

## [Guide] How to Use Ledger Nano S with Monero GUI

Hardware wallet support has finally arrived for the masses with the addition of support for the Ledger Nano S in version 0.12.3.0 of the Monero GUI. Even without knowledge of the Monero command line client, you can now safely generate a Monero wallet based on the cryptographic seed stored on the secure element of your Ledger Nano S.

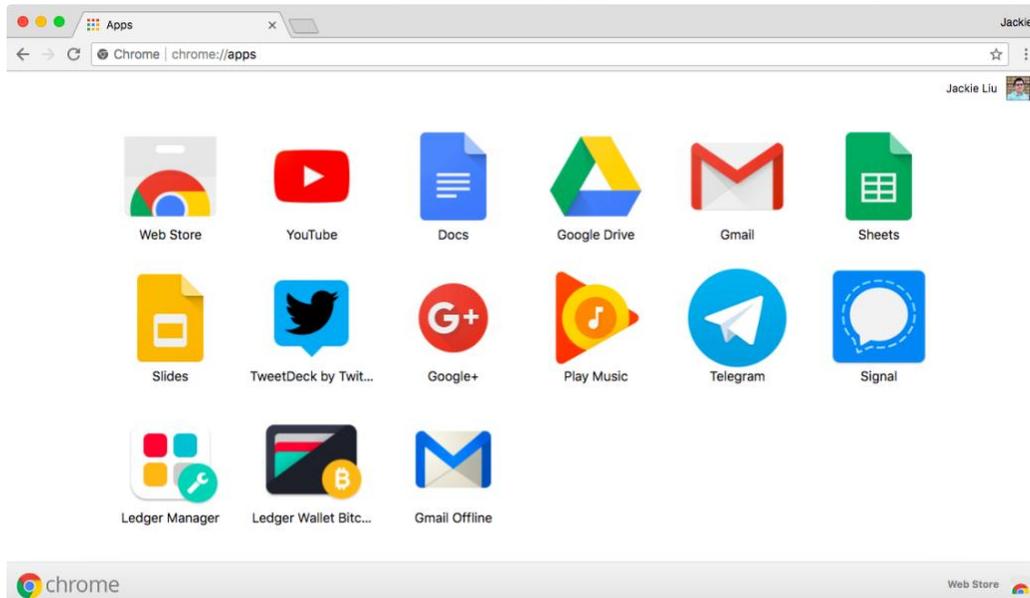
Here are the software prerequisites for setting up Monero support on Ledger Nano S:

- Windows 7 or higher, MacOS, or Linux
- Latest version of the Monero GUI from [getmonero.org](http://getmonero.org)
- Ledger Manager installed from [Chrome Web Store](https://chrome.google.com/webstore/detail/ledgermanager)

**Important:** Always ensure you have your 24-word seed written down in a safe place before doing anything to your Ledger Nano S, especially when installing a new “app” or updating the firmware. In case anything goes wrong, this phrase is the only way to restore access to the wallets for all the cryptocurrencies you have stored on the Ledger.

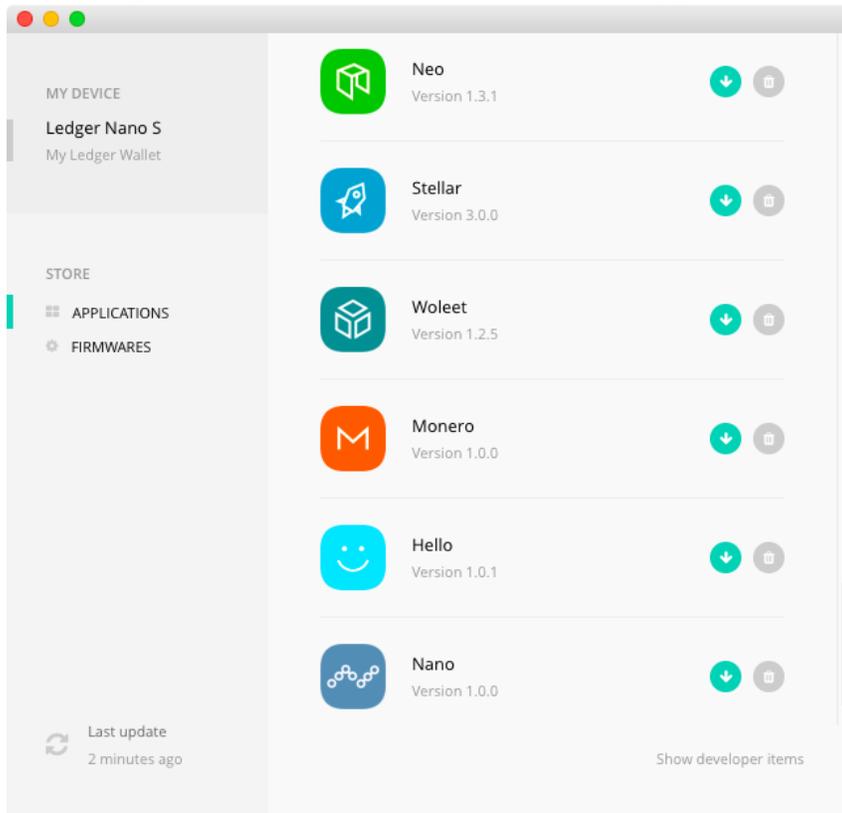
## Install the Monero app on your Ledger Nano S

