



LATTICE
NETWORK

WHITE-PAPER

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1. Welcome to the Lattice Network next-generation blockchain

The blockchain space has evolved manifolds in the past few years. Decentralized finance and NFTs are multi-billion-dollar industries in themselves. Individuals, funds, merchants, developers, governments, and financial institutions are increasingly seeking to explore, adapt, and capitalize on opportunities enabled by blockchain technology.

With the current global cumulative value of digital assets under management reaching around [\\$1.1 trillion \(as of 18.08.2022\)](#) and continuously growing, the blockchain space has attracted many conglomerates, institutional investors, retail traders, and millions of daily users of decentralized applications.

With the blockchain ecosystem growing rapidly, new technologies are formed to provide unique solutions, apps and concepts in an ever-changing ecosystem. At first, layer 1 blockchains offered decentralization and security. But unfortunately, this often meant that scalability was compromised, especially in the case of Bitcoin, which only provided the two aspects mentioned above.

At Lattice Labs, we believe in the world-reshaping power of this technology. We are committed to building the tools and scalable infrastructure to carry out that mission. LATTICE offers several solutions and network services to facilitate entry and participation into the new Web3 economy, which we will lay out in this whitepaper.

1.1 What is Lattice Network?

LATTICE Network is building an infrastructure for Network-as-a-Service (NaaS). Lattice's Network is a highly scalable and eco-friendly Layer 1 blockchain that achieves high throughput and offers compatibility with the Ethereum VM and all other major blockchain networks. LATTICE's innovative design and consensus mechanisms dramatically improve scalability, security, interoperability, and eco-friendliness for the future of digital assets, Dapps, and Web3.

At a high level, LATTICE Network offers the following benefits...

Lightning-Fast Transfers and Zero Fees

With LATTICE's AI Delegated Proof-of-Vote consensus algorithm (AIDPOV), its transactional flow and processing of a transaction take less than a second with 7000+ transactions per second and scale to thousands of external chain nodes, as opposed to BTC and ETH, which take much longer and require multiple confirmations on their ledgers to produce a confirmed transaction.

Trust and transparency

Blockchains create trust by giving all parties access to reliable, immutable information. Data is shared across parties, making it more accurate and consistent. Everyone (with permission) can verify the authenticity of the information, which improves transparency and reduces fraud. The decentralized nature ensures that no single entity can alter data because to update the ledger, the network needs to reach a consensus first.

Highly Secure

Blockchain technology ensures various security measures. By storing information in a distributed manner across many nodes, operated by quantum computers, we can mitigate any single point of failure. Our Quantum AI security prevents any hacker attacks or risk of information loss and ensures full user ownership of data. If a failure does happen to occur, each node possesses a complete copy of the blockchain, so data is never lost or compromised (i.e., it is fully tamper-proof). This design also minimizes the risk of downtime, as replicating information across nodes ensures high availability and reliability. Our AI Delegated Proof-of-Vote (AIDPOV) consensus mechanism allows transactions to be processed asynchronously. This increases the speed and throughput of transactions, removing the need for mining, and unlocking unparalleled security and scalability.

A More Scalable, Efficient, and Eco-Friendly Solution

The main challenge for other Layer 1 blockchain networks is the limited transaction throughput that does not achieve the level required for most processes. LATTICE's innovative consensus mechanism AIDPOV (Artificial Intelligence Delegated Proof-of-Vote), enables us to process 7,000+ transactions per second and scale to thousands of external chain nodes. Transactions are finalized within a second and with zero fees. The extensive network spectrum settles transactions instantly and without the risk of reversibility. This can be implemented both with permission and permissionless settings.

Additionally, LATTICE Network builds trust with data from trusted licensed third parties, who streamline operations for regulated industries and saves time and money. Compared to other blockchain solutions, LATTICE's Multidimensional block-lattice structure combines scalability, decentralization, and security. It prevents network strain and cleverly handles the scalability and energy consumption issues that other chains hold. This consensus mechanism prevents the use of mining so there is a zero-carbon footprint and zero gas fees.

