FOLMCOIN

FOLM.IO

# Cold FOLM Masternode Setup on VPS running Ubuntu 16.04

by unclear#0122
Version 1.0

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# Document History

| Version | Author | Changes |
|---|---|---|
| 1.0 | unclear#0122 | Initial release of the document |
| | | |
| | | |
| | | |

# Disclaimer

This document describes the process of setup, configuration and activation of new masternode in FOLM blockchain network. Purpose of the document is to provide instructions how to start a masternode on headless VPS running Ubuntu 16.04

- All node-specific data provided in code examples is just for visualization purpose and should not be used for specific masternode configuration.
- Author is not responsible for the losses caused by improper use of the information provided in examples.
- Below instruction assume that you have SSH access to the host and have permission to run commands with root privileges.

## How to use the document.

All parts of this instruction provided as a clear step-by-step process. Please, first read each step till the end and execute only if you understood the contents and confident with results.

## Code blocks legend

Code blocks in the instruction have following legend:

| | |
|---|---|
| **user@host:~$** | - Linux command prompt |
| **bold** | - data to be added by user |
| ***bold-italics*** | - commands to be executed by user in Linux command line |
| *italics* | - commands execution output |
| <in brackets> | - user specific variables |

```
Command prompt block
```

```
Text editor blocks
```

# I. About FOLM Coin

FOLM coin was designed as a masternode-based payment system. Our team, has been reviewing developments in Blockchain technology over time and has also studied many blockchain-based cryptocurrencies and identified many deficiencies related to them. We wanted to create a new innovative and cutting-edge cryptocurrency that will make several improvements in Blockchain technology and address some of these deficiencies. We decided to create FOLM coin.

FOLM Specifications

| | |
|---|---|
| Ticker | **FLM** |
| Algorithm | **PHI1612** |
| Blocktime | **120 seconds (2 minutes)** |
| Reward | **45 ( 30 POW + 15 MN )** |
| Block Confirms for Mined Blocks | **49 ( 98 Minutes )** |
| Block Confirms for Send/Receive | **10 ( 20 minutes )** |
| Block Maximum Size | **4 MB** |
| Maximum Coins | **23.001.916 (POW) (Included premine)** |
| Premine | **1.136.956 (%5 of POW)** |
| Halving | **Unique FOLM Supply Method for Every Year** |
| Default Port / RPC Port | **53656 / 53654** |
| Minimum Transaction Fee | **0,0001 FLM** |

For more information, please refer to the FOLM whitepaper available by the link:

https://folmcoin.com/whitepapers/folm_en_whitepaper_v1.0.pdf

## II. Scenario description

This manual describes how to configure one or several VPS hosted masternodes to be managed via single local wallet.

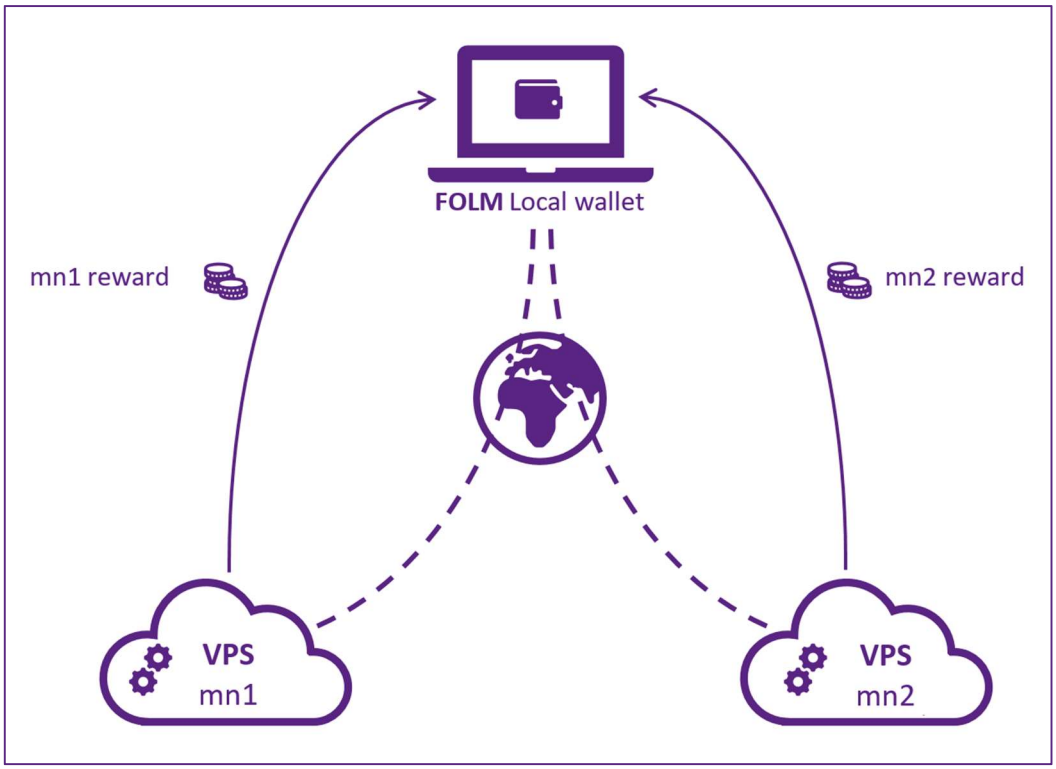



*Figure 1: Masternode connection scheme*

Local wallet will be used for all collateral transactions as well it will collect rewards from all masternodes.

In this scenario local wallet should be running for the period of masternode configuration, all other time it can be shutdown. VPS servers will remain running 24x7 providing stable masternode functionality and sending its rewards to the local wallet.

# III. VPS Requirements

This instruction targeting the Linux based VPS without graphical interface.

Following configuration considered as sufficient to run services properly:

- CPU: 1 shared CPU
- RAM: 1GB RAM
- Storage: 16GB SDD or HDD storage
- 1 network interface with static public IPv4 address

OS requirements:

- Ubuntu version 16.04
- Client requirements:
  SSH terminal
  SSH access to public IP address of VPS

Note: Host sharing with non-FOLM masternode not restricted, but also not guaranteed to be working.

