



Judicial Information Service  
*Ministry of Justice and Security*

# MANUAL

## MLExplorer

Version	1.2.3
Title	MasterList Explorer (MLExplorer)
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Copyright	Judicial Informationservice, Operations, expertteam PKI

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## 2. Introduction

The MasterList Explorer “MLEplorer” is a tool for investigating a masterlist. A masterlist can be published and digitally signed by a country or ICAO and is a list of Country Signing Certificate Authority (CSCA) public key certificates. A masterlist could also contain link certificates.

A masterlist can be imported in most bordercontrol systems or National Public Key Directories. But before importing, the content of a masterlist should be checked for correctness by the responsible organization or government of the national bordercontrol.






Although it is possible to extract the content of a masterlist on a command prompt using some tools, it is preferred to do this with an user friendly tool in a Graphical User Interface (GUI). Searching on the Internet for such a tool is a little disappointing ... you probably can't find such a tool. This is the reason why the Expertisecenter PKI of the Judicial Information Service wrote one and we are proud to bring this to you as freeware and free to use.

The “MLEplorer” has version 1.2.3 and is improved over time. We hope with this tool that we fulfill a need for bordercontrol- or pki-experts who have responsibilities with CSCA certificates.



### 3. Installation

Unzipping the 2025-MLEplorer.zip creates a directory “2025-MLEplorer” containing the following files:

Naam
 2025 Manual MLEplorer.pdf
 ICAO_ml_Nov2024.ml
 mlexplorer-1.2.3.jar
 OpenJDK17U-jdk_x64_windows_hotspot_17.0.14_7.msi
 United Nations CSCA 2.pem

The hashes of the “ml-explorer-1.2.3.jar” is:

- SHA1: 2fbdd51678abf119cf1ee0601182ebd0f5005ae4
- SHA256: 5cadca7869cdfb5d36aa0064204223ec650eda7e854ccafa463608600349a88d

The hashes of the “OpenJDK17U-jdk\_x64\_windows\_hotspot\_17.0.14.1\_1.msi” is:

- SHA1: da20d913f5dd52b87d66d6fe2511526c580523a0
- SHA256: 021589cc7d85392b24c3992331d84b25f0b1c1e6603dae07594abb97105fa67f

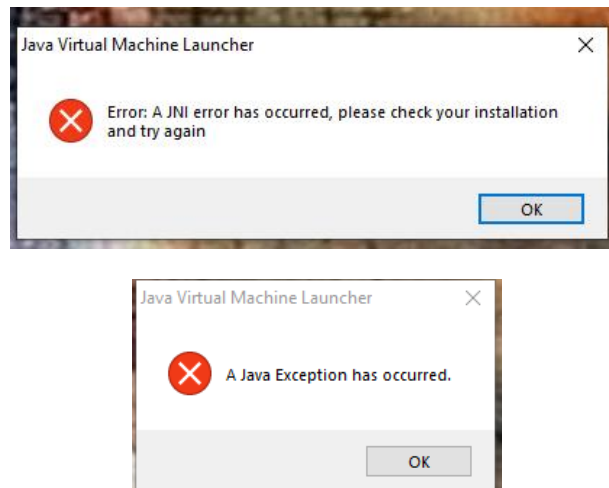
The hashes of the “ICAO\_ml\_Nov2024.ml” is:

- SHA1: 272663c17bf53bad2833670f61e4fae4682543c4
- SHA256: 068b2728a590d7e41bd9e9e79d3f6f646f3d545bd2757e0418eeb02baaf8fe48

The hashes of the “United Nations CSCA 2.pem” is:

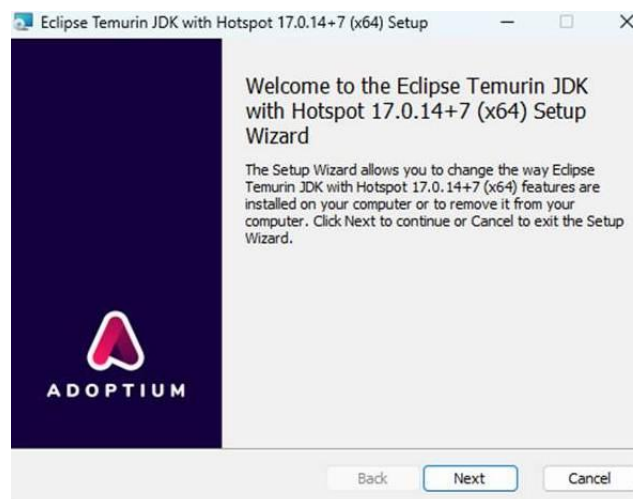
- SHA1: ea84f9cf81f8928bf617f8d48b9f9ee585f4486a
- SHA256: 5a5917d2a0df783b9e62c45689238f7648d7c825f3463ac2cf1e9d9d81b5a784

You could try directly to double click on the “MI-explorer-1.2.3”. De tool can start if OpenJDK17 is already installed, otherwise an error will occur.