A Fully EVM Compatible Blockchain

Lattice Network's performance scales to many nodes, including integrations of external chain full nodes. Lattice Network's products are fully customizable, and its capabilities allow external full nodes to be integrated, like the Ethereum Virtual Machine, Bitcoin, Avalanche, Solana, Binance, Tron, Polkadot, Polygon, and many more to come; it ensures seamless and much more secure transactions with zero fees. This allows you to easily deploy and scale your Dapps, all while benefiting from the next-generation quantum speed consensus algorithm.

Open Source

Lattice's fast, eco-friendly network is completely open-source and decentralized. Anyone can read its code, monitor progress, comment, and contribute to the future of the network.

Optimizing the blockchain 5 lemma

The blockchain 5 lemma is the Lattice Networks' outlook on the future of distributed ledger technologies, which must balance between speed, security, scalability, computational effectiveness, and being eco-friendly.

Comparing the 5 Lemma to other blockchain operational consensus, it is required to optimize all 5 pillars for the future of blockchains, unlike others where it's not possible to optimize all 5 at the same time without any tradeoffs.

For example, a distributed ledger such as Bitcoin has arguably strong security through its consensus protocol and decentralization, but gives up speed, scalability, and computational effectiveness, and is eco-unfriendly as a result.

LATTICE Network achieves decentralization and security through a chosen permission factor and a next-generation consensus protocol, in which anyone can join and leave the network at any time and all nodes are equal.

1.2 How does it work?

Lattice Network incorporates a Multidimensional Block Lattice structure, with no limit to scalability while improving security. In the Block Lattice structure, every account has a unique blockchain to record its own transactional information. With Smart Contract functionality, Lattice Network supports multiple token issuances within one account. Each account supports multiple tokens and each new token added will be mapped to a new chain within the same account so that each account can have multiple chains. Each token has its own "OPEN Block" in every single account. Since one token/one chain is one dimension, the structure with multiple tokens creates a

multidimensional Block Lattice. Each blockchain for an identical token is independent of others. The underlying structure of each token blockchain carries the Block Lattice structure and thus stays concise and agile.

Multidimensional Block-Lattice structure brings Lattice Network the following benefits:

Low Transaction Validation Latency

The use of independent account chains enables the user accounts to be updated asynchronously, without the need to involve the entire network. The dual-transaction approach leaves the process of transaction verification to the affected accounts, such as the sender and the receiver. This option eliminates the need for miners, meaning that transactions are instant and with zero fees. The network, therefore, becomes more scalable and agile.

Scalability

Scalability is hugely important, especially for web3 applications, because it requires the processing power and capability to create smart contracts, more liquidity for decentralized applications, building dApps, and increased transparency. It is comparable to Ethereum 2.0 in terms of its speed and capability.

Transactions on Lattice are handled independently of the main ledger. Every transaction is also an independent block that fits into a User Datagram Protocol (UDP) transactional packet and is recorded as a unique block. UDPs are transactional packets that help keep computational costs low, allowing you to send transactions to accounts that are offline. Using a system of references and hash pointers eliminates issues relating to block size and allows the network to scale without all nodes having to hold a copy of every transaction ever made. Rather, nodes store the most recent and current blocks of each account chain. Consequently, the network can achieve a drastically higher scale than other blockchain networks.

This is where block lattice and mainstream blockchain differentiate. A transaction on the blockchain cannot be isolated and recorded on the main chain. A specific number of transactions are verified before being added to the main chain. This means increased transactions lead to a steady decline in speed, slowing down the entire network. Lattice Network uses "account chains" to create a lighter network, reducing the problems of scalability that blockchain-based solutions often encounter.

Low Energy Consumption

The Lattice Network is built upon an AIDPOV architecture: AI-powered Delegated Proof-of-Vote (AIDPOV). This consensus can achieve low energy consumption because it does not require mining activity. All energy is contributed to make effective computing. Both consensus mechanisms will be elaborated on later in this paper.

