
MEVERSE
Optimum Blockchain Metaverse Platform
MEVerse Whitepaper V1.0

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Vision

MEVerse, a medium connecting a user (ME) to the metaverse, is our immense blockchain metaverse platform that allows users to explore a new form of entertainment. The joy of watching, feeling, and relating together is the core value that we pursue.

Metaverse, a compound word consisting of “meta” meaning transcending or virtual and “universe” meaning world or space, is a three-dimensional virtual space where social, economic, and cultural activities take place in the same way as in the real world.

MEVerse provides a myriad of social, economic, and cultural content that can be watched, felt, and enjoyed based on the Layer-1 MEVerse mainnet technology, and the users can freely engage in activities to have fun as well as to continuously create values for which they will be sufficiently compensated.

The blockchain protocol in the MEVerse platform is the key to verifying data validity, securing information transparency, and imbuing digital assets with scarcity through proof of ownership. The MEVerse mainnet, our independently-developed blockchain protocol, boasts outstanding blockchain performance and reliability for sustainable operation through technological innovations such as PoF (Proof of Formulation), Block Redesign, LEVEL Tree Validation, and Parallel Sharding. Our customized multi-chain structure provides an easy DApp development environment as well as a fast and convenient user environment.

An MApp, a blend of the words “MEVerse/Metaverse/ME” and “DApp,” is linked to the MEVerse platform and operates on the MEVerse mainnet via open source to connect with the three-dimensional virtual metaverse and thus with around 8 billion “me”s. Based on the platform’s vision of establishing a blockchain ecosystem that anyone can enjoy, MApps consist of entertainment-centric services coupled with additional features such as the P2E (Play to Earn) model, proof of ownership using the NFT (Non-Fungible Token), and P2P transactions for users’ maximized usability.

The combination of our evolving blockchain technology and our Metaverse will maximize the synergy and establish a global ecosystem where people all around the globe can constantly prove their values and can experience the joy of transcending the reality on MEVerse.

Optimum Blockchain Metaverse Platform

MEVerse is our Optimum Blockchain Metaverse Platform that anyone around the globe can enjoy. Our independently invented blockchain technology acts as the fundamental protocol of our platform through its outstanding performance with an average of 9,000 TPS as well as the scalability and interoperability achieved by our cross-chain technology.

The blend of our blockchain technology and our Metaverse ensures that MApps provide a variety of content and services on the platform, guarantees an optimum operating environment without network congestion, and supports each MApp's independence according to its different policy settings. Also, affordable transaction fees thanks to the chain's user-friendly system significantly reduce the cost burden for MApp providers and users.

Our platform environment that encourages the prosperity of MApps supports the stable establishment of an initial MApp ecosystem and accelerates the expansion of the ecosystem by rapidly processing a large number of transactions from an MApp through high network performance.

MEVerse can develop and provide an assortment of blockchain-based services not limited to a single category, such as entertainment, finance, and healthcare, through the optimal MApp-friendly protocol. This will lay the foundation for the growth of our blockchain metaverse platform and at the same time offer the users the pleasure of transcending the reality in their daily life.

2.1. Entertainment

Leisure activities are a necessity as well as a complement to our daily lives. Humans have long sought pleasure to relieve stress and improve their quality of life. Pleasure has also been the mother of many new inventions. We have developed countless sports and games, have created or owned artworks as part of pleasure-seeking. As more people invest money and time for pleasure, various content such as movies, dramas, and animations have been explosively produced and evolved into a constantly-growing industry with a systematic production structure as needed in the contemporary world.

- 2.5 billion out of 8 billion people on Earth play games.
  https://techjury.net/blog/video-game-demographics/#gref
- 5.5 billion people on Earth watch TV, and 220 million of them have Netflix accounts.
  https://www.statista.com/forecasts/1207931/tv-viewers-worldwide-number
- 3.2 billion out of 8 billion people on Earth watch the English Premier League.
  https://www.dailymail.co.uk/sport/sportsnews/article-10409843/Premier-Leaguedominates-Bundesliga-Ligue-1-La-Liga-Serie-attracting-3-2-billion-TV-viewers.html

Nowadays, we define the overall industry related to human leisure activities as the “entertainment industry,” which already takes up a large part of our lives and constantly integrates with new technologies to induce new demands and supplies.

MEVerse is constantly exploring new values through the convergence of blockchain technology and entertainment, building a platform environment for offering and gaining pleasure. Our blockchain metaverse platform will continuously provide various high-quality services and content centered on blockchain entertainment and further contribute to the expansion of the blockchain market in line with the exponential growth of the entertainment industry.