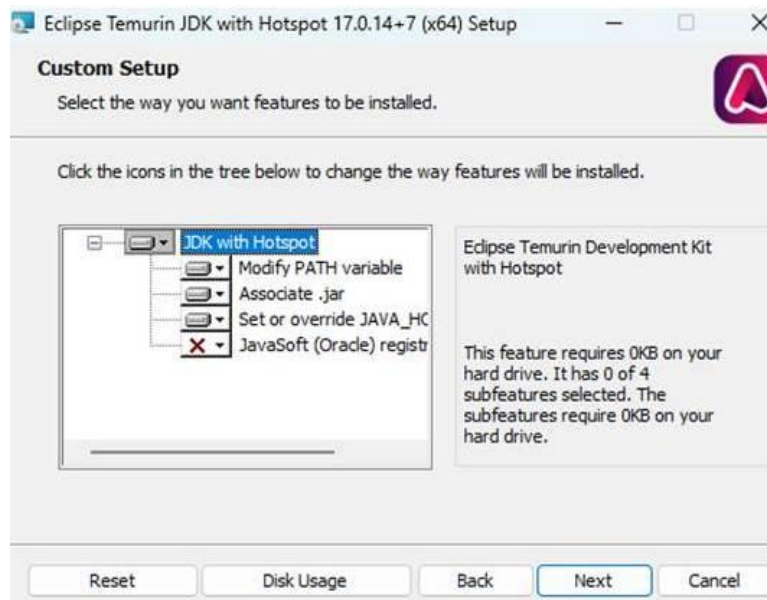


If an error occur then the “OpenJDK17U-jdk\_x64\_windows\_hotspot\_17.0.14.7.msi” must be installed first. You can also use this file as an update if you have already installed an earlier version of the “OpenJDK17U-jdk\_x64”.

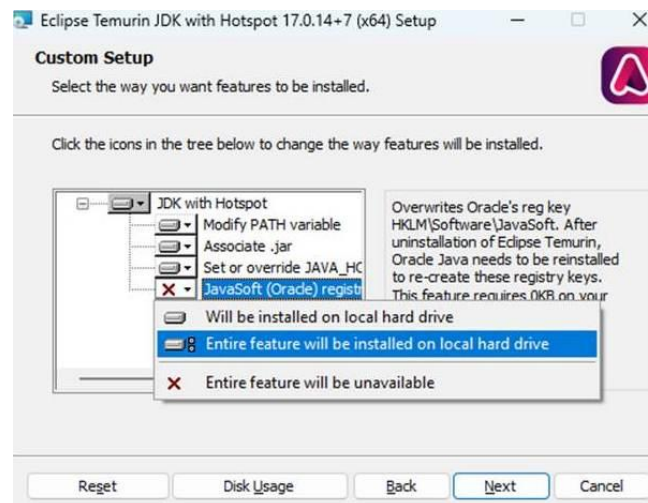
Double click on the msi file. A welcome screen will appear:



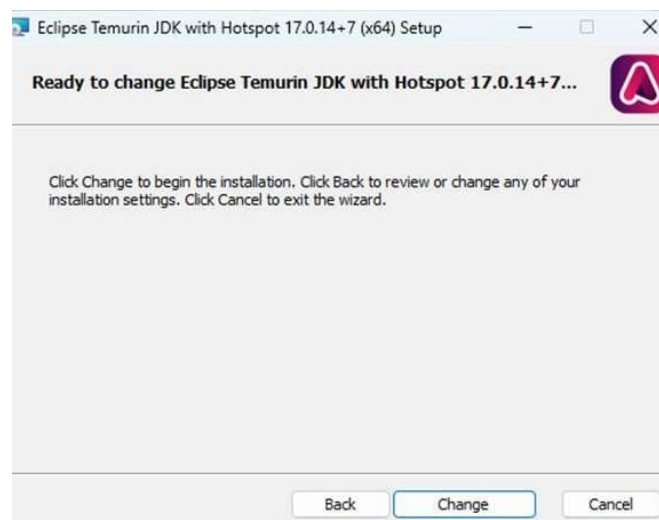
Click on next. The custom setup will appear:



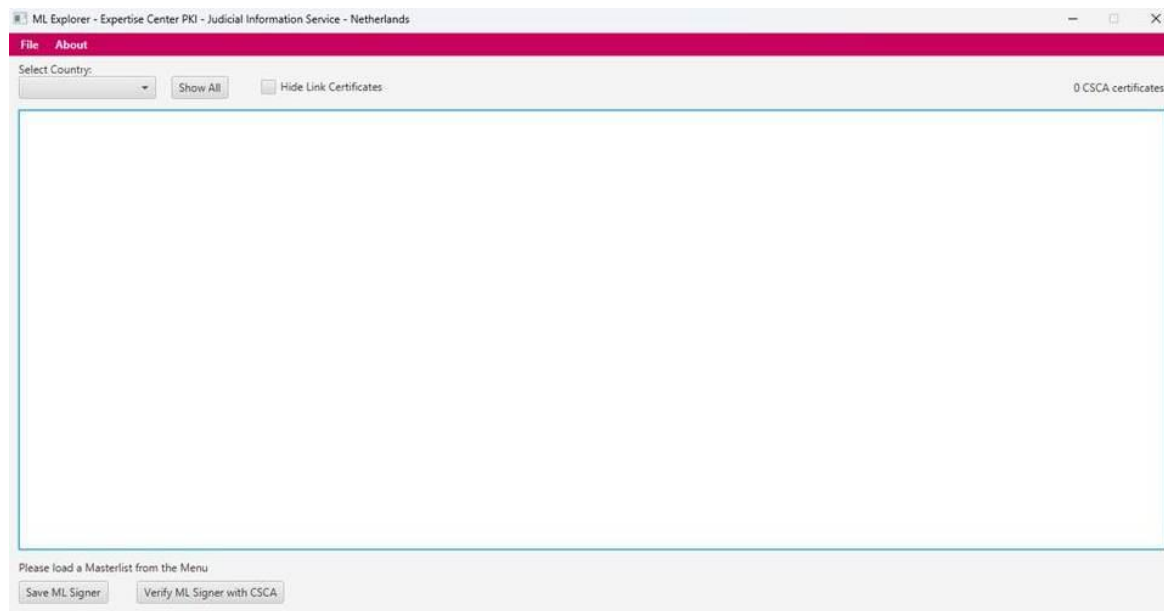
Be sure to set Java\_Home variable by choosing “Entire feature will be installed on local hard drive”.



Click next and install to start the installation. Follow the instructions on screen.

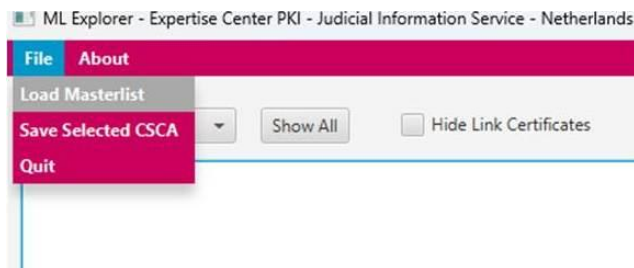


After installation (press finish) double click on the “MI-explorer-1.2.3”. The GUI will start:

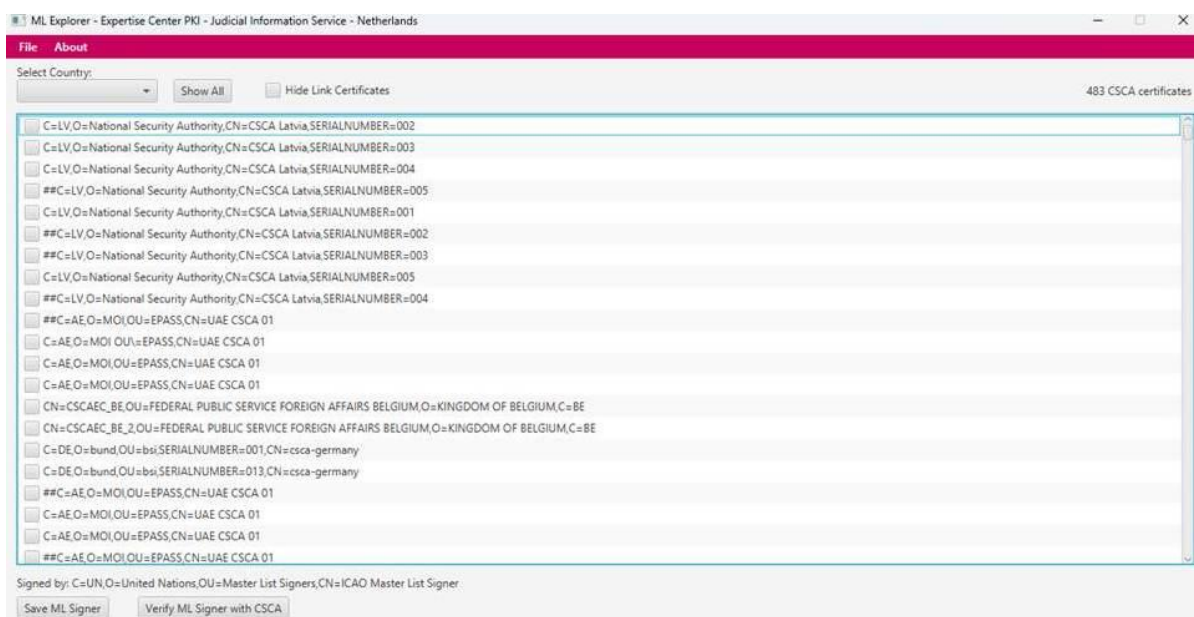


## 4. Load a Masterlist

From the menu “File” select “Load Masterlist”.