Inherent Anti-Centralization

Mechanism-guaranteed anti-centralization refers to the fact that each account has its own ledger, namely, the account-chain structure, and validation is conducted by delegates via an asynchronous mode. This is unlike the Proof-of-Work (PoW) consensus used by Bitcoin, where ledger generation and confirmations are completed by miner nodes; and unlike the Proof-of-Stake (PoS) consensus algorithm where transaction validation is based on the number of tokens a validator stakes.

In addition, the structure of the anti-centralized Block Lattice requires the transaction sender and receiver to conduct a small computational effort input - local PoW process. This process has decreased the possibility of transaction centralization, like how decentralized exchanges decrease the possibility of super account formation.

1.3 Lattice Token (LATT)

Lattice is a decentralized blockchain network with a native token known as LATT. LATT is used for governance, payments, and to contribute to the health and longevity of the network.

LATT's main utility is sending and receiving payments of value on the Lattice Network, with the advantage of having a high throughput, fast finality, and zero fees. The LATT total supply is 3.4 trillion and is currently in circulation on the Lattice Network.

Features and Utility:

LATT Zero Network fees

On Lattice Network there are zero network fees and zero transaction fees to deploy smart contracts.

Using LATT

The main utility of the LATT is being a native token medium of value on the Lattice Network, with the advantage of having a high throughput, fast finality, and zero fees. On Lattice Network, transfers take 1 second and have zero cost.

LATT On-Chain governance

LATT is needed for on-chain governance. Because Lattice Network is a fully permission-less and leaderless decentralized ecosystem, any decision regarding the network is carried out by on-chain governance. With governance, users can propose and vote for changes and improvements. LATT is the governance token required to participate in the voting process.

Securing the network

The LATT token is also used to secure the LATT market cap. Besides preventing centralization, the system is also environmentally friendly, and holding LATT Token contributes to the longevity and sustainability of the network.

How to obtain LATT?

You will only be able to obtain LATT on the Lattice Network. You can swap tokens to LATT using BTC, ETH, or any Lattice Network ecosystem tokens.

How to store LATT?

Safely store LATT or any Lattice Network-based tokens and collectibles using the Lattice backpack or any Lattice Network-compatible cold wallets, such as MetaMask and Trust Wallet. We discourage storing your tokens on any exchanges due to the custodial risk.

1.4 Web 3.0 using LATTICE Network

Lattice Network offers the first Web 3.0 stack built using an AI-powered Delegated Proof of Vote (AIDPOV) consensus. The speed, reliability, and zero cost is incomparable to any other predecessor Blockchain.

On Lattice Network, you can use your LATT and any Lattice Network tokens while accessing the Web3 tools.

Get started instantly

Access Web3 using your Lattice Backpack – make payments and purchases instantly. Just follow the registration or setup.

Fully decentralized

You're always in control of your keys and can trade from your computer or your personal device.

Next-generation Web3 platform

Unlock a whole new way of using decentralized products. Transactions on Lattice Network are almost instant and have zero cost.

Lattice Network Web3 products:

Swap your digital assets

You can swap any digital assets from any chain directly from your Lattice Network backpack. Take advantage of trading Lattice-based tokens and other digital synthetic collectibles from other top-tier full nodes, which represent tokens outside the Lattice Network ecosystem. You can swap Bitcoin with Ethereum, and many other pairs of tokens from different ecosystems.

2. Tools accessible on the Lattice Network

2.1 Lattice Network Backpack

Lattice Network Backpack is the official native cold wallet for Lattice Network's main-net. With the Lattice Network Backpack, you can:

- Install the IOS or Android app, or use the PWA Web app.
- Create a wallet
- Store your private key safely
- Load an existing wallet
- Send and receive LATTICE-based assets and any digital synthetic assets

For more information, check out the instructions on: [How to use the LATTICE Network Backpack](#)

2.2 Store and send LATT and all digital assets

You can safely store LATT, or any digital synthetic asset using LATTICE Network or any leading mobile wallets.

1. LATTICE Network Backpack

The official wallet of LATTICE Network allows you to safely store, send and receive your digital assets and use them on Web 3.0 and the LATTICE Network.

2. Metamask

As the most popular software wallet and browser extension, Metamask allows you to store mainnet LATT and interact with LATTICE Network Dapps.