1. Launch Chrome, browse to <chrome://apps/>, and click on “Ledger Manager.”



2. Plug in your Ledger Nano S using the supplied USB cable, and enter your PIN using the hardware buttons on the Ledger.

3. In the “Applications” pane of the Ledger Manager, scroll down to “Monero” and click the green download button to install the app.



4. You will see a prompt on your Ledger’s display stating “Allow Ledger Manager” asking you to confirm the install. Press the hardware button corresponding to the checkmark to allow the install to proceed.



5. Once installed, the Monero app will be displayed on the home screen of your Ledger Nano S. You are now ready to proceed to the next step.



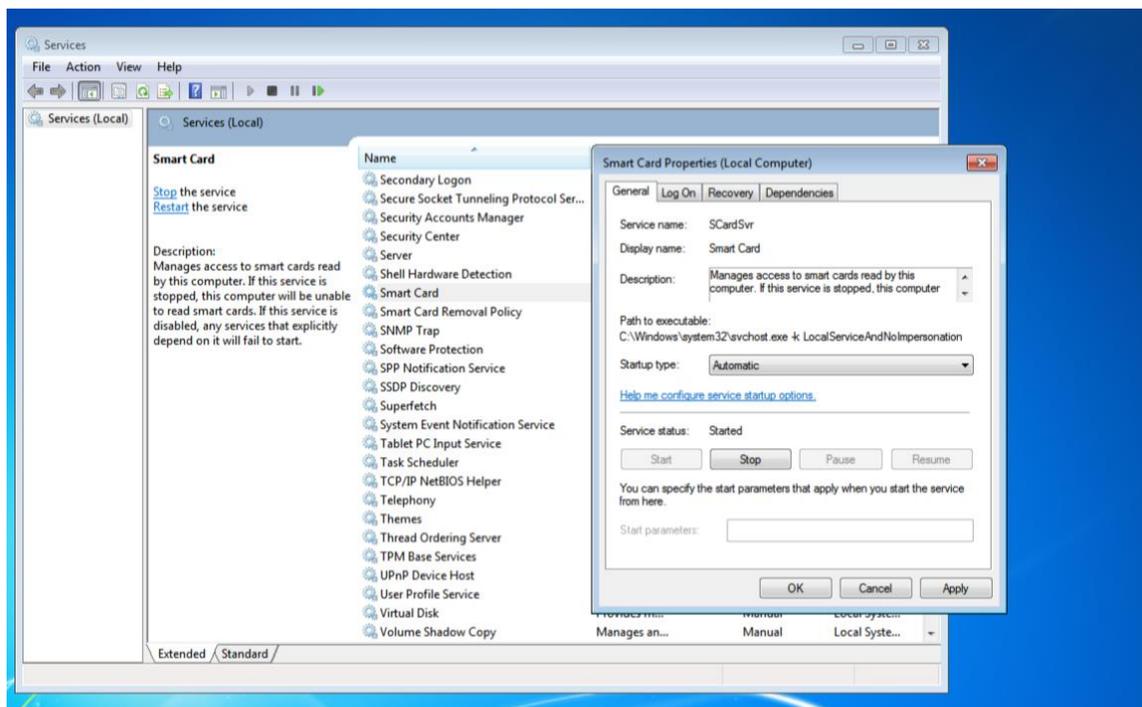
# Set up “Smart Card” service on your operating system

Using the Ledger Nano S with the Monero wallet requires setting up smart card support on your operating system. Unlike the Ledger Wallet Bitcoin app that is “plug and play”, the Monero desktop wallet requires direct communication with your Ledger through your OS drivers - so some configuration is required.