The windows explorer will appear and you can select a masterlist. For your convenience we added the ICAO masterlist within the zip file “ICAO\_ml\_Nov2024.ml”. You can select this one or whatever other masterlist you have.



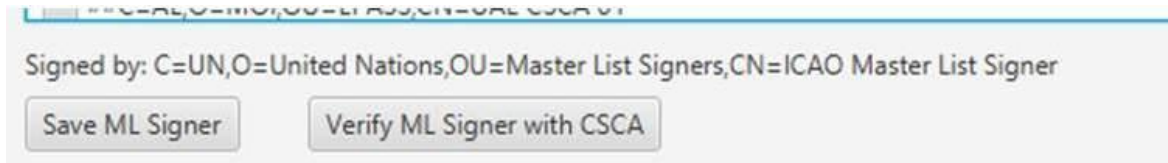
With the scrollbar on the right of the pane you can scroll to the whole list to see all the certificates.

You see on the top right of the GUI the number of certificates inside the loaded masterlist.



## 5. Download ML Sign Certificate

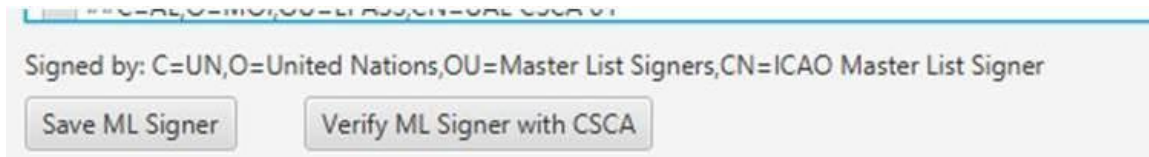
A masterlist is signed by a country Masterlist Signer use a masterlist signer certificate. To check this certificate (for instance with an ASN1-parser or certificate checker) you can download this ML Sign Certificate by using the “Save ML Signer” button on the bottom of the pane.



The ‘Save Masterlist Signer’ will appear where you can choose where to store the file. In our example of the ICAO masterlist the file name will be “ICAO Masterlist Signer.pem” but you can change the name of the file in whatever you want. The certificate will be stored in “pem” format.

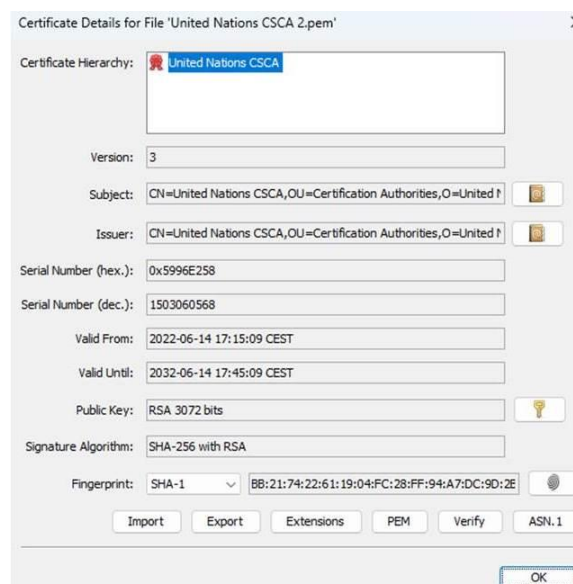
## 6. Verify with CSCA Certificate

The issuing country, creating a masterlist, has an unique masterlist signer. This masterlist signer is signed by their CSCA. You can check if the masterlist signer is signed by the issuing countries CSCA by using the button “Verify ML Signer with CSCA” on the bottom of the pane.



Clicking this button open the “Upload CSCA Certificate” pane. Here you can search and select the CSCA on your system for upload.

For your convenience the United Nations CSCA 2.pem is within the zip file. In our example of the ICAO masterlist you can upload this certificate.