# IV. VPS General Preparation

VPS installation and setup is out of scope of this document. You can choose one of the VPS hosting services and follow its documentation to configure it.

Please refer to the information available in public access to perform preparational steps or contact FOLM community for knowledge sharing.

Following requirements mandatory to successfully run masternode instance:

- ✓ VPS has at least one static public IPv4 address;
- ✓ VPS is reachable by tcp port 22[1] (ssh) from client for administration purposes;
- ✓ VPS accessible from Internet by tcp ports 53654 and 53656[2]

Recommended preparational steps:

- ✓ Update operating system;
- ✓ Create swap file of at least 2GB size if possible;
- ✓ Install *nano* text editor.
- ✓ Setup Intrusion Prevention application, e.g. Fail2Ban;
- ✓ Configure non-root user to run masternode application;
- ✓ Setup certificate based SSH authentication;

Additional preparational steps, which are out of scope of this instruction:

- ➢ Restrict root access via SSH;
- ➢ Setup firewall application if not provided by VPS hosting service;

[1] SSH port can be re-mapped to another port. In such case this requirement is not applicable
[2] TCP port 53656 used for FOLM p2p messaging and 53654 used for RPC requests to daemon

# V. Data collection table

For the time of masternode configuration, we recommend creating the below table for each cold masternode to collect there all the required variables.

Values in the table below is just an example.

| Variable name | Value | Source |
|---|---|---|
| <vpsexternalip> | 194.163.19.102 | VPS public IPv4 address |
| <walletname> | mn2 | User defined |
| <mnpayeeaddress> | FkBJ3B4T81oJDJArLBi8tW7MYd3YZ9CgQL | Output in Step 2 |
| <masternodeprivatekey> | P0Jt98ChPj2sYYr6dNB8gu6GhKB7DFPk1aUubTzuNP6WeW2jH | Output in Step 4 |
| <txhash> | 2897029bb78db2df20b9c4c20976d92abdae3092c0088de174a7157d68ff9ffd | Output in Step 7 |
| <txindex> | 1 | Output in Step 7 |
| <masternodealias> | mn2 | User defined |
| <rpcuser> | mnadmin | User defined |
| <rpcpassword>[3] | NbiPN6HCboXWM24 | User defined |

[3] Please avoid usage of "="symbol in rpcpassword.

# VI. Local wallet preparation

## Step 1: Local wallet installation

Please follow wallet installation instructions.

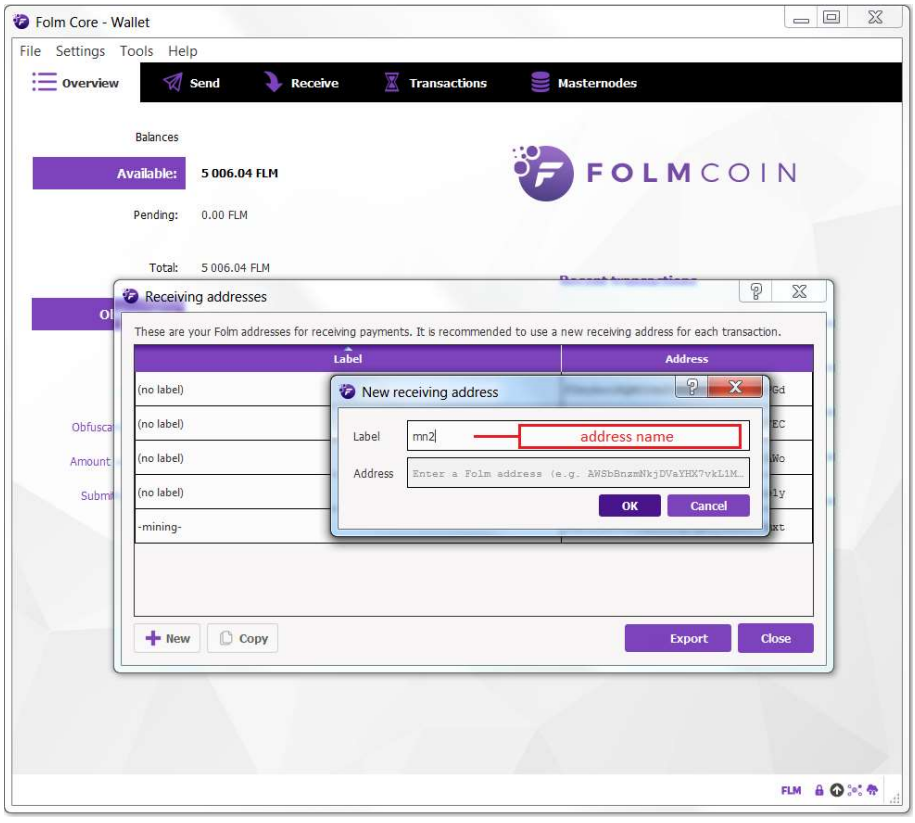
Current versions of wallet available on official site https://folm.io/download.

**Note**: during first wallet launch you will be asked about data directory location. Please note it down, you will need to access it later for configuration file modification.

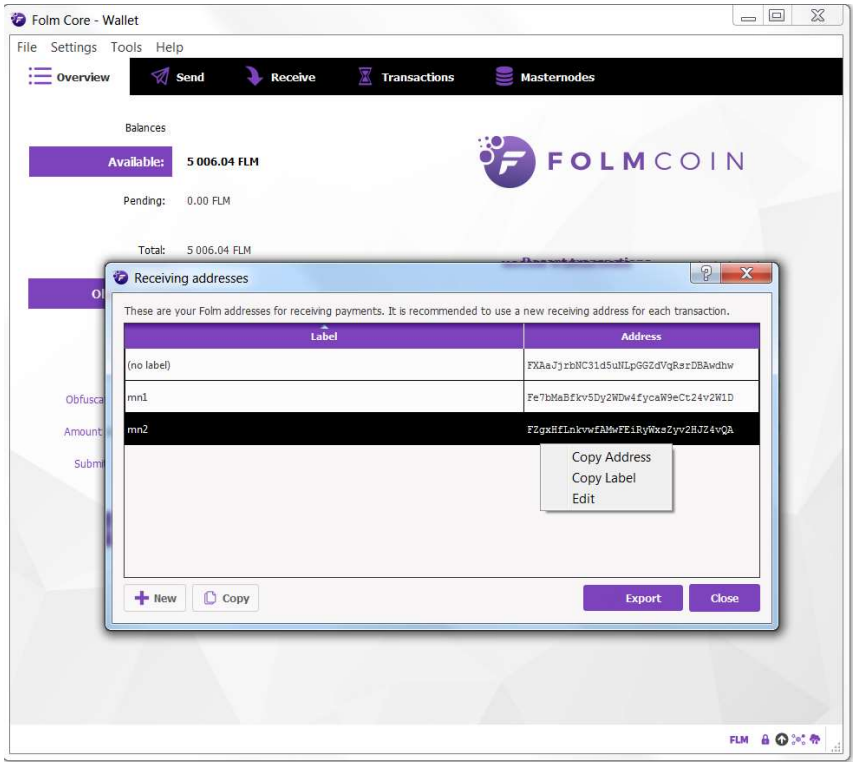
## Step 2: Create new address for masternode payments