Quit the Ledger Manager, and unplug your Ledger device from your computer’s USB port before proceeding with these steps.

## Windows 7, 8, and 10

1. Windows users simply need to enable the “Smart Card” service from the “Services” management console. Open “Run” from the Start Menu, type “services.msc”, and click “OK.”
2. Scroll down until you see the “Smart Card” service. You will probably find that it is set to manually start, and has not yet been started. Right click on the service, and click “Properties” in the context menu.
3. In the dialog that pops up, change “Startup type” to “Automatic” from the drop-down menu (so it is enabled on each reboot) and click the “Start” button below to start the service.



## **MacOS**

The process to enable “Smart Card Services” support in MacOS is somewhat more involved. You need to temporarily disable System Integrity Protection to modify a system file which will allow your Mac to recognize your Ledger Nano S as a legitimate smart card device. This requires booting to the Recovery Mode and executing some terminal commands.

The steps below are republished from [tficharmers](#)' answer to the Monero Stack Exchange question [“How do I make my macOS detect my Ledger Nano S when plugged in?”](#), under the [CC BY-SA 3.0 License](#).

### **Part 1 - Check if you have Smart Card Services installed.**

1. Open a Finder window. Then press CMD + SHIFT + G. Paste the following into the prompt window and select Go:  
`/usr/libexec/SmartCardServices/drivers/`
  2. If Finder can find this folder, then you have Smart Card Services installed and can move onto Part 2. If Finder doesn't find this folder, then you will have to install the the Smart Card Services by choosing the correct installer for the macOS version you are using. You can find the installers here:  
<https://smartcardservices.github.io/installers/>
- Once installed, you can move onto Part 2.

### **Part 2 - Disabling SIP (System Integrity Protection) in order to edit a file.**

1. You will need to boot into your Mac's Recovery OS in order to edit a file. To do this, restart your Mac and **immediately hold down** the CMD + R keys after you hear the Apple startup 'boooong', until you notice you are in the Recovery OS (this will have a light grey background and will look different to your usual user account desktop). Ignore the macOS Utilities window and move onto point 2.
  2. Launch Terminal from the Utilities menu.
  3. Enter the following command and press Return:  
`csrutil disable`
  4. Restart your Mac.
  5. Once restarted, open a Terminal window and type:  
`csrutil status`
- Press Return and you should see the following message:  
System Integrity Protection status: disabled.
- If it says that it's enabled then you may have to repeat Part 2.

### Part 3 - Editing a file.

1. Open a Terminal window and paste this command:

```
sudo nano /usr/libexec/SmartCardServices/drivers/ifd-ccid.bundle/Contents/Info.plist
```

Press Return and you will get asked for your user password. Enter it and press Return.

You will then enter the editor.

2. Using your down arrow key (or you might be able to scroll using your mouse), scroll down the file until you see:

```
<key>ifdVendorID</key>
```

Immediately following this, you will see there is an <array> tag. Inside the <array> tag there are many <string> tags on separate lines. Begin to scroll down the <string> tags until you get to the last one inside the <array>. Move the cursor after the last closing </string> tag and press Return to go onto a new line.

3. Press the Tab key twice to indent the cursor and then paste/type the following:

```
<string>0x2C97</string>
```

```
                <string>0x062D</string>
                <string>0x2C97</string>
            </array>
```

4. Immediately after the closing </array> tag, you will see the following:

```
<key>ifdProductID</key>
```

Like before, begin to scroll down the <string> tags until you get to the last one.

5. After the final </string> tag, make a new line, indent twice and paste the following:

```
<string>0x0001</string>
```

```
                <string>0x0001</string>
                <string>0x0001</string>
            </array>
```

6. Immediately after the closing </array> tag, you will see the following:

```
<key>ifdFriendlyName</key>
```

Like before, begin to scroll down the <string> tags until you get to the last one.

