

# BLUEPAPER



# Actinium

Building and Supporting the Lightning Network

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# Who We Are

- Actinium began as a hobby project, designed & written by a single developer. This project was created mainly to provide direct competition to the overwhelming influx of scams, shady developers, and blatant abuse of open-source technology.
- The Actinium Network was launched on April 25th, 2018, with no pre-mine, no pre-sale, no founders rewards, and the development team owns *no significant share* of (ACM) coins.
- The Actinium development team has always been—and will always be—publicly visible.
- Actinium leverages the latest Bitcoin and Litecoin codebase with a heavy focus on the perpetual development of future technologies and the **empowerment of users** through an intuitive user experience.
- Actinium provides stability against volatile speculation through our highly-motivated development plan that prioritizes **longevity** over short-term price.
- Actinium was created for **everyone** because we believe that it is **People** who collectively determine the value to things. Therefore, a cryptocurrency must work for **everyone** in order to be of any **value**.
- The Actinium team takes pride in offering a truly ethical, motivated, and technologically advanced cryptocurrency.

# Goals

- **Paper Wallets & Address-Generators**
- **Mobile Wallets** for Android & iOS
- **Hardware Wallet Integration**
- **Electrum Servers & Clients**
- **Tor Integration**
- **Zerocash Integration**
- **SegWit & Bech32 Addresses**
- **Lightning Network**
- **Atomic Swaps**
- **Smart Contracts**
- **Exchanges**
- **Education** in Blockchain Technology, Security, and Lightning Network

# Technology

- The Actinium codebase is built using the Litecoin code and follows the Bitcoin development branch.
- The Actinium development team continuously integrates the latest blockchain technology features like **Segregated Witness**, **Bech32 addresses**, **Tor Libraries**, **Zerocash protocol**, and numerous others.
- Actinium is actively implementing second layer solutions such as the **Lightning Network** by developing port-tools for stable, easy on-boarding and adoption.
- Actinium has successfully integrated **Tor libraries** as well as the **ZeroCash Protocol** because we firmly believe **Privacy** and **Anonymity** *must* be available to every cryptocurrency user via user-friendly applications.
- Maintaining the **Security** and **Safety** of all user(s) funds is of the utmost importance. Thus, Actinium has full **Hardware Wallet** compatibility with Ledger Nano and Ledger Blue. (pending the approval of the Ledger HQ Co.)
- Actinium aims to support as many different miners as possible, therefore, we use the GPU-friendly **Lyra2Z** algorithm that works effectively with both NVIDIA & AMD cards.
- To further secure the network Actinium utilizes the **Dark Gravity Wave v3** as our preferred difficulty-adjustment algorithm.

# Specifications

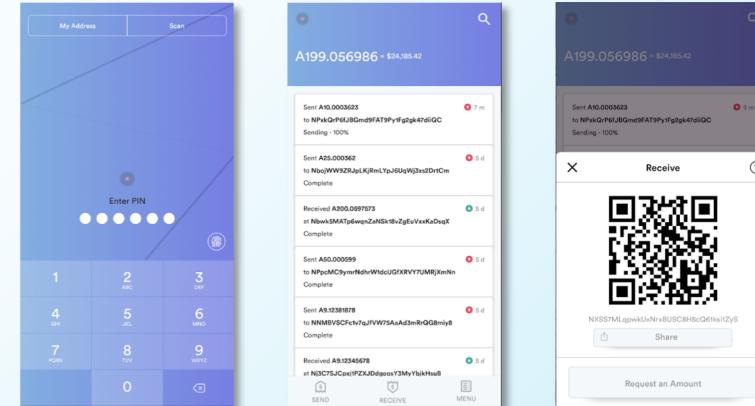
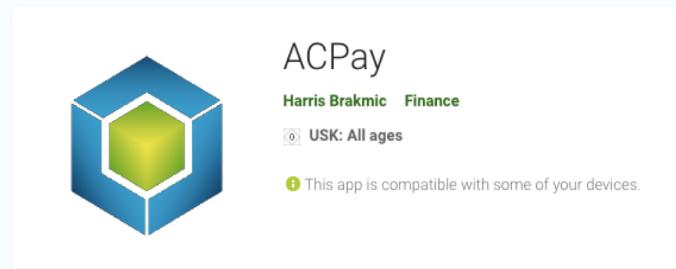
- **Launched:** 25th April 2018
- **Fair Launch:** no premine, no airdrop, no ICO, no “founder rewards”
- **Mining:** PoW with GPU (NVIDIA & AMD)
- **Algorithm:** Lyra2Z—since block 55,000
- **Maximum Supply:** 84,000,000 coins
- **Block Reward:** 40 ACM—halving every 840,000 blocks (approx. every 4 years)
- **Block Time:** 2.5minutes
- **SegWit:** active since block 64,512
- **Bech32 Addresses:** supported – prefix acml
- **Dark Gravity Wave v3** difficulty retargeting adjustment algorithm—since block 55,000
- **Tor Library:** activated with a single parameter - since version 0.17.5.0-BETA

