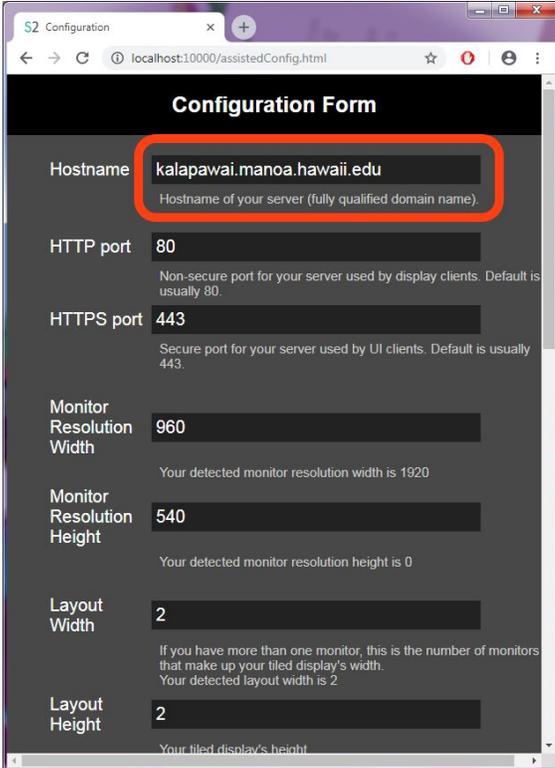
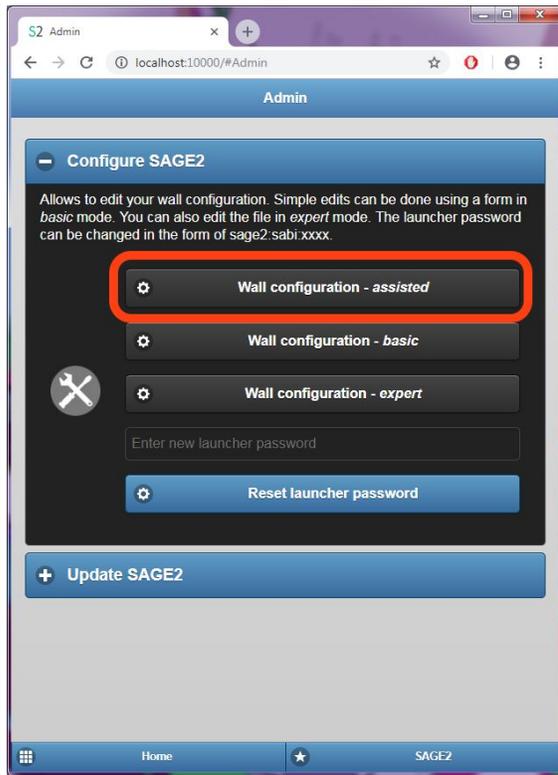
By default, Windows binaries come with localhost and 127.0.0.1 files:

127.0.0.1-ca.crt
127.0.0.1-server.crt
127.0.0.1-server.key
localhost-ca.crt
localhost-server.crt
localhost-server.key

