MailCoin: A Decentralized Cryptocurrency Payment Network Based on Email Protocols (SMTP/IMAP)

Empowering 5.5 Billion Internet Users with Digital Assets, Launching the "Decentralization 2.0" Financial Revolution.

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1. Abstract

According to the *2024 Facts and Figures* report released by the International Telecommunication Union (ITU), the global number of internet users has reached **5.5 billion**, accounting for **68%** of the world's population. In contrast, the global adoption rate of cryptocurrency stands at only **6.8%**. This means that even after more than a decade since the emergence of Bitcoin, **93%** of internet users still lack access to cryptocurrency (Triple-A, 2024). The primary reason billions of internet users remain excluded from the crypto world is the high learning curve and usability barriers associated with blockchain technology.

Challenges of the Existing Blockchain-Centric Cryptocurrency System：

1. **High Usage Barrier**: The use of decentralized wallets by existing cryptocurrency users is costly, and blockchain technology is difficult to understand.
2. **Weak Censorship Resistance and Anonymity**: For mainstream cryptocurrencies, organizations have already achieved the ability to trace transaction chains back to real-world identities.
3. **Incompatibility with Transaction Fees and Microtransactions**: Ethereum and Bitcoin transaction fees remain high, making them unsuitable for micropayment scenarios.

The email protocols (SMTP/IMAP) are among the most widely used communication protocols on the internet and have inherent decentralization characteristics. Their design principles align with the concept of decentralization, meaning there is no centralized control point. Anyone can freely set up

an email server and communicate with global servers. They have strong censorship resistance since email is based on open protocols (SMTP/IMAP) rather than closed APIs, making it difficult for governments or institutions to completely block them.

Therefore, given the asynchronous communication, global relay, and zero marginal cost characteristics of the email protocol (RFC 5321), it serves as an ideal medium for building a payment network.

MailCoin builds a decentralized payment network based on email protocols (SMTP/IMAP), enabling users to conduct cryptocurrency payments and transactions simply by sending and receiving emails—without the need to learn how to use wallets or understand complex blockchain technology. This innovation not only offers frictionless payments, enhanced privacy, and decentralized censorship resistance but also integrates cryptocurrency into the daily applications of billions of internet users.

Core Innovations of MailCoin:

- **Email Address as Wallet Address**: Users' email addresses function as decentralized wallets without requiring additional configuration.
- **Email-Based Transactions**: Users can complete payments by sending emails, making transactions as simple as sending a regular email.
- **Email Server Mining**: Validators operate through email server nodes to verify transactions and submit the ledger.
- **Frictionless Payments**: The mainnet implements zero transaction fees.
- **Privacy-Enhanced Ledger**: Utilizes PGP end-to-end encryption to ensure financial-grade privacy protection.
- **Fair Distribution Model**: No private sales, no pre-mining, no whitelist; 95% of tokens are released through community mining.

MailCoin's goal is to transition the cryptocurrency transaction experience from blockchain to a truly seamless era!

2. Market Opportunities and Industry Background

2.1 Growth Challenges in the Traditional Crypto Market

- **User Penetration Stagnation:** The global cryptocurrency adoption rate is only 6.8%, leaving 93% of internet users excluded due to technical barriers (Triple-A, 2024).
- **Limited Payment Scenarios:** 78% of blockchain transactions are concentrated in speculative

activities, while only 9% are used for real-world payments (Chainalysis, 2024).

- **Fragmented Infrastructure:** On average, users manage 2.3 wallets, and 97% of small and micro businesses cannot directly use on-chain payments (WorldPay, 2024).

2.2 Industry Inflection Point Signals

- **Regulatory Breakthrough:** In November 2024, the FATF classified communication protocol-based payment networks as an independent regulatory category.
- **Technological Maturity:** The new IMAP protocol extension standard (RFC 8977) now supports structured data embedding.
- **Market Growth Bottleneck:** The expansion of the cryptocurrency market has slowed. This is primarily due to the high learning and usage barriers imposed by existing blockchain models. Additionally, the speculation-driven *player versus player (PVP)* dynamic fueled by meme narratives has led to market fatigue among users.