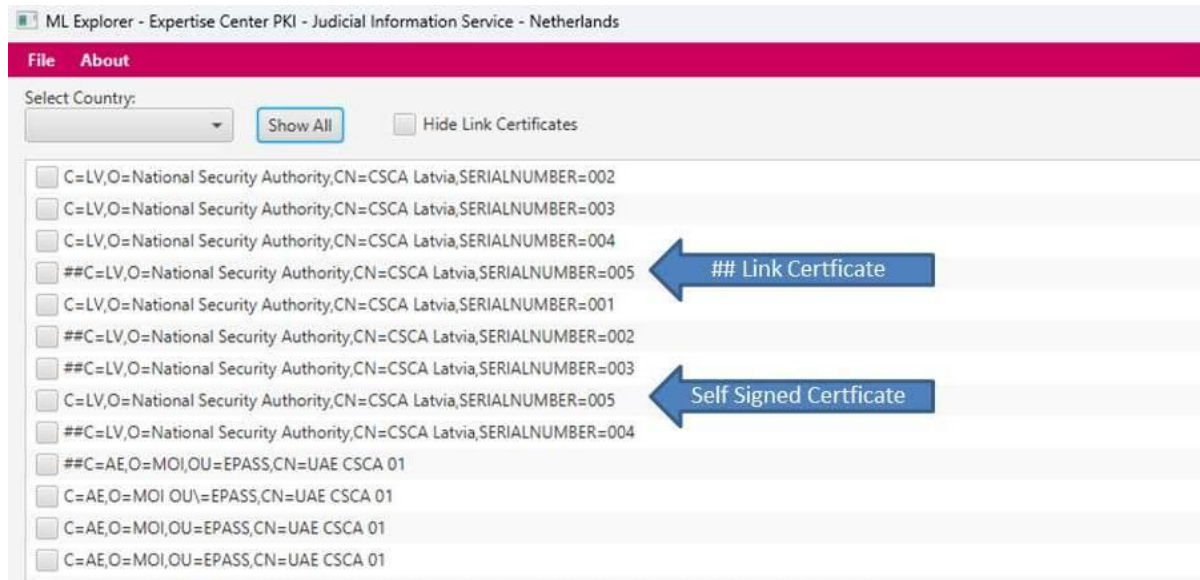
The tool will verify the digital signature and the result will appear on the bottom of the pane.



In our example the check was successful. If not, you get a Warning that the masterlist was not signed by the selected CSCA.

## 7. The content of the Masterlist

The content of a masterlist are selfsigned certificates (CSCA's) and link certificates. The difference in the list is indicated by “##” for a link certificate. Without these signs the certificate is a selfsigned (root) CSCA.