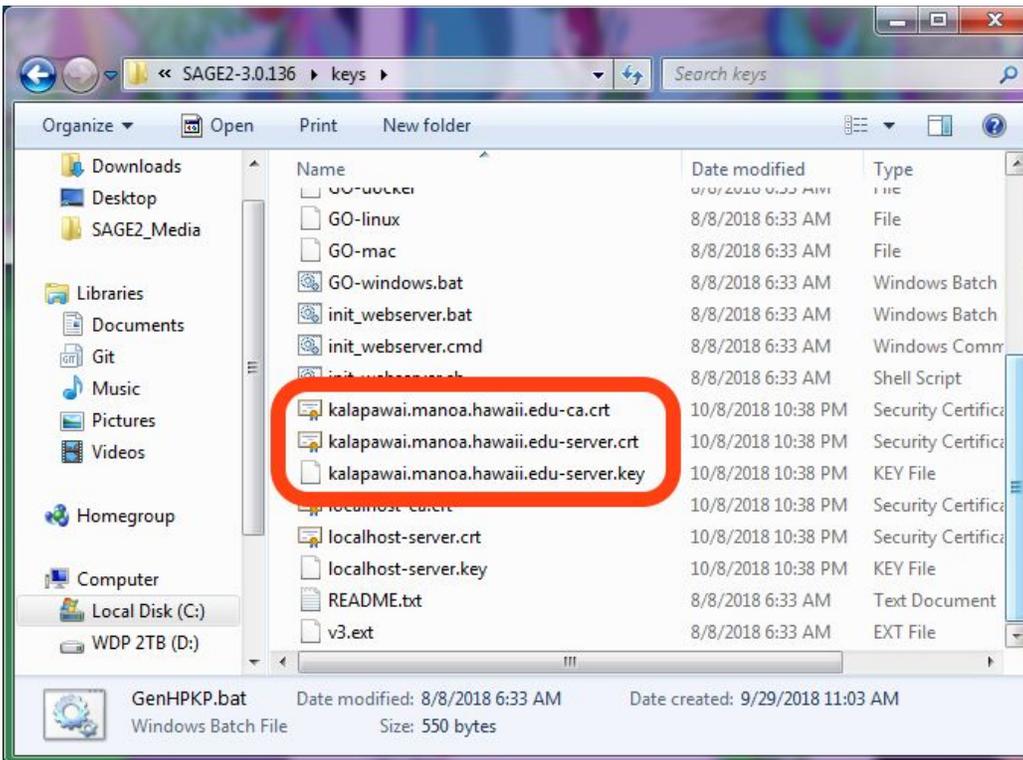
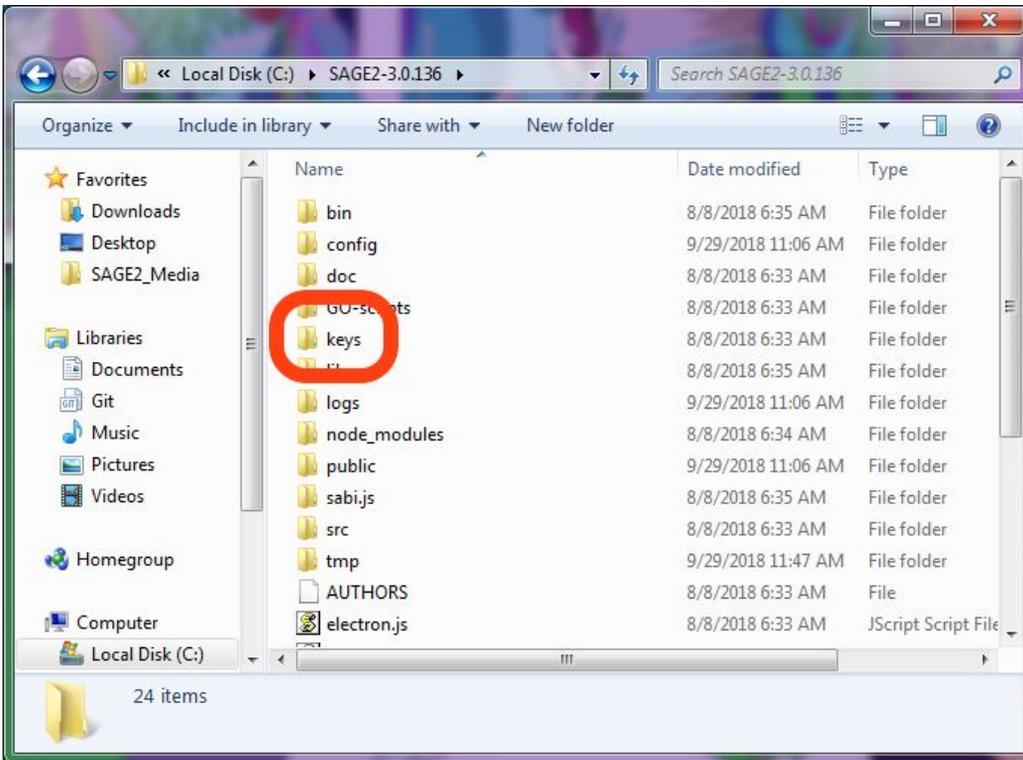
The naming scheme must match and all three files are needed. However, CA will only provide the server **.crt** file. The **.key** is generated when the CSR file is made. It is easier to let SAGE2 create the third file.

It is first recommended to let SAGE2 generate the three necessary files, if you have already been using certificates for the hostname and are updating them, the following steps may be skipped.