To control masternode reward payments we recommend creating a dedicated address for each masternode instance. However, this is an option and you can use same address for all masternodes.

Open local wallet and go to **Menu**, select **File** -> **Receiving addresses**, click **New** button and enter desired address name in Label field, e.g. “mn2” and click **OK**.



Save created address as <mnpayeeaddress> and label as <walletname>. Repeat this step for each masternode.



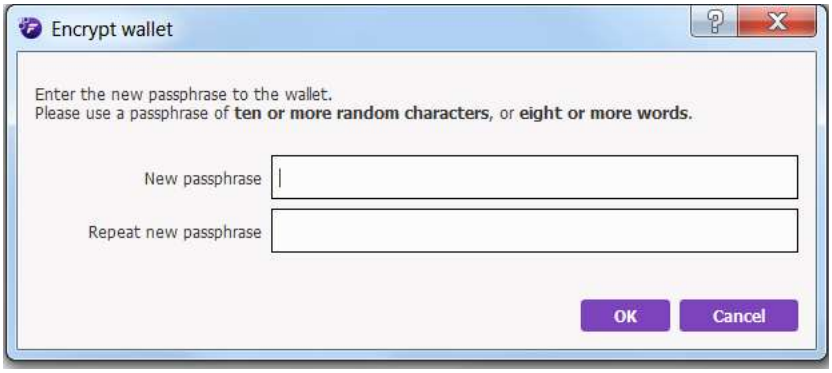

Note: There is no restriction to use same address for all cold masternodes. However, we recommend using dedicated address for each masternode.

## (Optional) Step 3: Encrypt and backup local wallet

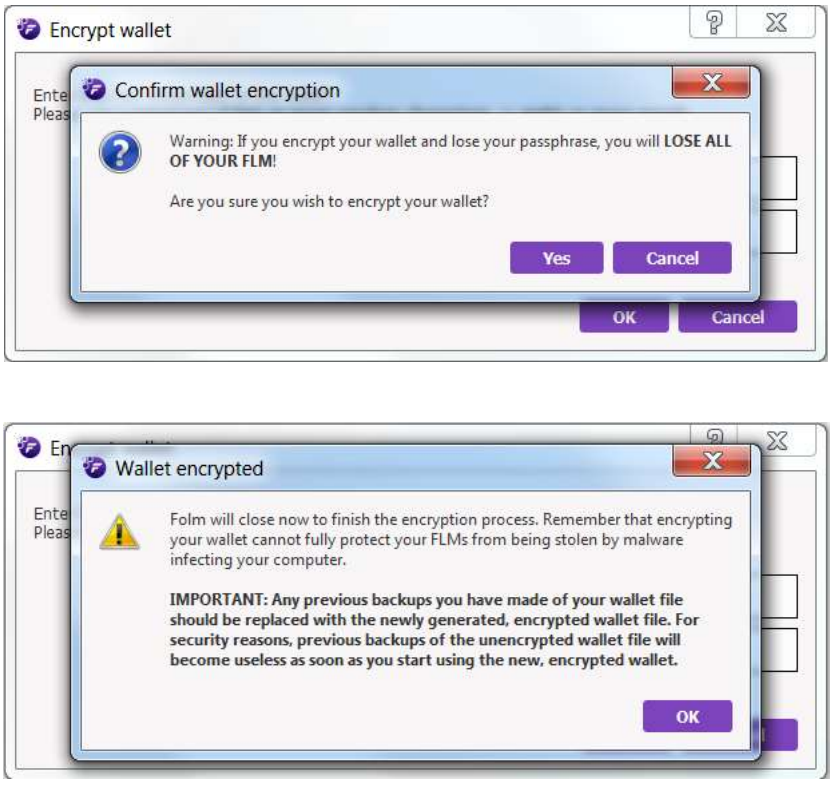
**!!! IMPORTANT !!!**: We recommend encrypting your wallet with password before and perform wallet backup before proceeding with next steps. Wallet backup required restoration of control over your wallet in case of local wallet crash or loss. Please store backup securely. You will not be able to recover your wallet in case of passphrase loss.

Follow these steps to encrypt your wallet.

Go to **Menu**, select **Settings** -> **Encrypt Wallet**. Enter your passphrase twice.