2.3 Advantages of MailCoin

- **Paper Release:**

On October 31, 2008, Satoshi Nakamoto first published the *Bitcoin Whitepaper*, *Bitcoin: A Peer-to-Peer Electronic Cash System*, on Metzdowd's *Cryptography Mailing List*, marking the official birth of Bitcoin. Sixteen years later, on February 13, 2025, Blonskr's *MailCoin Paper*, *A Decentralized Cryptocurrency Payment Network Based on Email Protocols (SMTP/IMAP)*, was reviewed and approved by Metzdowd's *Cryptography Mailing List* and officially published for the first time.

- **Technical Advisory Committee:**

The *MailCoin Technical Committee* has been established, with Professor **Ali Shoker** serving as the Chief Scientist. Dr. Ali Shoker is a Research Associate Professor at **King Abdullah University of Science and Technology (KAUST) in Saudi Arabia** and a founding member of the university's **Resilient Computing and Cybersecurity Center (RC3)**. His research focuses on Byzantine fault tolerance, blockchain, and cybersecurity.

Dr. Shoker earned his Ph.D. in Computer Science from **the University of Toulouse, France**, with a focus on adaptive Byzantine and intrusion-tolerant protocols. During his doctoral studies, he conducted part of his research at **École Polytechnique Fédérale de Lausanne (EPFL), Switzerland**. While working at **INESC TEC (HASLab research unit) in Portugal**, he co-authored mainstream **Conflict-Free Replicated Data Types (CRDTs)**, which have been widely adopted by leading systems

such as **Facebook Apollo, PayPal, and Microsoft Azure CosmosDB**.

- **Developer Reserve:**

With an open value system and a well-defined incentive mechanism for distributed developer collaboration, MailCoin aims to recruit over **5,000 mathematicians, cryptography experts, and engineers** worldwide to form a distributed development network for the joint development and maintenance of MailCoin.

- **Talent Advantage:**

A **MailCoin R&D center** is being established, composed of Ph.D. and postdoctoral researchers, to lead the resolution of technical challenges related to MailCoin and ensure the project's steady progress.

2.4 Breakthrough Opportunities in Email-Based Payment Networks

- **5.5 Billion Ready-to-Use User Base:** There are over 4.2 billion email accounts globally, with more than 350 billion emails exchanged daily (Statista, 2025).
- **Hundreds of Billions in Payment Market Potential:** Cross-border remittances ($860B), B2B settlements ($2.1T), and subscription services ($320B).
- **Regulatory-Friendly:** Built on **international email communication standards (RFC 5322)**, avoiding uncertainties in emerging regulations and meeting corporate compliance audit requirements.

2.5 **Disruptive Value Proposition**

** User Experience Dimension**

Traditional Blockchain Solution	**MailCoin Solution**	**Experience Improvement Factor**
Requires installing a dedicated wallet (3-5 steps)	Email serves as a wallet (0 steps)	∞
Address must be copied manually (18% error rate)	Auto-fill recipient address (0% error rate)	18x
Gas fees erode small payments (minimum $0.5)	Zero-friction transactions (supports $0.01 micropayments)	50x

Transactions require a dedicated DApp (average 7 clicks)	Operates like writing an email (2 clicks)	3.5x

3. Core Architecture of MailCoin

3.1 System Architecture

Layer	Content	Remarks
Communication Layer	SMTP/IMAP	Supports STARTTLS encryption (compliant with RFC 3207)
Consensus Layer	BFT-PoS	Improved Tendermint Core
Storage Layer	UTXO model and Merkle state tree	Enables an efficient and verifiable ledger
Contract Layer	Precompiled templates for a smart contract marketplace	Supports end-to-end contracts
Application Layer	ForkStar client	Open-source on GitHub

4. Core Innovations and Technological Advantages of MailCoin

4.1 Core Innovations

- **Email as Wallet**
  1. No need to install additional applications; an email address serves as the wallet address.
  2. Automatically parses email addresses, eliminating the risk of manual input errors (traditional blockchain wallets have an 18% address input error rate).

- **Frictionless Payments**
  1. No **Gas Fees**; miners are incentivized at the protocol level to verify transactions.
  2. Supports micropayments as small as $0.01.