7. After the final </string> tag, make a new line, indent twice and paste the following:

```
<string>Ledger Token</string>
```

```
                <string>THRC Smart Card Reader</string>
                <string>Ledger Token</string>
            </array>
```

8. To save/write out the file, press CTRL + O. Then press Return. The file has been saved.

9. Press CTRL + X to exit the editor and then close Terminal.

**Please note:** Even if the `<string>` you need to add already exists, you will still need to add it, despite it being a duplicate.

#### **Part 4 - Enabling SIP (System Integrity Protection) to restore Mac OS security.**

1. Once again, boot to the Recovery OS by restarting your machine (see Part 2.1 for this explanation).
2. Launch `Terminal` from the `Utilities` menu.
3. Enter the following command and press `Return`:  
`csrutil enable`
4. Restart your Mac.
5. You can check that SIP has been enabled by opening up a new `Terminal` window and typing:

`csrutil status`

Press `Return` and you see the following message:

System Integrity Protection status: enabled.

If the status is `disabled`, then you will need to redo Part 4, otherwise your Mac might be at risk.

### **Linux**

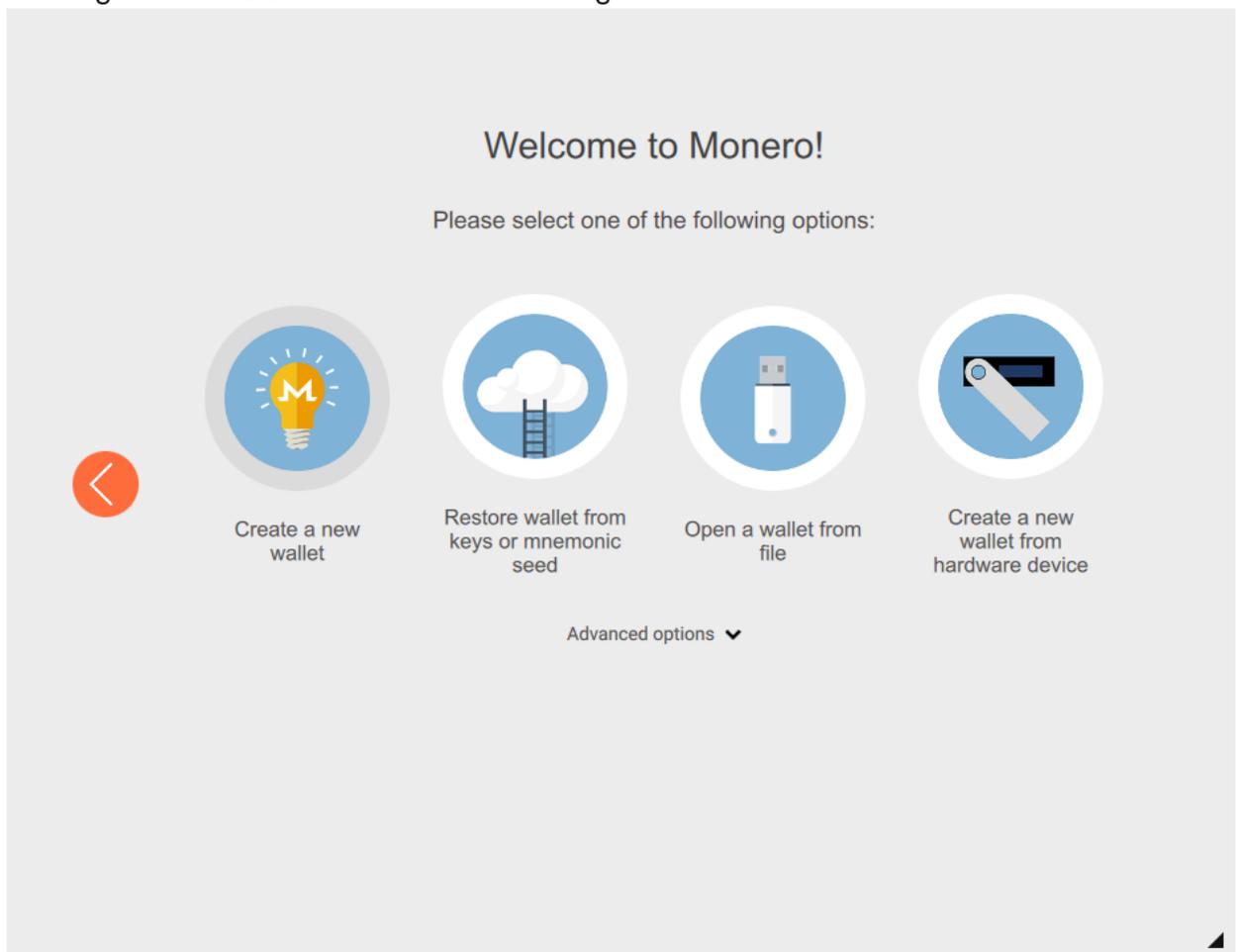
These steps should be performed as root, using the `sudo` command.