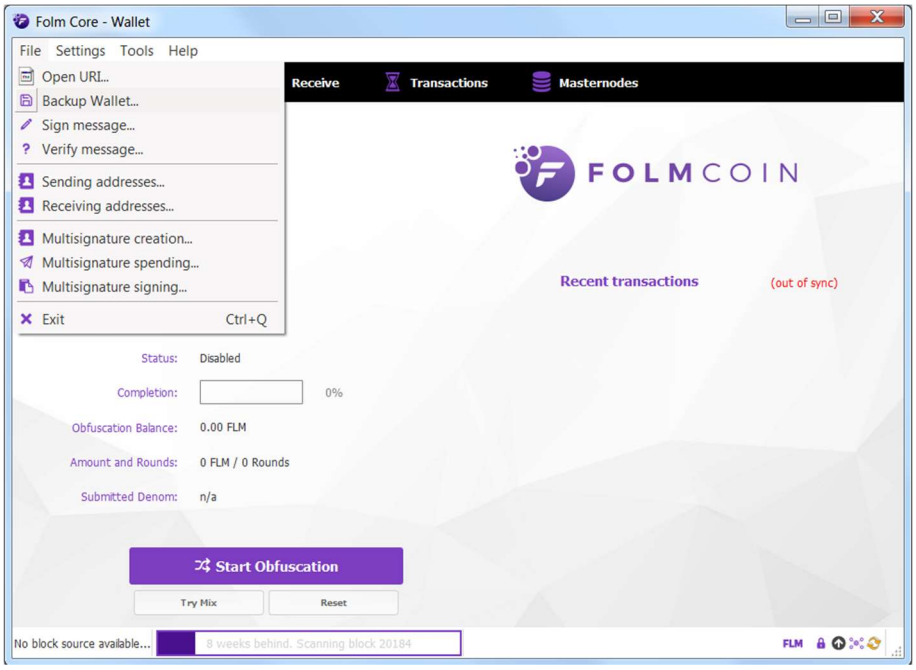


Proceed with dialog windows.




## (Optional) Step 4: Backup local wallet

Navigate to the **Menu**, select **File** -> **Backup Wallet**. Enter name for the backup file and select location to store it. Click **Save** button.



## Step 5: Perform collateral transaction

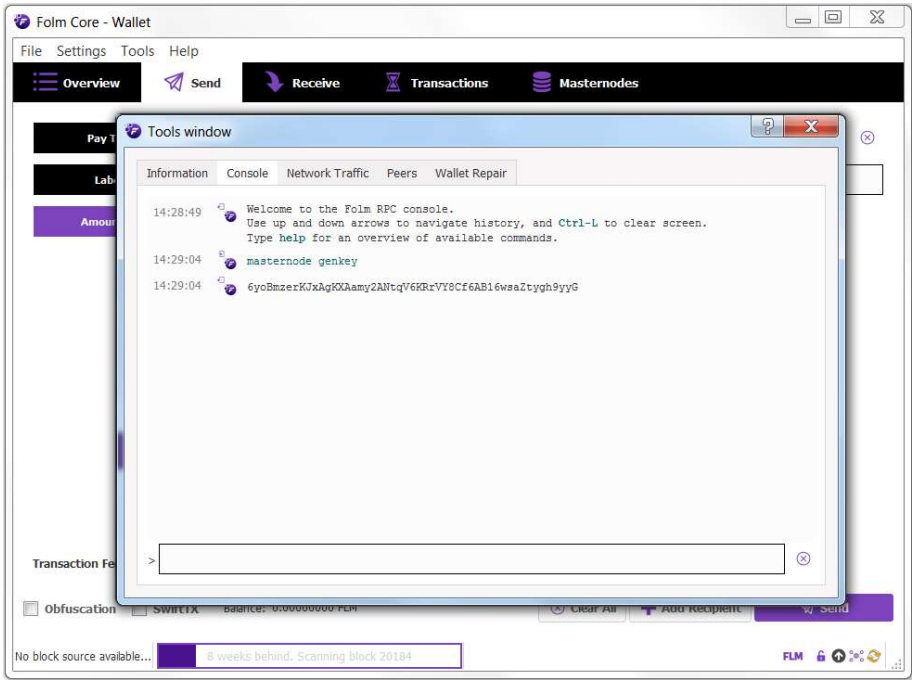
Please follow instructions of wallet or exchange to transfer 5000FLM to your <mnpayeeaddress> in one transaction.

**!!! IMPORTANT !!!**: Insure that transaction fee will not be subtracted from the collateral amount of 5000 FLM and receiving address will get full amount. Note, that collateral transaction requires **at least 15 confirmations** before masternode activation will be possible.

## Step 6: Generate masternode private key

Proceed with following steps to generate new masternode private key. You will need one private key for each masternode instance.

Navigate to the **Menu**, select **Tools** -> **Debug Console**. Enter command *masternode genkey* in textbox and press Enter.

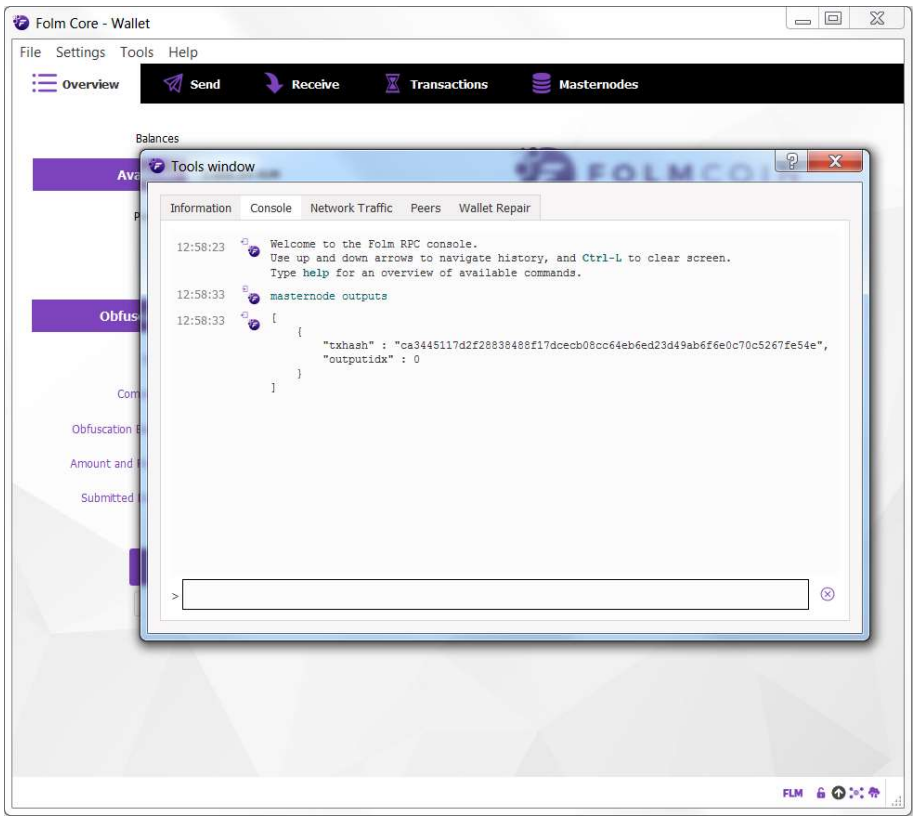



Save result as <masternodeprivatekey>.