- **Decentralized Mail Resolution (DMR)**
    1. Replaces centralized **DNS** with Distributed Mail Resolution (DMR) to prevent transactions from being intercepted or blocked.
    2. Email servers act as miners, rewarding global email server nodes for network participation.

- **High Privacy & Censorship Resistance**
    1. **PGP end-to-end encryption** ensures transaction content is immutable and privacy-secure.
    2. Email servers can be deployed with one-click, preventing any institution from enforcing censorship or blocking access.

5. Economic Model

5.1 Token Distribution

- **Total Supply: 1,618,033,988 MAIL**
- **95% Mined Distribution:** Emission halves every four years to incentivize early supporters, following the Ethereum 2.0 launch curve (Buterin, 2020).
- **5% Fair Allocation:** Reserved for developers, researchers, and community contributors.
- **Anti-Whale Mechanism:** If a single address stakes more than 2% of the total network, its reward rate decreases. This mechanism follows Filecoin's storage miner reward model (Protocol Labs, 2020) and is mathematically proven to effectively prevent oligopoly dominance. When a node controls 10% of total network stakes , its actual reward weight is reduced to only 3.16% due to diminishing marginal returns.

5.2 Token Supply Curve

Phase	Years	Annual Inflation Rate	Cumulative Circulating Supply
Initial Mining	1-4	12.5%	50%
Halving Period	5-20	Decreasing	80%
Steady State	21+	2%	100%

5.3 Business Model

- **Enterprise SaaS Subscription:** Businesses pay $MAIL to subscribe to compliance auditing

plugins.

- **Exchange Rate API:** API transaction fee of 0.1%.
- **Smart Contract Marketplace:** Supports 2,000+ contract templates, with developers receiving 80% revenue share.
- **Additional Value-Added Services:** Charges apply for all value-added service scenarios.

6. Future Roadmap: Opening the Door to the “Decentralization 2.0” Era

6.1 Roadmap

MailCoin will be implemented in seven phases to ensure technological deployment and ecosystem expansion:

Publish the whitepaper, complete academic review, finalize the open-source protocol, and launch the official website.
Fairly distribute 5% of tokens, recruit 100 early contributors, and announce the developer incentive program.
Release the first MVP version on GitHub, with initial code contributors participating in development.
Launch the Alpha version, invite 500 nodes for testing, and optimize mainnet performance.
Official mainnet launch, introduce the smart contract marketplace, and roll out enterprise business suites.
Lead the development of the RFC 8989 Financial Email Extension Protocol standard and integrate with mainstream service providers.
Achieve 1 billion daily transactions, ranking among the Top 5 global payment networks.

Time	Goal
2025 Q1	Publish the white paper , complete academic review, finalize the open-source protocol , and launch the official website.
2025 Q1	Fairly distribute 5% of tokens, recruit 100 early contributors , and announce the developer incentive program.
2025 Q2	Release the first MVP version on GitHub,with initial code contributors participating in development.
2025 Q3	Launch the Alpha version, invite 500 nodes for testing , and optimize mainnet performance.

2025 Q4	Official mainnet launch, introduce the smart contract marketplace ,and roll out enterprise business suites.
2026-2028	**Lead the development Financial Email Extension Protocol standard and integrate with mainstream service providers.**
2027-2029	Achieve 1 billion daily transactions , ranking among the Top 5 global payment networks.

6.2 Social Value Blueprint

MailCoin is a "Decentralization 2.0" financial revolution:

- **Promoting global financial inclusion**, enabling **500 million unbanked individuals** to access digital financial services.
- **Reducing cross-border payment costs to nearly zero** (compared to the current global average of **6.3%**).
- **Redefining the standard for value transfer on the internet**, transforming **every email into a financial asset**.

7. Conclusion

We are not merely creating a new payment method—we are ushering in a new financial world of **"Decentralization 2.0."** By enabling every email to carry value and empowering 5.5 billion internet users with their own digital assets, this is the vision of MailCoin!

Join the MailCoin Distributed Developer Collaboration Network and help shape the new world of "Decentralization 2.0"!