- Open the control panel, **http://<hostname>:1000/**
- Click on **Admin**
- Click on **Wall configuration - assisted**
- Set the **Hostname**
- **Save And Make Certificates**, at the bottom of the page

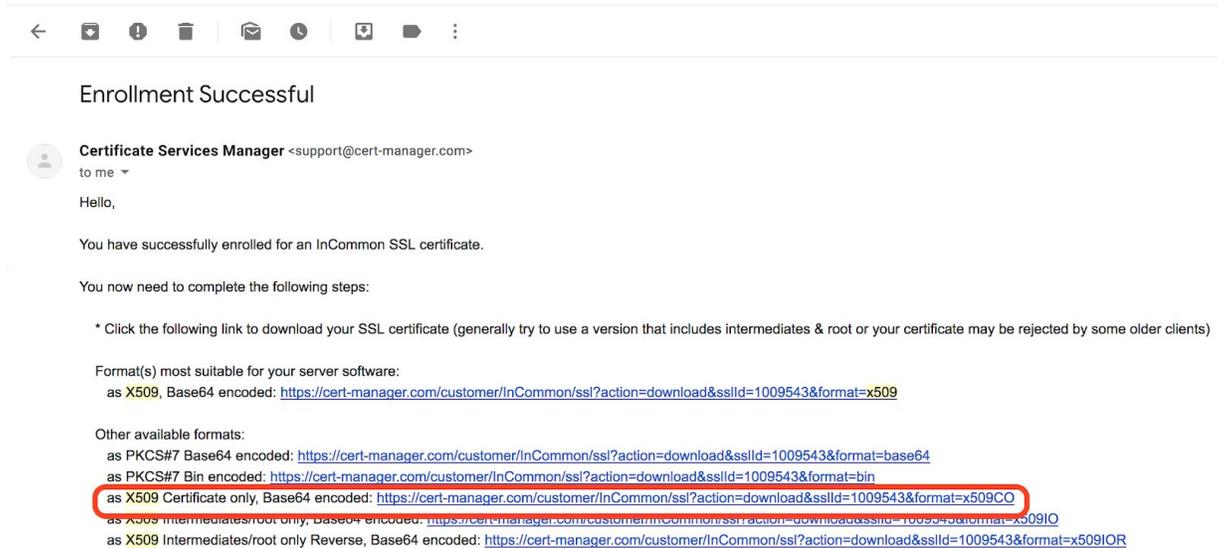


The above steps will generate the three file set, where they will be located in the keys folder.

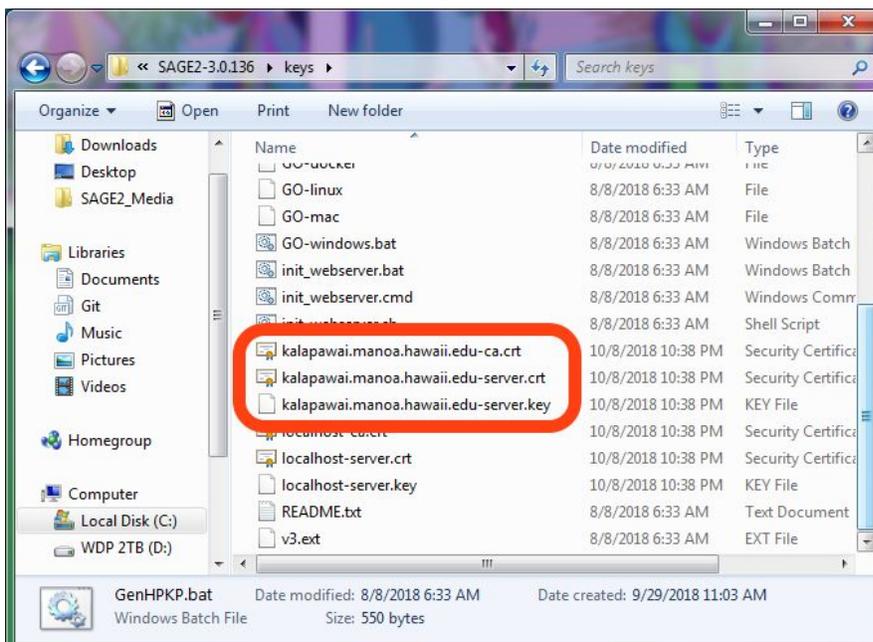


Now the certificate and key will need to be moved to the keys folder

- After submitting a CSR to a CA, they usually respond back with a download link to a variety of options for the certificate.
- Use the link and download the **X509 Certificate only, Base64 encoded**
 - If that that option is not available, get the **X509, Base64** file. It will need to be trimmed to work correctly through trial and error. More on this later.