## Step 7: Collect collateral transaction information

Proceed with following steps to collect collateral transaction information. You will need one unique collateral transaction for each masternode instance.

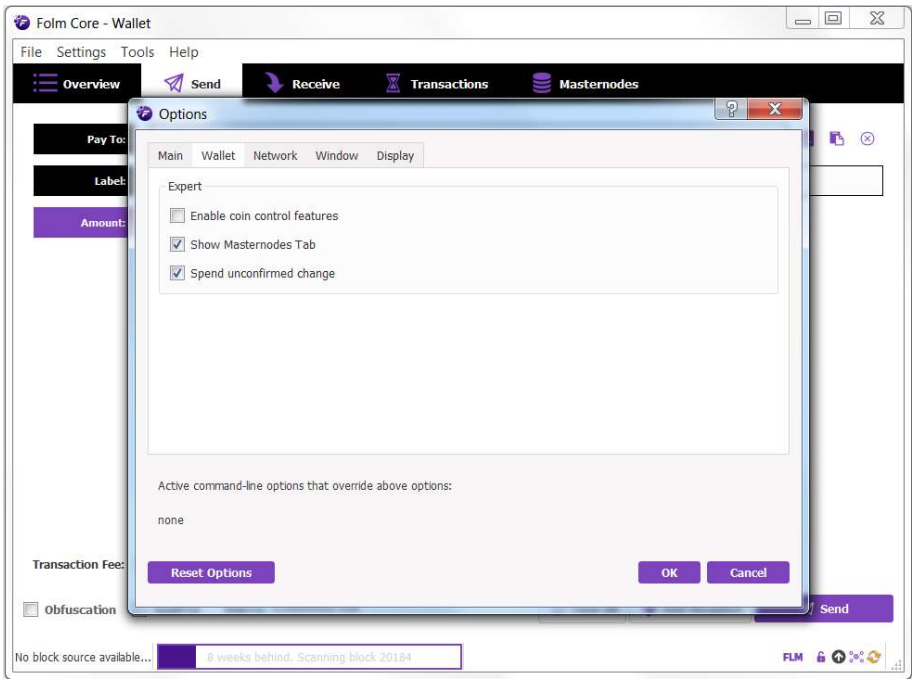
Navigate to the **Menu**, select **Tools** -> **Debug Console**. Enter command ***masternode outputs*** in textbox and press Enter.




Save txhash as <txhash> and value of outputidx as <txindex>.

## Step 8: Enable Masternodes Tab

Navigate to the **Menu**, select **Settings** -> **Options**. Click **Wallet** tab and check **Show Masternodes Tab** checkbox.

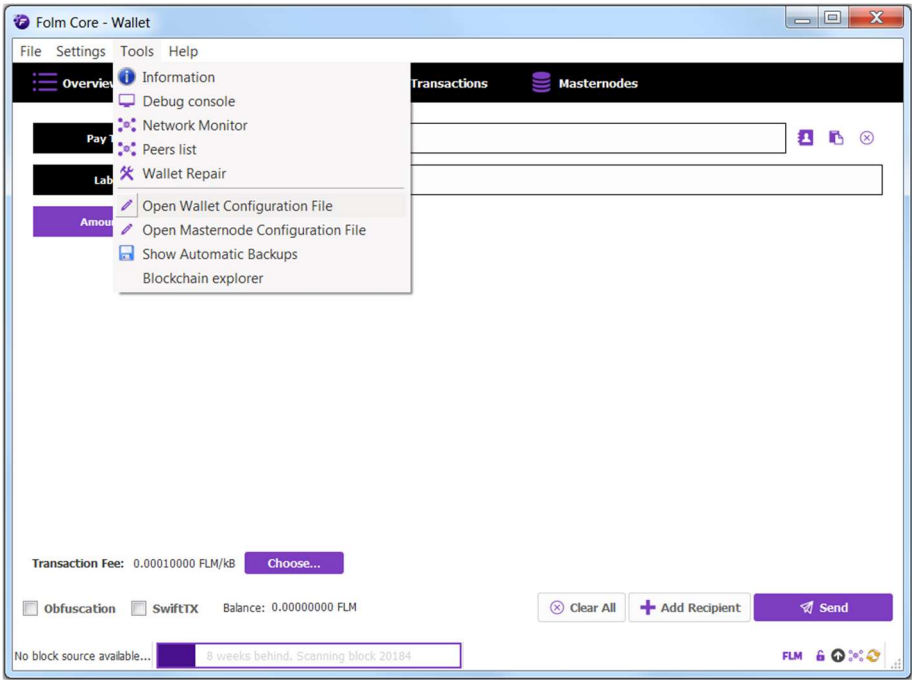



Click **OK** button and **restart wallet application**.

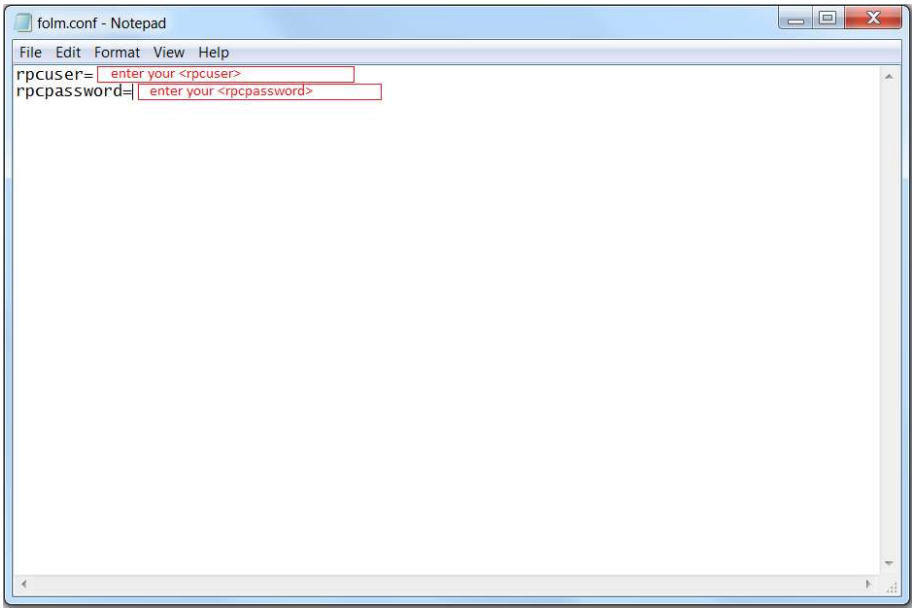
Wait until wallet fully synchronized before to switch to Masternodes tab.