3. Trust Wallet

Another trusted and widely used token wallet, Trust Wallet supports mainnet LATTICE Network.

4. Ledger

Ledger Nano is the most popular hardware wallet and the most secure way to store your main net LATTICE-based assets and interact with LATTICE Network Dapps.

3. Solutions: Empowering the next era of Web3-enabled businesses

LATTICE empowers the world's leading institutions, enterprises, and governments to develop and scale global solutions using blockchain technology. Launch digital assets, build interfaces, and streamline payments without ever sacrificing on security. Tap into the power of Web3, gain access to a global investor audience, and improve liquidity, all while cutting out fees and speeding up processes.

A wide range of industries can benefit from LATTICE Network's unique and future-ready infrastructure...

Digital Asset Creation

LATTICE Network's blockchain technology allows you to quickly create digital assets for monetizing traditional financial instruments, gaining access to a global investor audience, and improving liquidity.

Institutional Finance

LATTICE Network for enterprise-grade applications brings efficiency to the back office, mitigating intermediaries or siloed infrastructures and keeping transactional safety while eliminating custodial risk. Real-time settlement will become a reality, accompanied by transaction cost savings.

Tokenized Digital Content

Digital Content tokenization enables all digital content to have the opportunity to be tangible for the first time globally. For journalism and advertising companies, it means streamlined operations, historic content value based on subscriptions, and alternative advertisement vehicles. Digitalization and fractionalization of digital content give exposure to secondary markets and attract new sectors.

Tokenized Physical Assets and Real Estate

The tokenization of physical assets enables niche markets to be accessed globally and widens the exposure of a product in its industry. The tokenization of real estate allows for better access to real estate investments for the public, as individuals are now able to own fractional amounts of a tokenized piece of Real Estate. Further allowing institutions to streamline their operations, gain access to a wider investor pool and explore alternative financing options. The digitalization and fractionalization of physical assets and real estate enable secondary markets to be more liquid, thus attracting new investors.

Supply Chain Management

Digital processes can improve efficiency, transparency, and accountability in current operations. LATTICE Network enables real-time traceability, identifying counterfeit operations and trade contracts more effectively.

Smart Healthcare

LATTICE Network uses its AIDPOV consensus to verify the authenticity of pharmaceuticals, minimizing health risks for patients. Secure data storage can ensure patient confidentiality while also improving data sharing.

Central Bank Solutions

Central bank-issued digital currencies, or CBDCs, are a new approach to providing financial stability while speeding up interbank settlements, reducing transaction costs, and making the financial system more accessible to the wider public.

AI & AGI Integration

With LATTICE Network, all Artificial Intelligence business models have access for the first time to next-generation AI-based blockchain tools. LATTICE Network's AI Integration processes constitute a vast improvement in efficiency and transparency over current operations and enable real-time traceability, identifying answers more effectively.

Enterprises and Governments

LATTICE Network provides Next Generation Enterprise and government blockchain services centered around its innovative and breakthrough consensus-as-a-service solution. They can now start migrating their digital presence onto a scalable blockchain and use LATTICE's user-driven tools and full-time development services to take on the decentralized world and all the blockchains' advantages. Whether it be wallet development and integration tools, payment systems, user-driven metaverse development and integrations tools, NFT studio creation tools, or inventory systems, we assist companies to build public or private distributed ledgers on a highly scalable platform with Quantum speed settlement times at zero costs for their users.

Work With Us

LATTICE provides a vast range of Web3 solutions that are adaptable to anyone's needs and our scalable tools and infrastructure are designed to unlock real-world value. We work in conjunction with universities, global industry leaders, blockchain and cyber security experts, central banks, and government institutions to provide our services at every step: from ideation, and development, to expansion and maintenance.

Want to optimize your business process and set up your company on LATTICE Network? Contact us.

Join the global community

Join a fast-growing and global community of builders, ushering in the new era of the internet.

- Website: <https://latticelabs.io/>
- Blog: <https://news.latticelabs.io/>
- Discord: <https://discord.gg/latticelabs>
- Twitter: [https://twitter.com/Lattice Labs](https://twitter.com/Lattice_Labs)