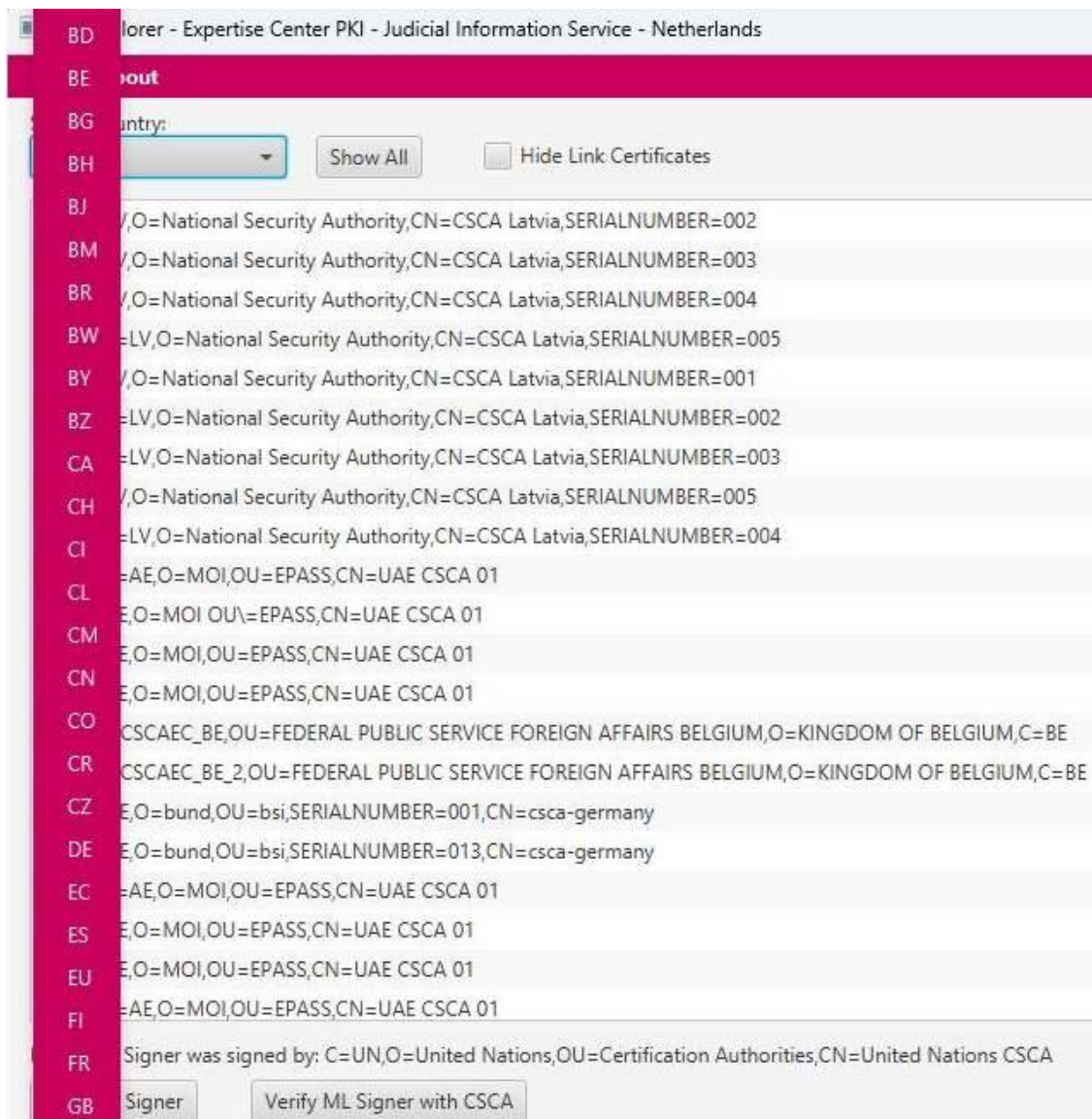


In the upper part of the pane you can select “Hide Link Certs only”.

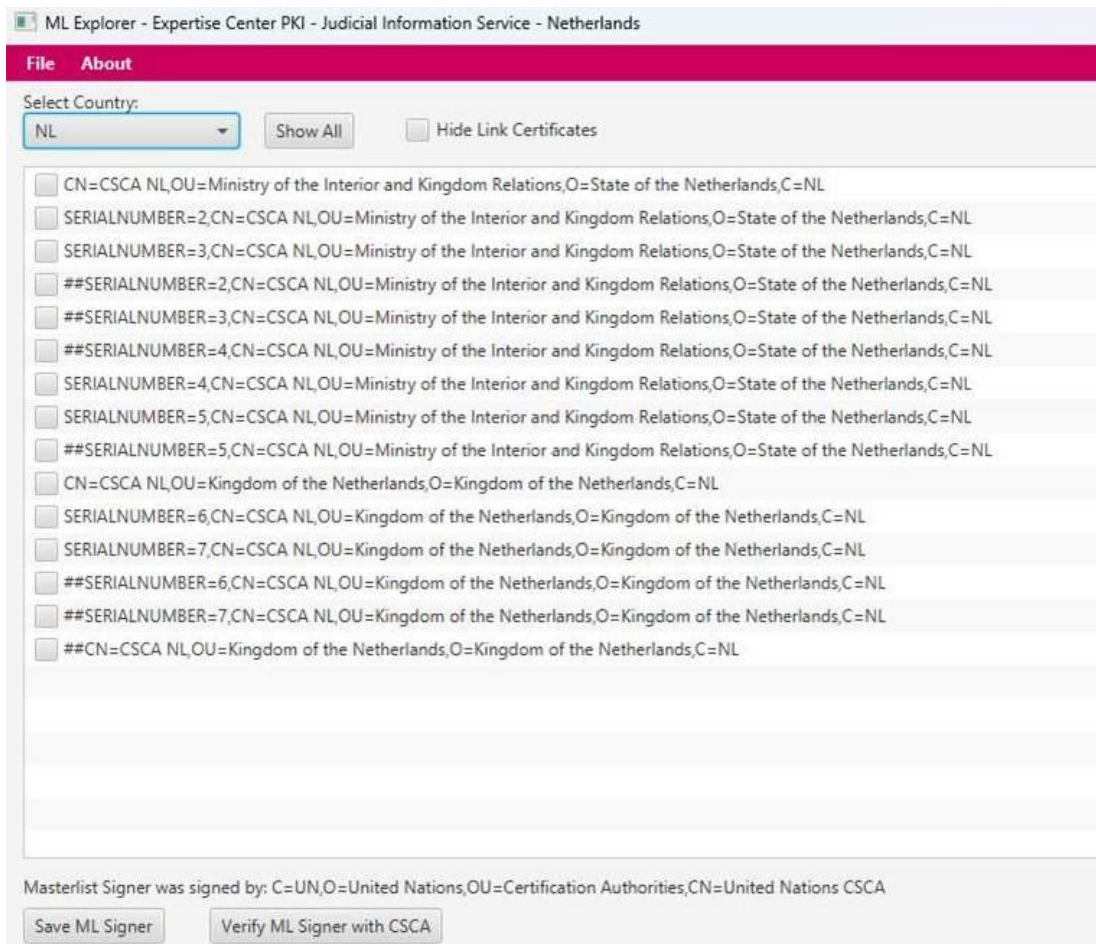


The list will show only the self signed CSCA certificates.

In the upper part of the pane you can click on “Select Country” to select in a dropdown menu your choice for selecting a country.