1. Check that the following packages are installed, and if not, add them using the package manager for your distribution: `pcsc-tools pcscd libpcsclite1:amd64`
2. Using a text editor such as `vi` or `nano`, edit the configuration file `/etc/libccid_Info.plist`. You will find 3 sections in the file `<key>ifdVendorID</key>`, `<key>ifdProductID</key>`, and `<key>ifdFriendlyName</key>`. At the end of each list of keys, add a new line with:
  - i. In `<key>ifdVendorID</key>` add the entry `<string>0x2C97</string>`
  - ii. In `<key>ifdProductID</key>` add the entry `<string>0x0001</string>`
  - iii. In `<key>ifdFriendlyName</key>` add the entry `<string>Ledger Token</string>`

## Create a Monero wallet in the GUI

Regardless of which operating system you are using, the steps to create a Monero wallet from your Ledger Nano S are the same.

1. Before you begin, plug in your Nano Ledger S using the USB cable and input your PIN. Select the Monero app by navigating left/right using one of the hardware buttons at a time, and pressing both buttons simultaneously to confirm.
2. Open the Monero wallet GUI by launching *monero-wallet-gui.exe* (Windows), *monero-wallet-gui* from the Applications folder in Finder (MacOS), or *./monero-wallet-gui* (Linux).
3. Select your language of choice and at the following screen, choose “Create a new wallet from hardware device.” If you do not see this option, ensure you are running Monero GUI version 0.12.3.0 or higher.



4. On this screen, specify a name for your wallet, and where you want to save it.
  - a. By default, your Monero wallet files are saved in your Documents folder (Windows) or your home directory (Mac and Linux). If you lose this file,

you can restore the same wallet by plugging in your Ledger and following this process again.

- b. To speed up blockchain scanning for a new wallet (one that has never received funds before), you should set “Restore height” to the current block height displayed at [moneroblocks.info](https://moneroblocks.info) minus 1000. Should you ever need to restore the wallet, this value should be set to the block height of the first incoming transaction to your wallet.
- c. The “Subaddress lookahead” should be set to 300:2. Then, click “Next” to proceed. There may be a brief delay as the Monero GUI retrieves the information from the Ledger Nano S needed to securely create the wallet.