2.1.1. Game

Games are the most representative form of entertainment enjoyed by around 2.5 billion out of 8 billion people on Earth. The global game market increased to $180.3 billion in size in 2021 by a 1.4% growth from the previous year. Mobile games account for 52% of the market share, worth $93.2 billion, followed by console games with a market share of 28%, worth $50.4 billion. The market for PC games turns out to be the smallest with a market share of 20%, worth $36.7 billion.

As such, games are technically enjoyed by a third of the global population, but there are some widely-known issues in the current game market.

- Staggering development costs of PC/console games
- Red-ocean competition in the mobile game industry
- Limited authority of game players (absence of ownership, alienation from game information, limited rights to engage in game policy-making and management)

To solve these problems, game companies have increasingly introduced blockchain technology to the industry. The new attempts include the P2E (Play to Earn) model in which players can not only have fun but also receive rewards for their gaming performance and the NFT (Non-Fungible Token) system that tokenizes an important item or a player's unique character as an NFT to record in the blockchain, thereby supporting the proof of ownership and a P2P transaction of the resource.

Although blockchain games provide entertainment and economic benefits for game players and high retention rates for game companies, the compatibility between games and blockchain technology is found to be not seamless enough to change the paradigm of the conventional game industry. For the full convergence of blockchain technology and games, it is crucial to first achieve blockchain performance that can handle a large number of game transactions as well as to lower transaction fees to prevent any inconvenience for providers and users in operating and playing blockchain games. Without these conditions met, the entire blockchain may be overloaded due to transactions concentrated on a few specific games, or transaction fees may soar, causing major disruption to users' playability.

MEVerse supports the seamless operation of blockchain games through the independently-developed, mainnet-based platform system with a fast transaction speed of 9,000 TPS on average and a remarkably lower transaction fee. Also, the chain scalability enabled by the customized multi-chain structure proactively prevents fee competition due to network congestion or overload in blockchain games.

Companies or developers that operate blockchain games using the MEVerse mainnet can either build an independent mainnet environment per their own operational policy or easily onboard the MEVerse main chain with either our enterprise solution or onboarding solution.

In addition, through the MEVerse mainnet protocol, a game company can tokenize in-game items to prove the gamers’ ownership of items, and the gamers can freely trade the NFTs of their items without the game company’s control and can easily retrieve the transaction history and price of their tokenized items. The interoperability of items across multiple games also further enhances the gamers’ convenience and fun experience.

Blockchain games have taken another major leap to solve problems of the existing game industry and have diversified the industry by taking it beyond simple entertainment. The key to this trend can be summarized as how well a blockchain, combined with games and their technological elements, serves its role. To this end, it is important to secure the blockchain performance that can digest a large number of transactions generated from games and the trust in the protocol itself that proves the ownership of innumerable IPs in the games.

2.1.2. Media and Content

Blockchain technology has a decentralized structure. Transaction details are not managed by a specific central entity such as the government or a bank, but instead, all participants share the same ledger. Data transparency and accuracy are guaranteed because if someone arbitrarily alters any information, the members can compare each other's information to determine the authenticity of the data.

Therefore, blockchain technology is highly demanded in data verification, especially in the media content of the entertainment industry. By recording the copyrights of media content on a blockchain, one can prove its authenticity, identify its revenue structure with verified sales and distribution information, and distribute the revenue fairly.

MEVerse is contributing to cultivating the entertainment industry by building the Date Management System that accurately stores and classifies records based on our stable network. We aim to invigorate the market and diversify the industry through our blockchain-based media and content services.

NFT (Non-Fungible Token) technology can also be actively used in the entertainment industry. In an NFT, the only unique token in a blockchain, information such as ownership and purchase history of an asset is permanently recorded, making it easy to retrieve the history of NFT ownership and transfer of ownership.

Based on these characteristics, it is possible to identify the authentic product out of indefinitely reproducible digital media and content and specify the royalties for works or artists, which have not been recognized as assets in the traditional sense. Since NFTs, once recorded, are impossible to forge or fake, the initial content provider can view the content distribution history to reliably protect his/her profits.

NFTs can be very intriguing to fandoms and collectors, the central axis of the entertainment industry. As NFTs can be created for the merchandise sold or given away first-come-first-served or by lottery as well as fan-generated content to satisfy the needs of loyal users, blockchain media and content services based on NFTs can be provided in countless different forms and aspects, not limited to a single category.

MEVerse aims to stimulate the platform by generating and proving the values of various MApp content and unique user identities through NFT tokenization, establishing a virtuous cycle of value centered on the NFT marketplace, and constantly reproducing added values.