For example select “NL” and the list gives you all the certificates in the masterlist of the Netherlands.



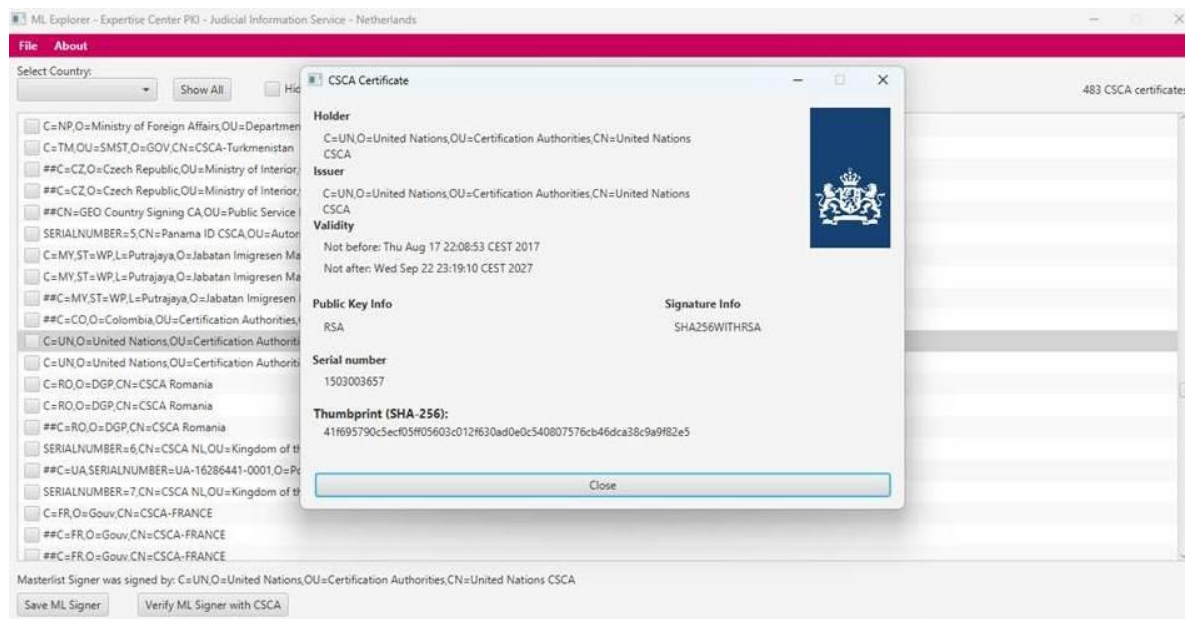
For presenting the whole list again you can use the button “Show All” in the upper pane next to “Select Country”.



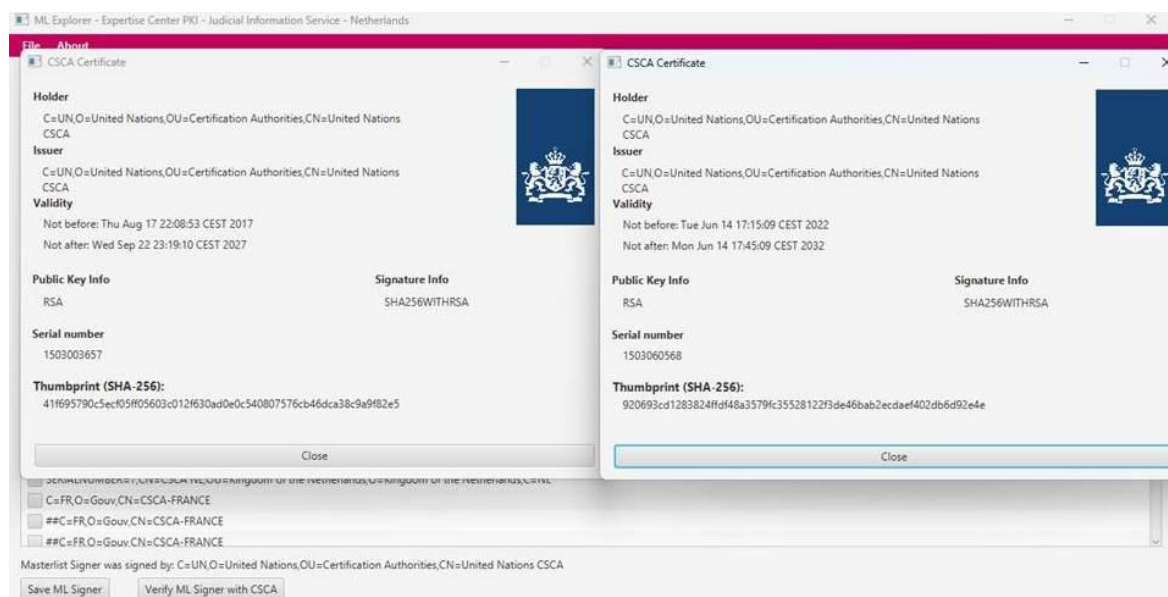


## 8. Check and Save selected CSCA's

If you select a certificate you can 'double click', with left mouse button on the selection, to get some extra information about the selected certificate.