## Step 9: Configure local wallet *folm.conf* file

Navigate to **Menu**, select **Tools** -> **Open Wallet Configuration File**. If requested to select application to open file, choose Notepad. You need to update *folm.conf* only once, additional masternode activation will not require file changes.



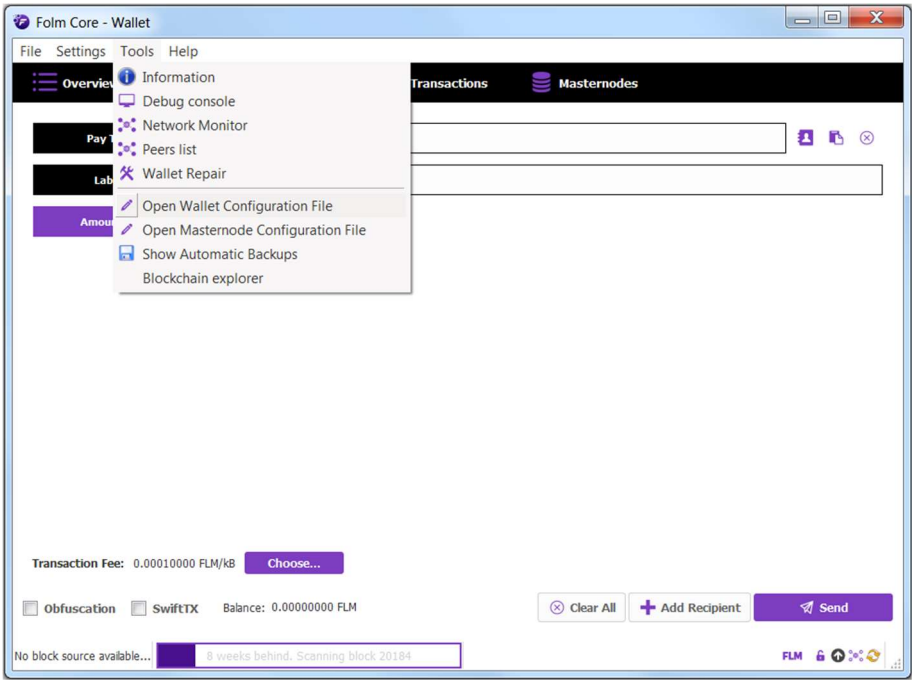

Edit *folm.conf* file adding following rows.



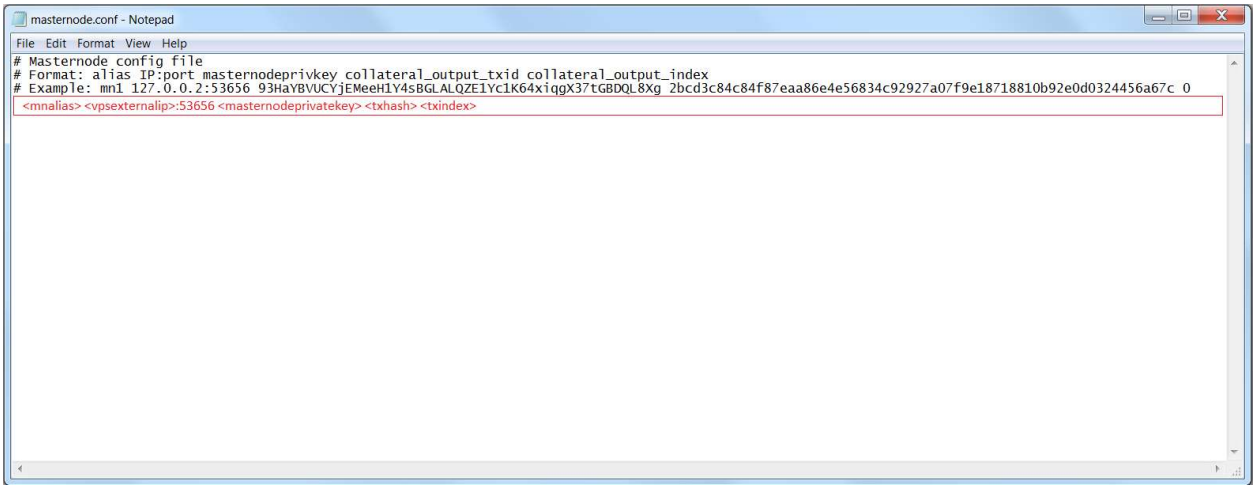

Save changes and close file.

## Step 10: Configure local wallet *masternode.conf* file

Navigate to **Menu**, select **Tools** -> **Open Masternode Configuration File**. If requested to select application to open file, choose Notepad. You will need to update *masternode.conf* file every time you adding new masternode instance. File should contain one configuration line per masternode instance.




Edit *masternode.conf* file adding one line per each cold masternode. Note, fields are separated with **space**.




Save changes and close file.

## Step 11: Restart local wallet

Close and re-open local wallet application to apply configuration files changes.

>> Proceed with VPS configuration steps <<

# VII. VPS Wallet Installation on Ubuntu 16.04

This instruction focusing to use FOLM wallet version 3.2.2. Please refer to GitHub and FOLM official site instruction to setup another version of wallet.