2.2. DeFi (Decentralized Finance)

With the introduction of money, finance has gradually become a realm of service —a bank is one of the centralized financial service institutions with a long history. Centralized financial services like banks, operated with the intervention of a third party, may give a cumbersome experience to users, such as visiting an actual bank, filling out numerous documents to verify their identity, and other complicated procedures. A bank's designated business hours and policies make it difficult for the customers to use the service in real time and simply set a lot of obstacles in use.

Moreover, banking services are not equally provided to everyone. People in countries with very little access to banks can only limitedly use the services, and those residing in countries where personal ID issuance is difficult may not be able to verify their identity to open an account at a bank. Under these circumstances, even basic banking services, such as money transfer and deposit, will not be available. As such, centralized financial services with the intervention of a third party does not guarantee everyone an equal opportunity to use them but rather alienate many people from financial services at all, causing serious grievances with the centralized financial system.

Blockchain technology can decentralize financial services to solve the blind spots of the centralized system. As blockchain technology and the number of its users has grown, decentralized services have been offered in various forms, including DeFi, an exemplary decentralized financial service.

DeFi utilizes a blockchain network to provide financial services such as payment, money transfer, deposit, and loan, not under the control of the central authority. Operating per the pre-determined protocol, DeFi doesn't require any in-person visit to a bank or any permission. It also simplifies complicated procedures such as identity verification and a great deal of paperwork, which saves a lot of unnecessary time spent and ensures user anonymity.

DeFi operates on virtual assets, not fiat money. As it doesn't require a currency issued by a certain country or institution, it is not regulated by the policies or rules of the country or other centralized institutions with strong authority. Also, the service is available to anyone, 24/7. It allows for cross-border trade regardless of an individual's credit status, offering everyone the great advantage of using the service under equal conditions.

There is a belief that centralized institutions place their interests above those of users. This deeply-ingrained distrust of currencies issued by countries and centralized financial systems has led to a staggering demand for virtual assets and explosive growth of DeFi services.

Accordingly, MEVerse is striving to provide financial benefits to more people with our DeFi service that people around the globe can use freely and conveniently whenever they need it.

The MEVerse chain is linked with various mainnet chains through Gateway, our own cross-chain technology, to incorporate assets based on many different networks into our DeFi service. This means that the users can freely transfer their virtual assets to other networks for versatile usage.

When it comes to DeFi, it is critical to establish a protocol environment that can be conveniently used without any third-party intervention or central authority. Therefore, network speed, stability, and transaction fees are the most crucial factors that DeFi users consider when choosing a service. The MEVerse mainnet can quickly process transactions with an average of 9,000 TPS while charging a very low transaction fee to maximize user convenience.

2.3. MApp (MEVerse/Metaverse/ME + DApp)

The DApp market has continuously expanded with the emergence of blockchain technology and has constantly been changing its shape over time. As more users have wanted to be liberated from the control of centralized institutions or platforms on conventional applications, decentralized services have increasingly appeared to meet this demand. Although the new paradigm of decentralization has waxed and waned in the traditional centralized era, the endless launch of DApps and their development have instilled the vision of blockchain and decentralization.

However, at first, it was very difficult to find any DApp that could actually be used in everyday life. From then on, people started to seek practically usable blockchain DApps rather than focusing on decentralization. But, there are still not many killer DApps around us because DApps need to be free from mainnet overload and high fees to provide actual services.

To overcome this, MEVerse provides the mainnet environment with high speed, low fees, and excellent scalability for the revitalization of DApps. MEVerse connects a user (ME) with DApps through blockchain mainnet technology optimized for our lives and further creating the metaverse ecosystem.