A new appears with info of the selected CSCA certificate. You will see the 'Holder' and 'Issuer'. The 'Validity', 'Public Key Info', 'Signature Info' and the 'Serialnumber'. All this information is for your convenience to better select a certain certificate. As an extra the 'Thumbprint' is given for checking and comparing the thumbprints after downloading the certificate.



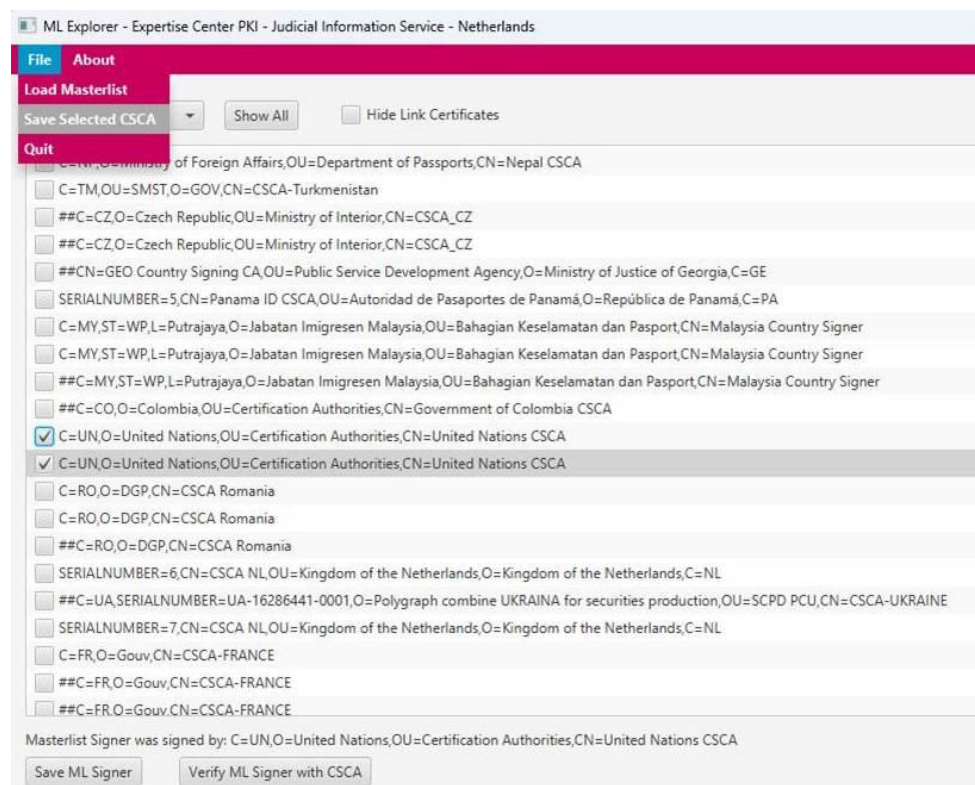
The selection is not limited to one certificate. You can 'double click' on another certificate which give you the opportunity to compare certificates.

You have to close every popup window with the 'exit x' on the right top of the window.

With a mouse click in the square box list of certificates you can select one or more CSCA's.



From the menu “File” selecting the “Save Selected CSCA” you can download the CSCA or selection of CSCA's.



The “Save selected CSCA” screen appears to store the selected CSCA's as a .zip- file. The filename can be of your choice but default it will be named as “masterlist-cscas.zip”.

If you select just one certificate you can use the same “Save selected CSCA”, but now the filename will be default <distinguished name>.pem. Of course you could select any name you want.

## 9. About

In the menu bar you can select the “About” and “EAC-PKI”.



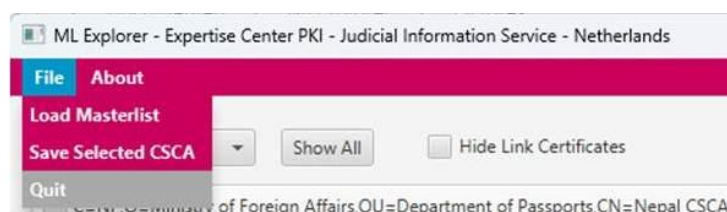
The about screen appears.



You can close this pane by selecting “Close” or by clicking the exit “x”.

## 10. Quit

Close the tool by selecting “Quit” in the “File” menu or by clicking the exit “x”.





Version 1.2.3

2025 Special edition for the freeware program “MLEplorer”

Judicial Information Services

Operations, expert team PKI



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