Abelian Improvement Proposal 0012:

Token Release Schedule

Abelian Foundation

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Abstract. This AIP describes an updated Token Release Schedule, which provides longer eras with new tokens produced, while keeping the total supply unchanged, say same as that of the original Token Release Schedule.

Contents

1 The Original Token Release Schedule

1.1 Token Issued at Genesis Block

The genesis block (denoted by Block-0) issues 20,579,981.3685247 ABELs to the Abelian Foundation. With 1 ABEL $= 10^7$ Neutrinos, this means 205,799,813,685,247 Neutrinos.

1.2 Token Release Schedule

Abelian uses block generation and consensus mechanism that are similar to that of Bitcoin, namely, based on PoW.

- It is expected that one block is released per 256 seconds on average, and the mining difficulty will be adjusted every 4000 blocks.
- New tokens will be issued in (the first) 10 eras, each of which will generate 400,000 blocks. And no more tokens are issued after that.
- The Block Reward (i.e. issued ABELs per block) is set as below:

  1. Era 1: 256 ABELs $= 256 \times 10^7$ Neutrinos.
  2. Era 2: 128 ABELs $= 128 \times 10^7$ Neutrinos.
  3. Era 3: 64 ABELs $= 64 \times 10^7$ Neutrinos.
  4. Era 4: 32 ABELs $= 32 \times 10^7$ Neutrinos.
  5. Era 5: 16 ABELs $= 16 \times 10^7$ Neutrinos.
  6. Era 6: 8 ABELs $= 8 \times 10^7$ Neutrinos.
  7. Era 7: 4 ABELs $= 4 \times 10^7$ Neutrinos.
  8. Era 8: 2 ABELs $= 2 \times 10^7$ Neutrinos.

9. Era 9: 1 ABEL = 1×10^7 Neutrinos.

10. Era 10: 0.5 ABEL = 0.5×10^7 Neutrinos.

1.3 Analysis

The supply summary is

- The total supply by mining is $(2^8 + \cdots + 2^2 + 2^1 + 2^0 + 2^{-1}) \times 400000 =$ 204,600,000 ABELs $= 204,600,000 \times 10^7$ Neutrinos.[1]
- The pre-issued supply at genesis block is 20,579,981.3685247 ABELs $= 20,5379,981.3685247 \times 10^7$ Neutrinos.
- The total supply will be 204,600,000 + 20,579,981.3685247 = 225,179,981.3685247 ABELs = 2251799813685247 Neutrinos = 2^{51}-1 Neutrinos.

The time-related summary is

- One block is released per 256 seconds on average.
- The mining difficulty is adjusted per (approx.) 11.8 days.
- The block reward is halved per (approx.) 3.25 years.
- All supply by mining will be released in $3.25 \times 10 = 32.5$ years.
- At the end of the first era, there are 122,979,981.3685247 ABELs (pre-issued at the genesis block and mined in the first era) available in the Abelian Network.

[1] Half of these ABELs will be generated/issued in the first era, then 1/4 is issued in the second era, 1/8 in the third era, and so on, until the tenth era.

2 The Updated Token Release Schedule

The updated Token Release Schedule will take effect at height 400000. The new Token Release Schedule will provide longer eras with new tokens produced, while keeping the total supply unchanged.

2.1 Token Issued at Genesis Block

As this happened before height 400000, this part keeps unchanged.
The genesis block (denoted by Block-0) issues 20,579,981.3685247 ABELs to the Abelian Foundation. With 1 ABEL $= 10^7$ Neutrinos, this means 205,799,813,685,247 Neutrinos.

2.2 Token Release Schedule

Abelian uses block generation and consensus mechanism that are similar to that of Bitcoin, namely, based on PoW.

- It is expected that one block is released per 256 seconds on average, and the mining difficulty will be adjusted every 4000 blocks. With the Difficulty Smoothing Algorithm (DSA), since height 284000, the mining difficulty is adjusted every 200 blocks, affected by the past 4000 blocks.
- New tokens will be issued in (the first) 10 eras. The first era generates 400,000 blocks, then each of the remaining 9 eras will generate 800,000 blocks. And no more tokens are issued after that.
- The Block Reward (i.e. issued ABELs per block) is set as below:
    1. Era 1: 256 ABELs $= 256 \times 10^7$ Neutrinos.
    2. Era 2: 64 ABELs $= 64 \times 10^7$ Neutrinos.

3. Era 3: 32 ABELs = 32×10^7 Neutrinos.
4. Era 4: 16 ABELs = 16×10^7 Neutrinos.
5. Era 5: 8 ABELs = 8×10^7 Neutrinos.
6. Era 6: 4 ABELs = 4×10^7 Neutrinos.
7. Era 7: 2 ABELs = 2×10^7 Neutrinos.
8. Era 8: 1 ABEL = 1×10^7 Neutrinos.
9. Era 9: 0.5 ABEL = 0.5×10^7 Neutrinos.
10. Era 10: 0.25 ABEL = 0.25×10^7 Neutrinos.

2.3 Analysis

The supply summary is

- The total supply of the original release schedule by mining is $(2^8 + \cdots + 2^2 + 2^1 + 2^0 + 2^{-1}) \times 400000 = 204{,}600{,}000$ ABELs $= 204,600,000 \times 10^7$ Neutrinos.[2]

  The total supply of the updated release schedule by mining is

  $$\begin{aligned} & 2^8 \times 400000 + (2^6 + \cdots + 2^2 + 2^1 + 2^0 + 2^{-1} + 2^{-2}) \times 800000 \\ =& 2^8 \times 400000 + (2^7 + \cdots + 2^3 + 2^2 + 2^1 + 2^0 + 2^{-1}) \times 400000 \\ =& (2^8 + \cdots + 2^2 + 2^1 + 2^0 + 2^{-1}) \times 400000, \end{aligned}$$

  which is the same as that of the original release schedule.

- The pre-issued supply at genesis block is

  20,579,981.3685247 ABELs $= 20, 5379, 981.3685247 \times 10^7$ Neutrinos.

[2]Half of these ABELs will be generated/issued in the first era, then 1/4 is issued in the second era, 1/8 in the third era, and so on, until the tenth era.

- The total supply will be 204,600,000 + 20,579,981.3685247 = 225,179,981.3685247 ABELs = 2251799813685247 Neutrinos = 2^{51}-1 Neutrinos.

The time-related summary is

- One block is released per 256 seconds on average.
- The mining difficulty is adjusted (approx.) per $256 \times 200\ seconds \approx 14\ hours$.
- At height 400,000, the block reward changes to 64 ABEL per Block, then the block reward is halved per 800000 blocks, which happens (approx.) per $256 \times 800,000\ seconds \approx 6.49\ years$.
- All supply by mining will be released in $3.25 + 6.49 \times 9 = 61.66$ years.
- At the end of the first era, there are 122,979,981.3685247 ABELs (pre-issued at the genesis block and mined in the first era) available in the Abelian Network.

3 Remark

Note that the first era contains blocks from height 0 to height 39999, but the genesis block does not mine/generate the 256 ABELs. That is, actually in the first era, $256 \times (400000 - 1)$ ABELs are mined. In other words, the actual total supply is 256 smaller than the above described schedule.