# Mining

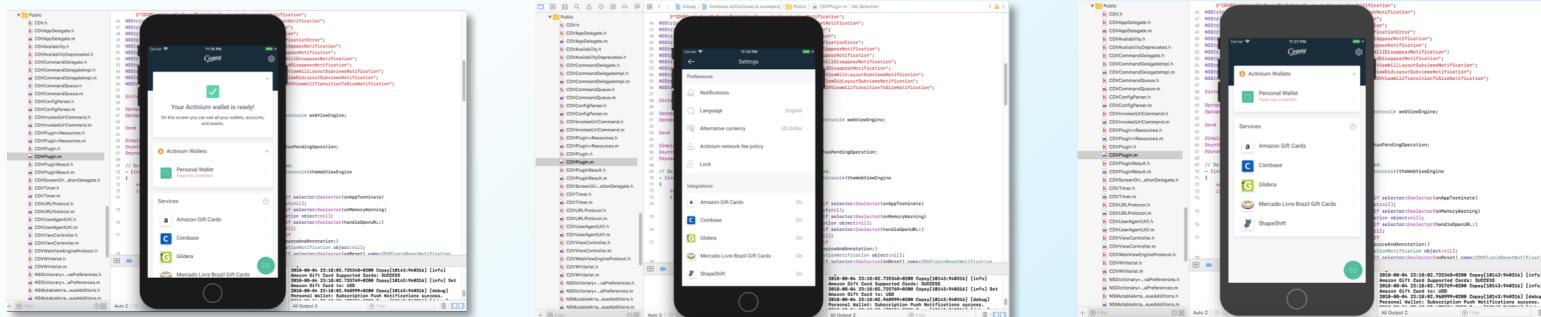
- Actinium uses Lyra2Z as a Proof-Of-Work Algorithm.
- Advantages of Lyra2Z:
  - Energy efficient algorithm
  - Keeps GPU cards from **overheating**
  - Lowers efficiency-gap between AMD and NVIDIA GPU's.
  - Currently **ASIC, FPGA, & Botnet, etc. resistant**
- The Dark Gravity Wave v.3 difficulty readjustment algorithm
- Advantages of DGWv3:
  - Proven to be more effective at stabilizing hash-rate than the 2016 block algorithm used by Litecoin & Bitcoin.
  - Readjusts the difficulty every block; taking into account the calculations of the last 24 blocks
  - Reacts quickly to large spikes in hash-rate.
- Future implementation of **Merkle Tree Proof (MTP)** algorithm
- Advantages of MTP:
  - Further lowers the efficiency-gap between commodity GPU's and ASIC's, FPGA's, Botnets, etc. providing a foundation of **Equality** to all users.

# Mobile Applications

- Actinium Mobile Wallet is available for Android.



