# Apertum (APTM) Whitepaper

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# 1. Abstract

Apertum (APTM) 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.



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## 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.

## 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.



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## 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

### APTM in Numbers:

Total APTM to be mined is 2 Billion

Total APTM allocated to APTM Foundation is 100 Million

Total APTM supply is 2.1 Billion.



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## APTM 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 APTM** through mining, with rewards halved every 125 million blocks. (+/- every 4 years)

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

## General Formula:

**Variables:**

- RbR_bRb: Reward per block (APTM).
- BBB: Total blocks (125 million).
- PtotalP_{total}Ptotal: Total products price in USD.
- APTMrateAPTM_{rate}APTrate: Conversion rate of APTM per USD (Rb/PtotalR_b / P_{total}Rb/Ptotal).
- TAPTTM_{APTM}TAPTM: Total APTM rewarded in the halving (Rb×BR_b \times BRb×B)

### Key Equations:

1. **APTM/$ Conversion Rate**:
   APTMrate=RbPtotalAPTM_{rate} = \frac{R_b}{P_{total}}APTMrate=PtotalRb
2. **APTM Reward for a Product Price**: For a product priced at PPP (USD):

   APTMproduct=APTMrate×PAPTM_{product} = APTM_{rate} \times PAPTMproduct =APTMrate×P
3. **Total APTM Rewarded**:

   TAPTM=Rb×BT_{APTM} = R_b \times BTAPTM=Rb×B
4. **Total APTM/block**:

   TotalAPTM/block=APTMrate×PtotalTotal_{APTM/block} = APTM_{rate} \times P_{total}TotalAPTM/block=APTMrate×Ptotal



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## Halving Calculations on APTM Mining Bot:

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

### *Halving #0:*

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

### *Calculations:*

- APTMrate=817,550=0.000455840455840456APTM_{rate} = \frac{8}{17,550} = 0.000455840455840456APTMrate=17,5508=0.000455840455840456

- For a $50 product: APTMproduct=0.000455840455840456×50=0.0227920227920228APTM_{product} = 0.000455840455840456 \times 50 = 0.0227920227920228APTMproduct =0.000455840455840456×50=0.0227920227920228

- Total APTM Rewarded (TAPTTM_{APTM}TAPTM): 8×125,000,000=1,000,000,0008 \times 125,000,000 = 1,000,000,0008×125,000,000=1,000,000,000 APTM.

- Total APTM/block: TotalAPTM/ block=0.000455840455840456×17,550=8Total_{APTM/block} = 0.000455840455840456 \times 17,550 = 8TotalAPTM/block =0.000455840455840456×17,550=8.

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| Halving # | Reward/Block (APTM) | Total Blocks | Total APTM Rewarded | Cumulative Total | APTM/$ Rate | APTM for $50 Product |
|---|---|---|---|---|---|---|
| **0** | 8.0 | 125000000 | 1000000000 | 1000000000 | 0.000455840455840456 0 | 0.022792022792022800 |
| **1** | 4.0 | 125000000 | 500000000 | 1500000000 | 0.000227920227920228 0 | 0.011396011396011400 |
| **2** | 2.0 | 125000000 | 250000000 | 1750000000 | 0.000113960113960114 00 | 0.005698005698005700 |
| **3** | 1.0 | 125000000 | 125000000 | 1875000000 | 5.6980056980057E-05 | 0.002849002849002850 0 |
| **4** | 0.5 | 125000000 | 62500000 | 1937500000 | 2.84900284900285E-05 | 0.001424501424501420 0 |

| Halving # | Reward/Block (APTM) | Total Blocks | Total APTM Rewarded | Cumulative Total | APTM/$ Rate | APT M for $500 Product |
|---|---|---|---|---|---|---|
| **0** | 8.0 | 125000000 | 1000000000 | 1000000000 | 0.000455840455840456 0 | 0.227920227920228 00 |
| **1** | 4.0 | 125000000 | 500000000 | 1500000000 | 0.000227920227920228 0 | 0.11396011396011400 |
| **2** | 2.0 | 125000000 | 250000000 | 1750000000 | 0.000113960113960114 00 | 0.05698005698005700 |
| **3** | 1.0 | 125000000 | 125000000 | 1875000000 | 5.6980056980057E-05 | 0.02849002849002850 |
| **4** | 0.5 | 125000000 | 62500000 | 1937500000 | 2.84900284900285E-05 | 0.014245014245014200 |

| Halving # | Reward/Block (APTM) | Total Blocks | Total APTM Rewarded | Cumulative Total | APTM/$ Rate | APTM for $2000 Product |
|---|---|---|---|---|---|---|
| **0** | 8.0 | 125000000 | 1000000000 | 1000000000 | 0.000455840455840456 0 | 0.91168091168091200 |
| **1** | 4.0 | 125000000 | 500000000 | 1500000000 | 0.000227920227920228 0 | 0.45584045584045600 |
| **2** | 2.0 | 125000000 | 250000000 | 1750000000 | 0.000113960113960114 00 | 0.22792022792022800 |
| **3** | 1.0 | 125000000 | 125000000 | 1875000000 | 5.6980056980057E-05 | 0.11396011396011400 |
| **4** | 0.5 | 125000000 | 62500000 | 1937500000 | 2.84900284900285E-05 | 0.05698005698005700 |



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| Halving # | Reward/Block (APTM) | Total Blocks | Total APTM Rewarded | Cumulative Total | APTM/$ Rate | APTM for $5000 Product |
|---|---|---|---|---|---|---|
| **0** | 8.0 | 125000000 | 1000000000 | 1000000000 | 0.000455840455840456 0 | 2.2792022792022800 |
| **1** | 4.0 | 125000000 | 500000000 | 1500000000 | 0.000227920227920228 0 | 1.1396011396011400 |
| **2** | 2.0 | 125000000 | 250000000 | 1750000000 | 0.000113960113960114 00 | 0.5698005698005700 |
| **3** | 1.0 | 125000000 | 125000000 | 1875000000 | 5.6980056980057E-05 | 0.2849002849002850 |
| **4** | 0.5 | 125000000 | 62500000 | 1937500000 | 2.84900284900285E-05 | 0.1424501424501420 0 |

| Halving # | Reward/Block (APTM) | Total Blocks | Total APTM Rewarded | Cumulative Total | APTM/$ Rate | APTM for $10000 Product |
|---|---|---|---|---|---|---|
| **0** | 8.0 | 125000000 | 1000000000 | 1000000000 | 0.000455840455840456 0 | 4.5584045584045600 |
| **1** | 4.0 | 125000000 | 500000000 | 1500000000 | 0.000227920227920228 0 | 2.2792022792022800 |
| **2** | 2.0 | 125000000 | 250000000 | 1750000000 | 0.000113960113960114 00 | 1.1396011396011400 |
| **3** | 1.0 | 125000000 | 125000000 | 1875000000 | 5.6980056980057E-05 | 0.5698005698005700 |
| **4** | 0.5 | 125000000 | 62500000 | 1937500000 | 2.84900284900285E-05 | 0.2849002849002850 |

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## *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.



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### *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.

## 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 APTM, for marketing, advertsising, development and research purposes, constituting a 4.76% of total supply.

### *5.1 Governance*

Governance is decentralized, allowing APTM 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.

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## 6. Token Economics

### *6.1 Supply*

APTM 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 APTM 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.



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## 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 APTM token. It does not constitute financial, legal, or investment advice. Participants should consult with advisors before engaging with the ecosystem.

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