- Edit the downloaded file's name to match the **<hostname>-server.crt** file
- Then get the **.key** file that was generated when the CSR was generated and make its file name match the **<hostname>-server.key** file.
- Make duplicates of the **.key** and **.crt** file you just renamed.
 - Sometimes the CA will put a time limit to how long the **.crt** file download is available.
 - If the **.key** file is lost, it cannot be recovered and the **.crt** file becomes unusable.
 - Should the **.key** file be lost, usually CA will allow regeneration. Some will charge a fee for regeneration.
- Replace the old files with the ones you just name edited. The names should match the formatting of those generated using the control panel



- Restart SAGE2
- Test to see if it was installed
 - Connect to the SAGE2 interface using the certificate hostname
 - After the page loads, look at the address bar
 - To the left of the URL should be a lock icon
 - Click on the lock icon
 - If the information popup says “Secure Connection” then it has been installed correctly.
 - If there is no lock icon, it was not installed correctly

If the **X509 Certificate only, Base64** encoded file is unavailable

You may have to manually reduce the **X509, Base64** file.

This can be a guess and check process

For example this image shows that the contents of the X509, Base64

It contains four separate certificates for different usage cases.

However only one will work correctly

```

kalapawai_manoa_hawaii_edu.cer x
1 |-----BEGIN CERTIFICATE-----
2 MIIENjCCAx6gAwIBAgIBATANBgkqhkiG9w0BAQUFADBVMQswCQYDVQQGEwJTRTEU
3 MBIGA1UEChMLQWRkVHJ1c3QgQUlXjAkBgNVBAAsTHUFkZFRydXN0IEV4dGVybmFs
4 IFRUUCB0ZXR3b3JrMSIwIAYDVQQDExLBZGRUcnVzdCBFeHRlcm5hbCBDQSB5b290
5 MB4XDTAwMDUzMDUzMDUzMDUzMDUzMDUzMDUzMDUzMDUzMDUzMDUzMDUzMDUzMDUz
6 FdASBgNVBAoTC0FkZFRydXN0IEFCSyYwJAYDVQQLEx1BZGRUcnVzdCBFeHRlcm5h
7 bCBUVFAGTmV0d29yZiEiMCAgA1UEAxMzQWRkVHJ1c3QgRXh0ZXJ1YyYwWgQ0EgUm9v
8 dDCCASiWdQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEBALf3GjPm8gAELTngTLvt
9 H7xsD821+i02zt6bET0XpCLmfZ0fvUq8k+0DGu0Pz+VtUFRwLymUwCwSXrbLpX9
10 uMq/NzgtHj6RQa1wVsfwTz/oMp50ysiQV0nGXw94nZpAPA6sYapeFI+eh6FqUNzX
11 mk6vBb0mcZScCbNQYArHE504B4YCq0moaSYkKtMsE8jqzPPhNj fzp/haW+710LX
12 a0Tlx63ubUFfcLpxCDezeWwKwCUN/cALw3CknLa0Dhy2xSoRcRdKn23tNbE7qzN
13 E0S3ySvdQwAl+mG5aWpYIXG3pz0PVnVZ9c0p10a3CitlttNCbxWyuHv77+ldU9U0
14 WicAAwEAA0B3DCB2TAdBgNVHQ4EFgQUrb2YejS0Jvrf6xCZU7w094CTLVBowCwYD
15 VR0PBAQDAGEGMA8GA1UdEwEB/wQFMAMBAf8wgZkGA1UdIwSBkTCBjoAURb2YejS0
16 Jvf6xCZU7w094CTLVBqhc6RrMG8xCzAJBgNVBAYTAlNFMRQwEgYDVQQKEwtBZGRU
17 cnVzdCBBBQjEmMCQGA1UECXMdQWRkVHJ1c3QgRXh0ZXJ1YyYwWgVFRQIE5ldHdvcm5x
18 IjAgBgNVBAMTGUFkZFRydXN0IEV4dGVybmFsIENBIFJvb3SQAQEDQYJKoZIhvcN
19 AQEFBQADggEBALCb4IUlwtYj4g+WBpKdQZic2YR5gdkeWxQHIzZlj7DYd7usQWxH
20 YINRsPkyPef89iYTx4AWpb9a/I fPeHmJIZriTAcKhjW88t5RxnKwt9x+Tu5w/Rw5
21 6wwCURQtjr0W4MHfRnXnJK3s9EK0hZNwEGe6nQY1ShjTK3rMUUKhemPR5ruhXsvC
22 Nr4TDea9Y355e6cJDUCrat2PisP29owaQgVR1EX1n6diIWgVIEM8med8vSTYqZEX
23 c4g/Vhsx0Bi0cQ+azcg0no4uG+GMmIPLHzHxREzGBHNDmAPx/i9F4BrLunMTA5a
24 mnkPIAou1Z5jH5VkpTYghdae9C8x490hgQ=
25 -----END CERTIFICATE-----
26 -----BEGIN CERTIFICATE-----
27 MIIIdzCCBF+gAwIBAgIQE+oocFv0700MNMjGfDNjANBgkqhkiG9w0BAQwFADBv
28 MQswCQYDVQQGEwJTRTEUMBIGA1UEChMLQWRkVHJ1c3QgQUlXjAkBgNVBAAsTHUFk
29 ZFRydXN0IEV4dGVybmFsIFRUUCB0ZXR3b3JrMSIwIAYDVQQDExLBZGRUcnVzdCBF
30 eHRlcm5hbCBDQSB5b290MB4XDTAwMDUzMDUzMDUzMDUzMDUzMDUzMDUzMDUzMDUz
31 gYgxCzAJBgNVBAYTAlNFMRQwEgYDVQQQIEwpoZXCgSmVyc2V5MRQwEgYDVQQHEwtK
32 ZXJzZXhkgQ2l0eTEeMwBGA1UEChMVVGVhLlFVTRVJUUVTVVVCB0ZXR3b3JrMSIwIAYD
  