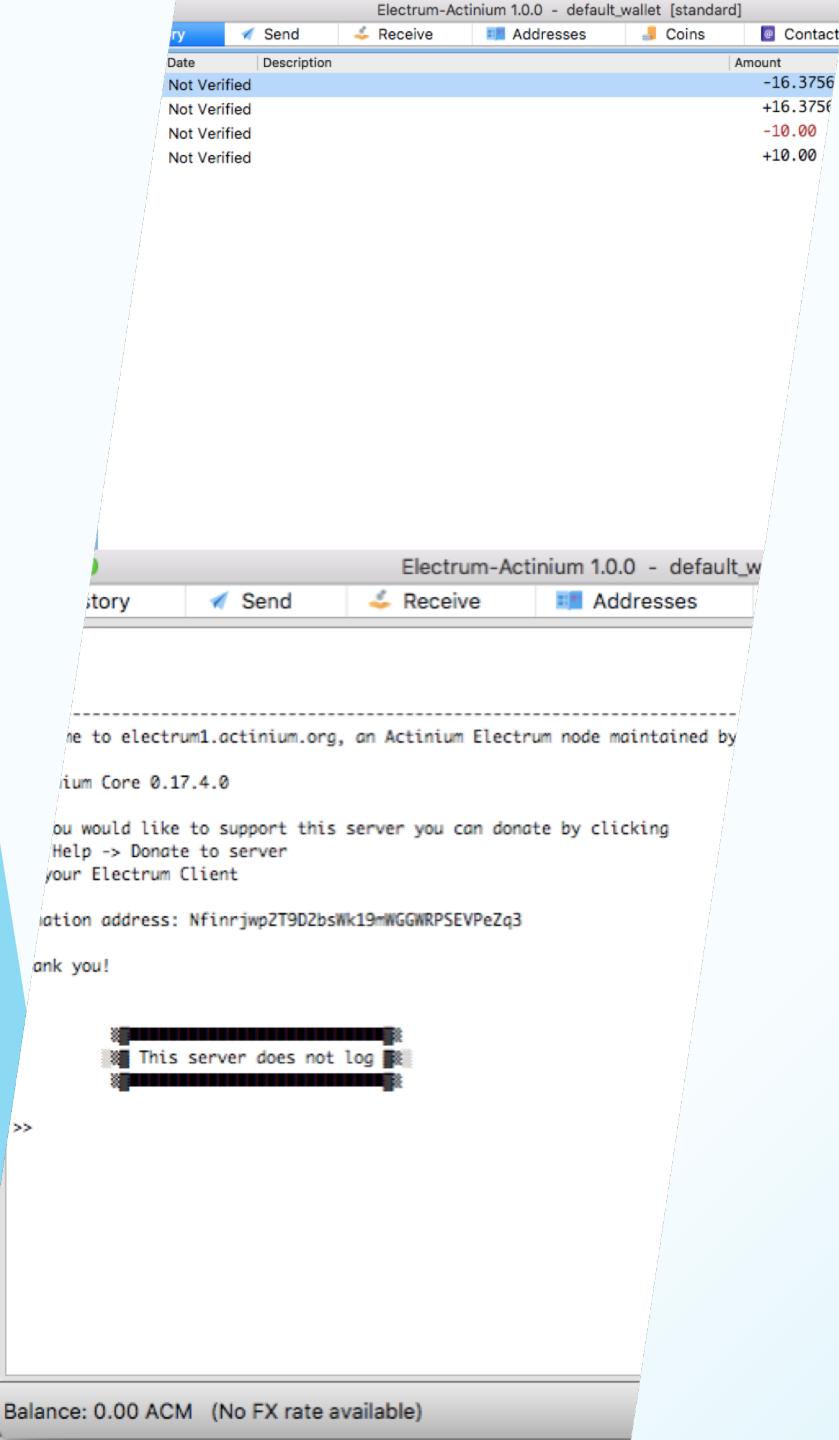
- The iPhone version is currently in development.



# Hardware Wallets

- Actinium is compatible with Ledger Nano S and Ledger Blue.
- We have successfully completed tests of our integration code.
- Awaiting Ledger HQ's final approval.