Create a new wallet from hardware device

Wallet name

ledger-wallet

1625650

300:2

Device name

Ledger

Your wallet is stored in: /Users/jackieliu/Monero/wallets/

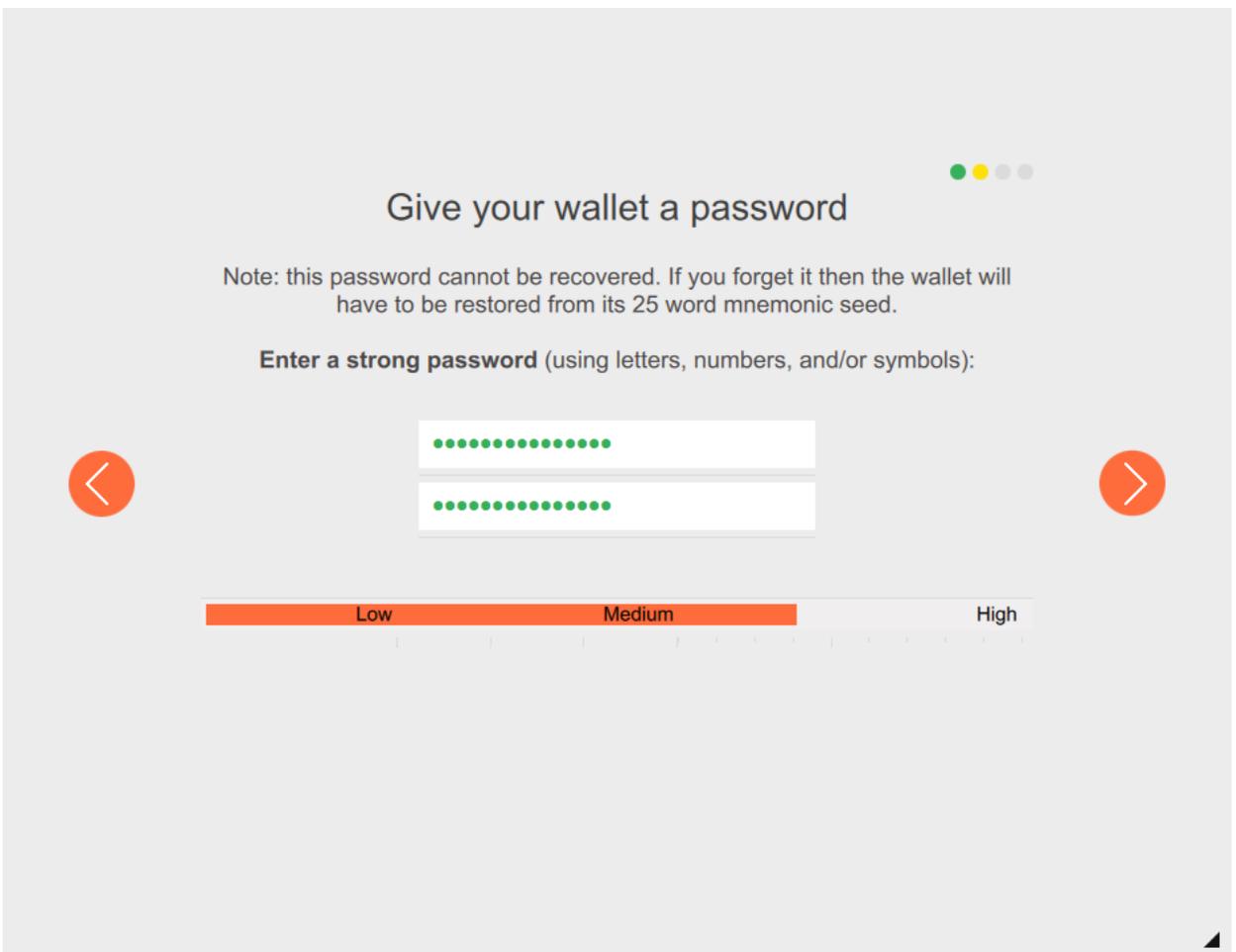
/Users/jackieliu/Monero/wallets/

5. Click “Next” and you will be prompted on your Ledger Nano S display whether you wish to “Export View Key” from the Ledger to your computer. Press the hardware button corresponding to the checkmark two times consecutively to confirm. It is recommended to do so, as long as you trust the computer you’re using with your privacy. If you deny this request, you will not be able to view your

Monero balance or transaction history on your desktop.



6. Set a password for the wallet file to secure it from prying eyes. This password, in addition to physical possession of the Ledger device is needed to open the wallet file.



7. Next, you will need to configure whether you wish use a local or remote node. If you choose "Start a node automatically in background", the Monero GUI client will download the entire Monero blockchain, which is over 50 GB in size and store it on your hard drive. Depending on your Internet connection speed, it can take a few days to sync the entire blockchain, but it is the most private way to transact with Monero. If you wish to use a remote node instead, select the

“Connect to a remote node” option. You can use a random open node provided by volunteers in the Monero community by specifying *node.moneroworld.com* at port *18089*. Click “Next” to proceed.

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## Daemon settings

To be able to communicate with the Monero network your wallet needs to be connected to a Monero node. For best privacy it's recommended to run your own node.

If you don't have the option to run your own node, there's an option to connect to a remote node.