## Step 1: Install pre-requisite packages for Ubuntu 16.04

Execute below lines one at a time, please follow output on the screen to evaluate successful execution or proceed with troubleshooting in case of problems.

```
user@host:~$ sudo apt-get install -y unzip build-essential libtool autotools-dev

user@host:~$ sudo apt-get install -y libssl-dev libevent-dev libboost-all-dev

user@host:~$ sudo apt-get install -y software-properties-common

user@host:~$ sudo add-apt-repository -y ppa:bitcoin/bitcoin

user@host:~$ sudo apt-get update -y

user@host:~$ sudo apt-get install -y libdb4.8-dev libdb4.8++-dev

user@host:~$
```

Proceed to Step 2 after successful installation of required packages.

## Step 2: Download Ubuntu 16.04 wallet from official repository

Download wallet from repository to user home directory.

```
user@host:~$ cd ~
user@host:~$ wget https://github.com/folm/folm/releases/download/v3.2.2/folm-3.2.2-ubuntu16.04.zip

user@host:~$
```

Wait for download complete and proceed to next step.

## Step 3: Unzip wallet package to user home directory

Unzip wallet package to user home directory using following commands.

```
user@host:~$ cd ~
user@host:~$ unzip folm-3.2.2-ubuntu16.04.zip
Archive:  folm-3.2.2-ubuntu16.04.zip
  creating: /home/<user>/folm-3.2.2-ubuntu16.04/
  inflating: /home/<user>/folm-3.2.2-ubuntu16.04/folmd
  inflating: /home/<user> /folm-3.2.2-ubuntu16.04/folm-tx
  inflating: /home/<user> /folm-3.2.2-ubuntu16.04/folm-qt
  inflating: /home/<user> /folm-3.2.2-ubuntu16.04/folm-cli
user@host:~$
```

## Step 4: Delete compressed wallet

Execute following command to delete compressed wallet from user home directory.

```
user@host:~$ rm folm-3.2.2-ubuntu16.04.zip
user@host:~$
```

>> Proceed with FOLM Masternode Configuration <<

# IX. FOLM Masternode Configuration for Ubuntu 16.04

Pre-condition: FOLM wallet installed in home directory.

## Step 1: Start FOLM daemon

Use below command to start FOLM daemon for the first time. This command will create structure of data directory. The error message displayed below is expected and doesn't report any problem.

```
user@host:~$ ~/folm-3.2.2-ubuntu16.04/folmd -daemon
Error: To use folmd, or the -server option to folm-qt, you must set an rpcpassword in the configuration file:
/home/master/.folm/folm.conf
It is recommended you use the following random password:
rpcuser=folmrpc
rpcpassword=7iAtS3d8Bngu4squmzV7nN9w4Qiwja7qsraWiTzzdMLL
(you do not need to remember this password)
The username and password MUST NOT be the same.
If the file does not exist, create it with owner-readable-only file permissions.
It is also recommended to set alertnotify so you are notified of problems;
for example: alertnotify=echo %s | mail -s "Folm Alert" admin@foo.com
```

Exit process with **Ctrl+C**

## Step 2: Prepare *folm.conf* file

To start masternode you need to configure *folm.conf* file. This file automatically created during first daemon start and normally located in *~/.folm* directory. You can use any text editor, in this example *nano* editor is used.

```
user@host:~$ nano ~/.folm/folm.conf
```

Normally this file is empty, don't be surprised to see empty content.

Add below information to the file (you can use copy-paste):

```
daemon=1
rpcuser=<rpcuser>
rpcpassword=<rpcpassword>
rpcconnect=127.0.0.1
rpcallowip=127.0.0.1
rpcport=53654
externalip=<vpsexternalip>
port=53656
maxconnections=256
server=1
listen=1
masternode=1
masternodeaddr=<vpsexternalip>:53656
masternodeprivkey=<masternodeprivatekey>
```

Save file using:
***Ctrl-X***
***Y***
***Enter***

Check the result with following command.

```
user@host:~$ more ~/.folm/folm.conf
daemon=1
rpcuser= mnadmin
rpcpassword= NbiPN6HCboXWM24
rpcconnect=127.0.0.1
rpcallowip=127.0.0.1
rpcport=53654
externalip=194.163.19.102
port=53656
maxconnections=256
server=1
listen=1
logtimestamps=1
masternode=1
masternodeaddr=194.163.19.102:53656
masternodeprivkey=P0Jt98ChPj2sYYr6dNB8gu6GhKB7DFPk1aUubTzuNP6WeW2jH

user@host:~$
```

## Step 3: Start FOLM wallet daemon

Start wallet daemon using below command.

```
user@host:~$ ~/folm-3.2.2-ubuntu16.04/folmd -daemon
Folm Server Starting
user@host:~$
```

## Step 4: Check tor node synchronization with blockchain

To start masternode, daemon should be synchronized with FOLM blockchain.

Get current blockchain height.

```
user@host:~$ ~/folm-3.2.2-ubuntu16.04/folm-cli getblockcount
35554
user@host:~$
```

Get daemon synchronization block.

```
user@host:~$ ~/folm-3.2.2-ubuntu16.04/folm-cli getinfo
{
   "version" : 3020200,
   "protocolversion" : 70910,
   "walletversion" : 61000,
   "balance" : 0.00000000,
   "obfuscation_balance" : 0.00000000,
   "blocks" : 35554,
   "timeoffset" : 0,
   "connections" : 35,
   "proxy" : "",
   "difficulty" : 1525.38943959,
   "testnet" : false,
   "keypoololdest" : 1523376539,
   "keypoolsize" : 1001,
   "paytxfee" : 0.00000000,
   "relayfee" : 0.00010000,
   "staking status" : "Staking Not Active",
   "errors" : ""
}
user@host:~$
```

