

Apertum (APT) Whitepaper

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1. Abstract

Apertum (APT) is a decentralized cryptocurrency addressing modern digital currency challenges by offering security, transparency, scalability, and inclusivity. Built as a subnet of the Avalanche blockchain, Apertum leverages Avalanche's technology to provide a secure, scalable, and inclusive platform for digital finance. The system includes innovative mining mechanisms, deflationary tokenomics, and advanced governance protocols.

Apertum: Redefining Digital Transactions

Apertum is designed on its native blockchain to overcome limitations of existing cryptocurrencies. By integrating innovative features, Apertum establishes a reliable, scalable, and inclusive platform for digital finance.

Core Features of Apertum:

- **Security:** Advanced cryptographic techniques ensure transaction integrity and asset confidentiality.
- **Transparency:** Operating on a public ledger, all transactions are openly verifiable.
- **Scalability:** High transaction throughput ensures usability for individuals and businesses.

Innovative Mechanisms:

- **Virtual Mining Protocol:** Promotes inclusivity by eliminating the need for physical mining hardware.
- **Deflationary Mechanism:** Up to 50% of transaction fees are burned, reducing supply over time and driving value.

This whitepaper explores the vision, architecture, and components of Apertum, building a sustainable, transparent, and secure cryptocurrency ecosystem for advancing digital finance.

2. Introduction

The cryptocurrency space faces challenges in achieving sustainability, decentralization, and seamless business integration. Apertum addresses these with three pillars:

1. **Mining Protocol:** A decentralized, efficient consensus algorithm ensuring fair transactions.
 2. **Apertum Foundation:** Overseeing governance, research, and development.
 3. **Avalanche Subnet Integration:** Leveraging Avalanche's scalability, speed, and security to create a robust ecosystem.
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3. Vision and Mission

3.1 Vision

Apertum envisions a decentralized, inclusive financial ecosystem empowering individuals and businesses with a secure, scalable platform for digital transactions.

3.2 Mission

Our mission is to create a sustainable cryptocurrency ecosystem, ensuring fairness, security, and adaptability for both personal and business applications.

4. Apertum Architecture

Apertum operates as a subnet of the Avalanche blockchain, inheriting its advanced technology while introducing unique features tailored to its ecosystem. Key features include:

Core Technologies:

1. **Custom Virtual Machine (VM):** Supports smart contracts, custom assets, and advanced functionalities.
2. **Interoperability:** Enables seamless cross-chain transactions within its ecosystem.
3. **Governance Mechanisms:** Ensures fairness and aligns decision-making with community goals.
4. **Scalability:** Handles high transaction volumes without congestion, leveraging Avalanche's architecture.

4.1 Mining Protocol

Apertum's virtual mining protocol eliminates the need for physical hardware, offering a sustainable, inclusive way to validate transactions. The mining process features a halving mechanism, where rewards decrease by half after every 125 million blocks, promoting controlled token distribution and long-term sustainability.

Key attributes:

- **Decentralization:** Anyone can participate in securing the network.
- **Fair Distribution:** Rewards are structured equitably.
- **Energy Efficiency:** Smart algorithms minimize energy consumption.
- **Halving Mechanism:** Reduces block rewards over time, creating scarcity and incentivizing early participation.

Comprehensive Explanation and Calculations for Halving Mechanism

APT in Numbers:

Total APT to be mined is 2 Billion

Total APT allocated to APT Foundation is 100 Million

Total APT supply is 2.1 Billion.

APT Mining:

Halving

***All Examples and Explanations included in this white-paper only show the Halvings up to Halving 4.**

***The Halvings do continue past Halving 4, and can be calculated by readers, using the calculations shared in this white-paper**

***The calculations do not include up to 50% of the transactions fees which will be shared with miners, from the Halving 1 epoch onwards, specifically from block 125 000 001 onwards.**

This halving mechanism distributes a total of **2 billion APT** through mining, with rewards halved every 125 million blocks. (+/- every 4 years)

An additional **100 million APT** is pre-minted and allocated to the APT Foundation, making the total supply 2.1 billion APT.