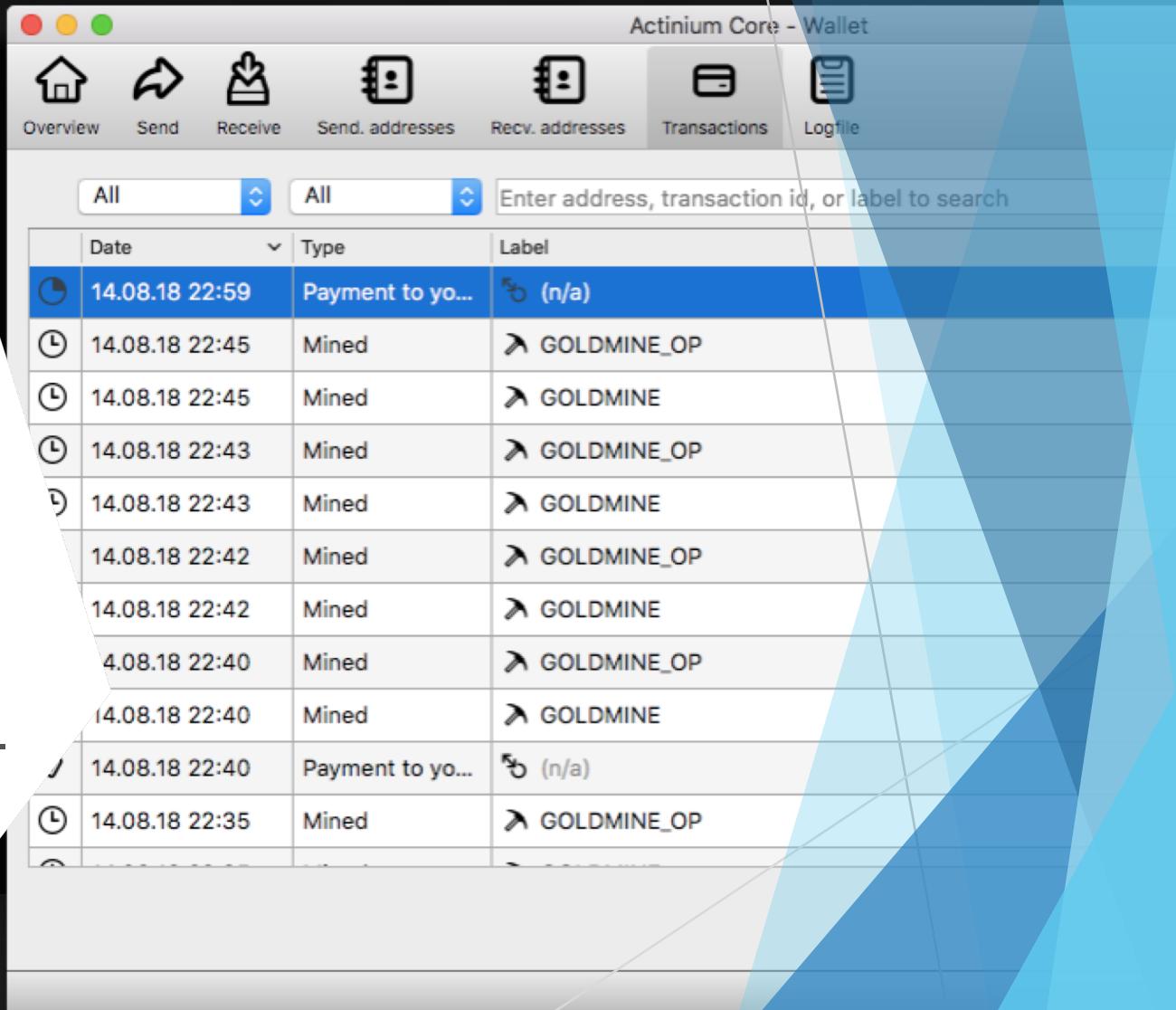
# Electrum Support

- To make the using blockchains easier for our users we operate specialized **Electrum Servers for Actinium**.
- We also offer an alternative **Electrum SPV Wallet**.

# Tor Integration

- Actinium has supported the Tor anonymity protocol since v0.17.5.0
- To activate Tor, users need only enter a single parameter into their configuration file—everything else will be done automatically.
- Additionally, we support Pluggable Transports to ensure censorship resistance against high-level Tor traffic blocking systems.

```
running on Darwin with Libevent 2.2.0-alpha-dev, OpenSSL 1.0.2o, Zlib 1.2.11, Liblzma N/A, and Libstdc++ 7.3.0
Warning: If you use it wrong! Learn how to be safe at https://www.torproject.org/download/download#warn
file "/Users/brakmic/Library/Application Support/Actinium/tor/torrc" not present, using reasonable
KISTLite has been enabled.
Listener on 127.0.0.1:9050
```



# Zerocash Integration

- Actinium is currently implementing the **Zerocash privacy protocol**.
- The **Zerocash** protocol fully anonymizes user transactions making the Actinium Blockchain impervious to chain-analysis.
- **Zerocash** enables confidential transactions by creating specialized Actinium coins that obfuscate any-and-all transaction data including transaction amounts, sender/receiver identification information, and more.
- **Zero-Knowledge Proofs** confirm the validity of confidential transactions without revealing any details.
- Actinium provides a seamless experience for converting, splitting, and recombining the specialized **Zerocash-ACM** coins alongside ‘normal’ **ACM** coins.

# Lightning Network

- Actinium's main priority is facilitating the adoption of the **Lightning Network**
- We have already successfully activated **SegWit**, a necessary protocol for Lightning Network support.
- Currently, we are developing & porting several tools that will be needed to manage specialized **LN-nodes**

```
Version 0.12.0-beta
Loading block database from '/home/brakmic/.anvil'
Block database loaded
Can't discover upnp: write udp4 0.0.0.0:64591->192.168.1.1:64591
Transaction index is enabled
Address index is enabled
Index is enabled
Syncing block index. This might take a while
Synced to state (height 50401, hash d71c6f418b711...
[...]
Server listening on 0.0.0.0:5335
Server listening on [::]:5335
5 addresses from file '/home/brakmic/.anvil/peers'
Listening on [::]:4334
Listening on 0.0.0.0:4334
Added peer 140.82.36.38:4334 (outbound) (new)
to block height 50401 from peer 140.82.36.38:4334
Valid peer 45.63.92.210:4334 (outbound) (new)
Valid peer 140.82.36.38:4334 (outbound) (new)
Valid peer 217.163.23.22:4334 (outbound) (new)
New valid peer 104.156.231.46:4334 (outbound) (new)
New valid peer 79.143.180.57:4334 (outbound) (new)
New valid peer 45.63.92.210:4334 (outbound) (new)
```

# Links

- <https://actinium.org>
- <https://github.com/Actinium-project>
  
- <https://paperwallet.actinium.org>
- <https://faucet.actinium.org>
  
- <https://explorer.actinium.org>
- <https://explorer2.actinium.org>