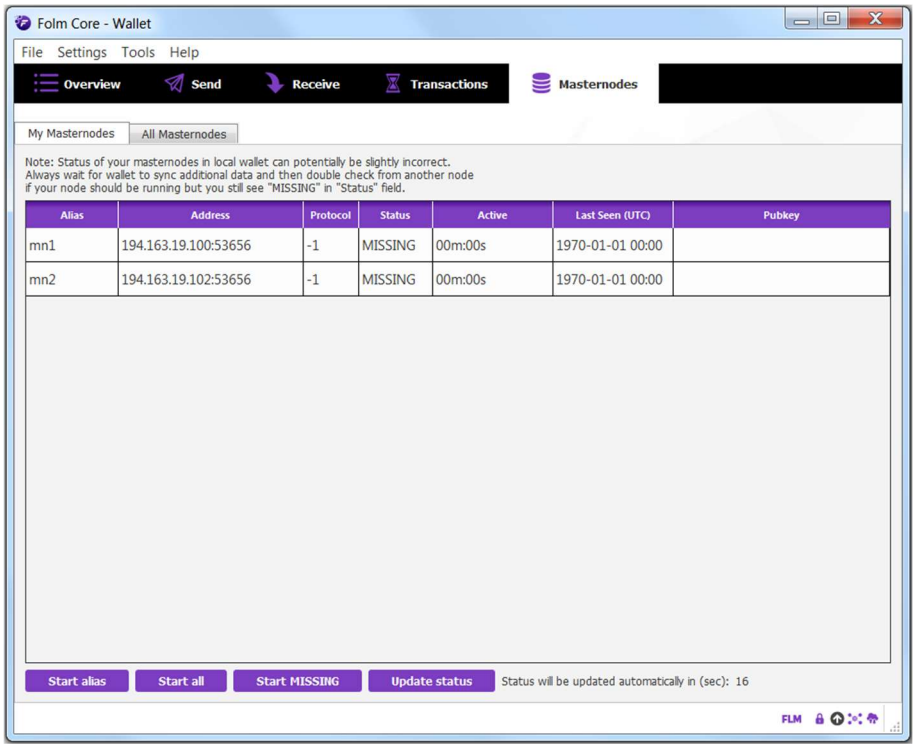
The value displayed next to “blocks” field reflects current height of daemon.

>> Proceed to Start FOLM Masternode <<

# X. Start FOLM Masternode

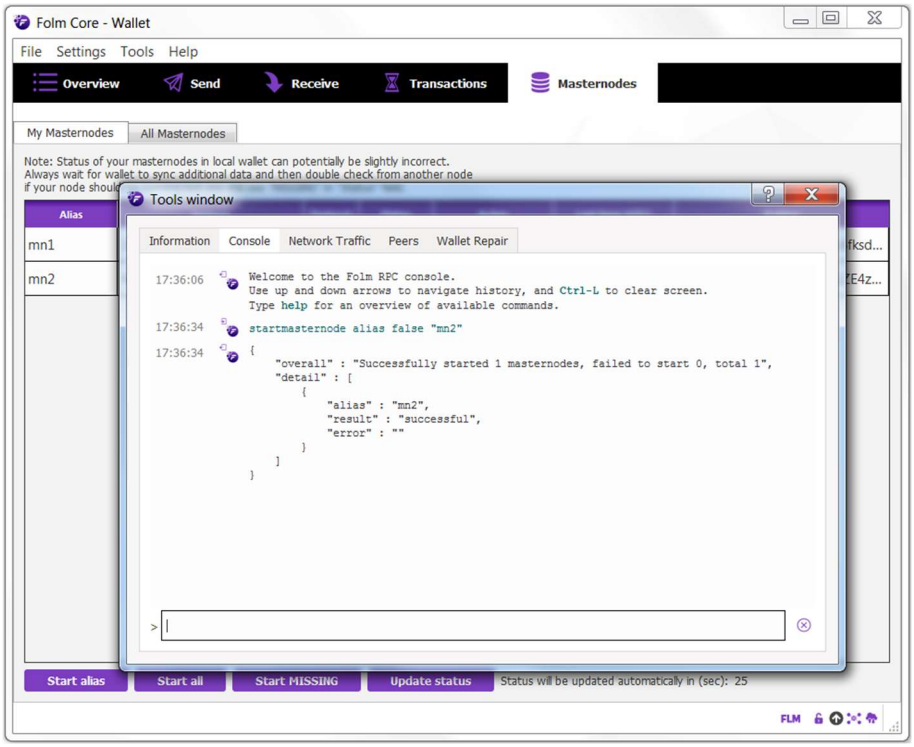
## Step 1: Start masternode instance from local wallet

Open local wallet application, wait until wallet fully synchronized with blockchain and masternode list and switch to Masternodes Tab. Check that your masternode listed in My Masternodes.




In case wallet was encrypted before, you will need to **unlock** it with passphrase before continuing to next step.

Navigate to **Menu**, select **Tools** -> **Debug Console**
Enter command ***startmasternode alias false "<masternodealias>"***




## Step 2: Check masternode status on VPS (Ubuntu 16.04)

Execute following command to check current masternode status.

```
user@host:~$ ~/folm-3.2.2-ubuntu16.04/folm-cli masternode status
{
  "txhash" : "<txhash>",
  "outputidx" : <txindex>,
  "netaddr" : "<externalip>:53656",
  "addr" : "<walletaddress>",
  "status" : 4,
  "message" : "Masternode successfully started"
}
user@host:~$
```

# XI. Masternode de-commissioning and unblocking collateral balance

Masternode activation requires blocking of collateral balance, which due to this cannot be spent. To release collateral balance for spending you will need to de-commission the masternode from your wallet.

Following steps should be executed to stop and de-commission masternode.

## Step 1: Modify local wallet *masternode.conf* file

To de-commission masternode you need remove instance declaration from *masternode.conf* file.

Open local wallet and navigate to **Menu**, select **Tools** -> **Open Masternode Configuration File**. If requested to select application to open file, choose Notepad.

Delete or comment with # sign the string with masternode declaration (marked with cross-out).

```
# Masternode config file
# Format: alias IP:port masternodeprivkey collateral_output_txid collateral_output_index
# Example: mn1 127.0.0.2:53656 93HaYBVUCYjEMeeH1Y4sBGLALQZE1Yc1K64xiqgX37tGBDQL8Xg
2bcd3c84c84f87eaa86e4e56834c92927a07f9e18718810b92e0d0324456a67c 0

<masternodealias> <vpsexternalip>:53656 <masternodeprivatekey> <txhash> <txindex>
```

Save changes and close the file.

## Step 2: Restart local wallet

Close and re-open local wallet application to apply *masternode.conf* file changes.

Your collateral balance will be released after full synchronization of wallet.