```

Make a copy of the file and try test each of the certificate section one at a time.

---BEGIN CERTIFICATE---

<hash>

---END CERTIFICATE---

It will not work correctly if all of them are in the file at the same time.

The contents should only contain one cert section, just like the localhost file

```
localhost-server.crt x
1 -----BEGIN CERTIFICATE-----
2 MIIDCzCCAf0gAwIBAgIJJAPcRar8RZN0dMA0GCSqGSIb3DQEBCwUAMBQxEjAQBgNV
3 BAMTCWxvY2FsaG9zdAeFw0x0DA4MDgwNjMzMDFaFw0x0TA4MDgwNjMzMDFaMBQx
4 EjAQBgNVBAMTCWxvY2FsaG9zdDCCASiWdQYJKoZIhvcNAQEBBQADggEPADCCAQoC
5 ggEBAMd+C49VU3DGHlMKReD6tNhkdL3EqsTs6QmfZRYMEGiFUNT6C60ZEwq02tsN
6 yRee2tmgZXmnTnmri3w+xmQ9Zo/YGLbL6v5XJL8tCV7WQcKS0yDSZ+yTgxAbjfib
7 wjExYyDUqUrLSMx0v9ox5H3JLL0HPbhghyKv7KXDf1MA3YlWQRWmGUbH/SfRRBVU
8 QZxJUmdZ1hxojmCPYIGL0GBJ/zXbXNKwkgsw/gueo0h5aEQP2ZKZS0XH8aleCP7
9 HJl05ZhA+vzIVIj54p0Kfx9f5FGIdCNWcx/eoHi0YeQyJVenpsJB7W4tBvU8Q6Q6
10 my6aNJC66HmjKSQm26q7VjeZmAUCAwEAANgMF4wLgYDVR0jBCcwJaEYpBYwFDES
11 MBAGA1UEAxMJBG9jYXxob3N0ggkA9xFqvxFk050wCQYDVR0TBAlwADALBgNVHQ8E
12 BAMCBPAwFAYDVR0RBA0wC4IJBG9jYXxob3N0MA0GCSqGSIb3DQEBCwUAA4IBAQDC
13 T3GrrZ/fVdvDl10CiJdoIeCib2t2nJqwfFvn0w+GLConrYfv087CWUSd+FaqGRL+
14 j2YCy3Afp3iQHMH5hezrZZ3J9TCvKJe/B1fnDulvfJUzC1rJBYzW3cfQbUwoi8zy
15 vuyeVTuS6KifVqT/N6UnIkY4dwaRvPdLKE1emE9tTeXdcfUNMZqCzjTAW+oocQrk
16 pxHQdgu1SYq1BNbJq8A1U+z2HZGgl4Ngvygkj8ppkQDj//REDFzdyctcP8gSN1NU
17 FbetWpARwjybfFUon0UudjFwxY2u/EqDts/JR0l81AB74270IEXnmo5XJHJRA9vn
18 wPaWoEnQnbLH00/9UMYU
19 -----END CERTIFICATE-----
20
```