General Formula:

Variables:

- R_b : Reward per block (APT).
- B : Total blocks (125 million).
- P_{total} : Total products price in USD.
- APR : Conversion rate of APT per USD (R_b / P_{total}).
- $TAPT$: Total APT rewarded in the halving ($R_b \times B$)

Key Equations:

1. APT/\$ Conversion Rate:

$$APR = \frac{R_b}{P_{total}}$$

2. APT Reward for a Product Price: For a product priced at PPP (USD):

$$APT_{product} = APR \times P_{product}$$

3. Total APT Rewarded:

$$TAPT = R_b \times B$$

4. Total APT/block:

$$Total_{APT/block} = APR \times P_{total}$$

$$Total_{APT/block} = APR \times P_{total}$$

Halving Calculations on APT Mining Bot:

Example for a **50USDT** Membership APT Mining Bot

Halving #0:

- **Reward per Block (RbR_bRb):** 8 APT.
- **Total Blocks (BBB):** 125,000,000.
- **Total Product Price (PtotalP_{total}Ptotal):** 17,550 USD.

Calculations:

- $APTrate = \frac{8}{17,550} = 0.000455840455840456$
 $APTrate = \frac{17,550}{8} = 0.000455840455840456$
- For a \$50 product:
 $APTproduct = 0.000455840455840456 \times 50 = 0.0227920227920228$
 $APTproduct = \frac{50}{0.000455840455840456} = 0.0227920227920228$
 $APTproduct = 0.000455840455840456 \times 50 = 0.0227920227920228$
- Total APT Rewarded (TAPTT_{APT}TAPT): $8 \times 125,000,000 = 1,000,000,000$
 $125,000,000 \times 8 = 1,000,000,000$ APT.
- Total APT/block: $TotalAPT/block = 0.000455840455840456 \times 17,550 = 8$
 $TotalAPT/block = \frac{17,550}{0.000455840455840456} = 8$
 $TotalAPT/block = 0.000455840455840456 \times 17,550 = 8$.

Halving #	Reward/Block (APT)	Total Blocks	Total APT Rewarded	Cumulative Total	APT/\$ Rate	APT for \$50 Product
0	8.0	12500000	1000000000	1000000000	0.0004558404558404560	0.02279202279202280
1	4.0	12500000	500000000	1500000000	0.0002279202279202280	0.011396011396011400
2	2.0	12500000	250000000	1750000000	0.00011396011396011400	0.005698005698005700
3	1.0	12500000	125000000	1875000000	5.6980056980057E-05	0.0028490028490028500
4	0.5	12500000	62500000	1937500000	2.84900284900285E-05	0.0014245014245014200

Halving #	Reward/Block (APT)	Total Blocks	Total APT Rewarded	Cumulative Total	APT/\$ Rate	APT for \$500 Product
0	8.0	12500000	1000000000	1000000000	0.0004558404558404560	0.22792022792022800
1	4.0	12500000	500000000	1500000000	0.0002279202279202280	0.113960113960114000
2	2.0	12500000	250000000	1750000000	0.00011396011396011400	0.05698005698005700
3	1.0	12500000	125000000	1875000000	5.6980056980057E-05	0.02849002849002850
4	0.5	12500000	62500000	1937500000	2.84900284900285E-05	0.014245014245014200

Halving #	Reward/Block (APT)	Total Blocks	Total APT Rewarded	Cumulative Total	APT/\$ Rate	APT for \$2000 Product
0	8.0	12500000	1000000000	1000000000	0.0004558404558404560	0.9116809116809120
1	4.0	12500000	500000000	1500000000	0.0002279202279202280	0.45584045584045600
2	2.0	12500000	250000000	1750000000	0.00011396011396011400	0.22792022792022800
3	1.0	12500000	125000000	1875000000	5.6980056980057E-05	0.11396011396011400
4	0.5	12500000	62500000	1937500000	2.84900284900285E-05	0.05698005698005700