Start a node automatically in background (recommended)

Blockchain location

(optional)

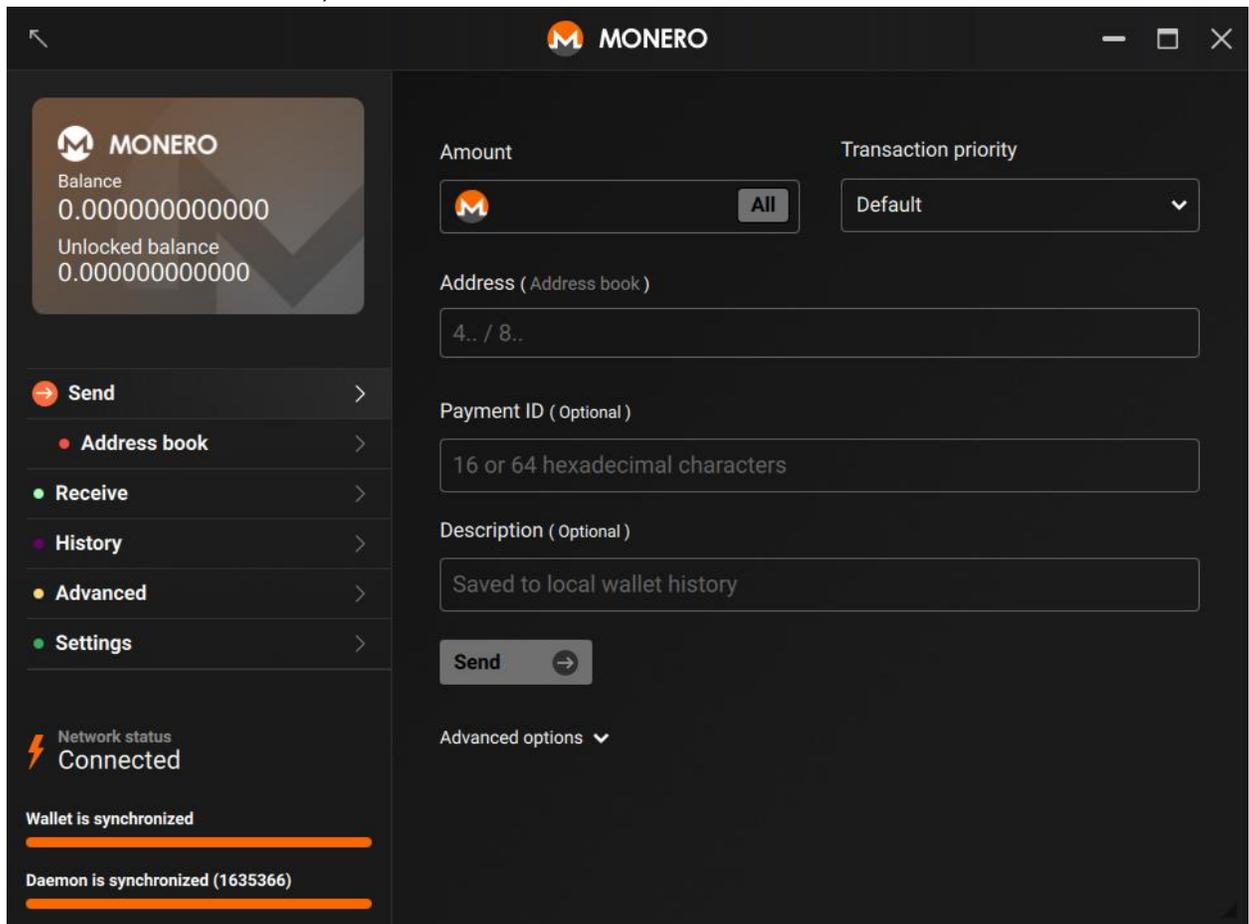
Bootstrap node (leave blank if not wanted)

Remote Node Hostname / IP      Port

Connect to a remote node

8. You will see a summary of all the information you entered in the previous steps. If everything looks good, click “Use Monero” in the bottom right hand corner of the GUI to start using the wallet.
9. The GUI will take some time to scan the most recent blocks on the Monero blockchain for any transactions relevant to your wallet, using your view key. Once you see “Wallet is synchronized” and “Daemon is synchronized” in the bottom left hand corner of the interface, you can send & receive Monero transactions. When you make a spend transaction, you will be asked to approve it on your Ledger device. Once you’ve carefully verified that both the amount and destination address is correct, press the hardware button corresponding to the checkmark on your Ledger’s display to sign the transaction with your private spend key (stored

on the secure element) and finalize the transaction.



10. In the future, when you wish to view the funds on your Ledger Monero wallet, your Ledger Nano S must be plugged in & unlocked with the Monero app open on the device. Then open the Monero GUI on your desktop, choose "Open a wallet from file", browse to the wallet file that you created, and enter your password.