Halving #	Reward/Block (APT)	Total Blocks	Total APT Rewarded	Cumulative Total	APT/\$ Rate	APT for \$5000 Product
0	8.0	125000000	1000000000	1000000000	0.0004558404558404560	2.2792022792022800
1	4.0	125000000	500000000	1500000000	0.0002279202279202280	1.1396011396011400
2	2.0	125000000	250000000	1750000000	0.00011396011396011400	0.5698005698005700
3	1.0	125000000	125000000	1875000000	5.6980056980057E-05	0.2849002849002850
4	0.5	125000000	62500000	1937500000	2.84900284900285E-05	0.14245014245014200

Halving #	Reward/Block (APT)	Total Blocks	Total APT Rewarded	Cumulative Total	APT/\$ Rate	APT for \$10000 Product
0	8.0	125000000	1000000000	1000000000	0.0004558404558404560	4.5584045584045600
1	4.0	125000000	500000000	1500000000	0.0002279202279202280	2.2792022792022800
2	2.0	125000000	250000000	1750000000	0.00011396011396011400	1.1396011396011400
3	1.0	125000000	125000000	1875000000	5.6980056980057E-05	0.5698005698005700
4	0.5	125000000	62500000	1937500000	2.84900284900285E-05	0.2849002849002850

4.2 Consensus Mechanism

Apertum utilizes a highly efficient consensus protocol, ensuring:

- **Rapid Validation:** Near-instant transaction finality.
- **Scalability:** Supports high transaction rates.
- **Security:** Robust against malicious activity.
- **Eco-Friendliness:** Operates on PoS, reducing energy consumption.

4.3 Security Features

Security is foundational to Apertum:

- **Immutable Ledger:** Transactions are irreversible once added to the blockchain.
 - **Advanced Encryption:** Protects transaction data and user privacy.
 - **Subnet Benefits:** Leveraging Avalanche's fault tolerance and scalability ensures a secure and efficient environment.
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5. The Apertum Foundation

The Apertum Foundation, oversees governance, protocol upgrades, and ecosystem development, ensuring sustainability and growth.

The Foundation will have a total of 100 million pre-minted APT, for marketing, advertising, development and research purposes, constituting a 4.76% of total supply.

5.1 Governance

Governance is decentralized, allowing APT token holders to vote on protocol changes, resource allocation, and dispute resolution.

5.2 Development and Research

The Foundation drives innovation, including improving protocols and fostering partnerships that enhance the ecosystem.

6. Token Economics

6.1 Supply

APT has a capped supply of 2.1 billion tokens, with 2 billion mined through halvings and 100 million pre-minted for the Apertum Foundation.

50% of the total supply will be mined out within the first 125 million blocks (approximately 4 years)

Deflationary Mechanism

Up to 50% of all transaction fees are permanently burned, reducing the circulating supply and driving long-term value.

7. Roadmap

Phase 1: Protocol Pre-Launch

- Launch of Apertum blockchain.
- Pre-Launch of DAO1

Phase 2: Protocol Launch

- Launch of APT Mining Bots
- Launch of Decentralised DAO1
- Launch of Trading Transactions
- Advanced interoperability between multiple chains, swaps, bridges and DEX
- Integration of Solana, Avalanche, Ethereum

Phase 3: Integration of 3rd Party Smart Contract Projects

- Vetting, approving and launching of 3rd party platforms, services and transactions

Phase 4: Expansion and Scalability

- Advanced scalability features.

8. Conclusion

Apertum redefines cryptocurrency by combining fair mining, decentralized governance, and Avalanche subnet integration into a secure ecosystem. With a clear vision and robust architecture, Apertum aims to lead the future of digital finance.

9. Disclaimer

This document provides information on the Apertum blockchain and APT token. It does not constitute financial, legal, or investment advice. Participants should consult with advisors before engaging with the ecosystem.