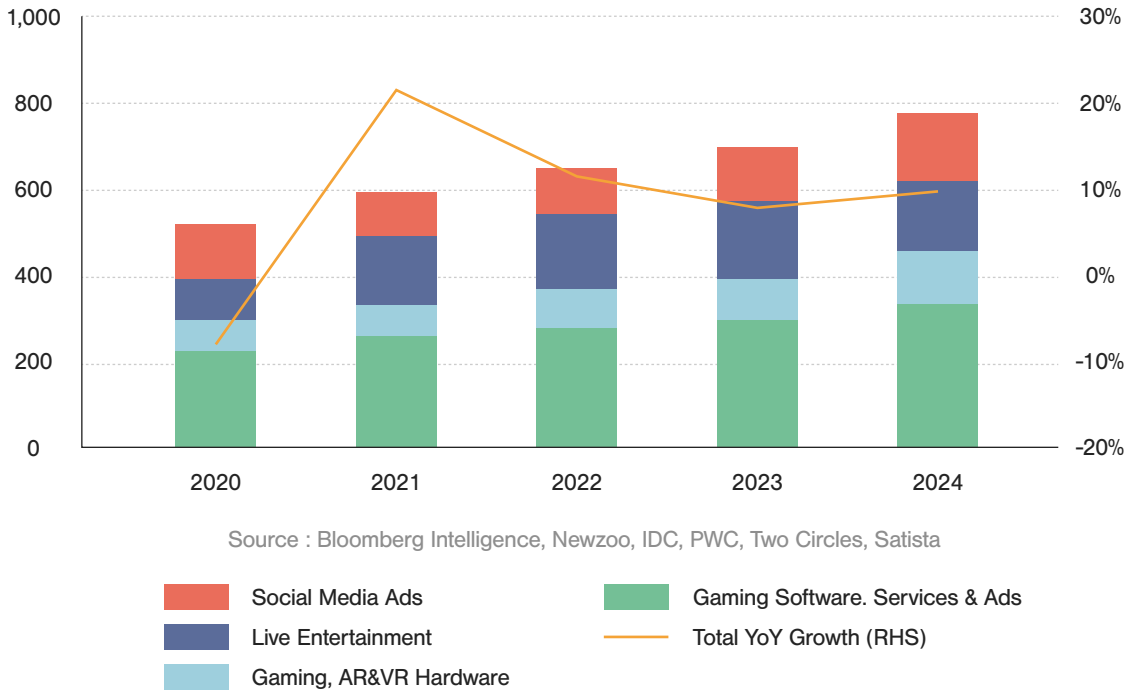
Through MEVerse, DApps evolve into the concept of MApps (MEVerse/Metaverse/ME + DApp). Providing their unique content and services in our blockchain metaverse platform, MApps will be connected to about 8 billion “me”s based on our MEVerse mainnet protocol.

2.4.1. Market Analysis

FAANG (i.e., Facebook, Apple, Amazon, Netflix, Google), the leaders of the 3rd industrial revolution driven by the innovation of the Internet and computers, are paying close attention to the metaverse. Microsoft and NVIDIA, the IT behemoths in the US, declared the metaverse as their next-generation core business and are dedicated to researching new technologies related to the metaverse.

Microsoft and Amazon have begun to develop a business that converges their flagship cloud services with the metaverse. Facebook changed its name to Meta for the first time in 17 years since its foundation to focus on converting the Oculus Quest VR ecosystem into a metaverse based on the Facebook platform, a leading lifelogging service platform.

The total market size of the metaverse industry stands at $478.7 billion as of 2020. The subdivisions include social media advertising, live entertainment, gaming and VR equipment, and software services. In the entire metaverse market, gaming (software and hardware) alone is predicted to jump from $274.9 billion in 2020 to $412.9 billion in 2024.



2.4.2. MEVerse

While the traditional gaming market's development and use environment has already been systemically established for decades, the metaverse market is an unknown territory full of new challenges and innovations and is a key idea for the 4th industrial revolution to come. This flow of innovation has already begun, as obviously shown in the growth of the metaverse-related industries. MEVerse connects users (ME) with the Metaverse and helps them create their own Metaverse beyond their reality in our blockchain mainnet-based metaverse ecosystem.

1) Seamless Metaverse

Avatar, the persona of a user in the metaverse, should be able to use the service seamlessly and continuously. She should be able to play blockchain P2E games with her single avatar, own NFT photos of the artists she supports, and read the latest web novels. And all these experiences should be seamlessly provided in the single metaverse ecosystem based on the information on the real "me" instead of running specific services every time or moving between platforms.

MEVerse users can seamlessly use various services with just one blockchain ID in the Metaverse using their own account and private keystore. MEVerse's gateway system can also easily convert assets in the MEVerse Metaverse ecosystem into various mainnet-based assets. Even if a service in our Metaverse uses another mainnet that does not belong to MEVerse, users can still dive into the seamlessly connected Metaverse through the Gateway without interruption of experience.

2) Authentic Metaverse

The metaverse is not about the experience and content of the real world but the consumption and experience of the content through the personas of users in the digitalized world. The most essential matter in this virtual space is the degree of immersion a player can experience. No matter how interesting and good the content is, if the metaverse experience is not pleasant and realistic, the user's immersion level will decline, significantly degrading the quality of the entire experience in the metaverse.

Our excellent TPS performance processing an average of 9,000 transactions per second allows users to have a more immersive experience by providing fast latency throughout the metaverse ecosystem.

1) Profitable Metaverse

The metaverse is often compared with VR videos or game genres like MMORPG. The biggest difference between our Metaverse and the other existing virtual worlds or games is whether the members of the ecosystem can engage in convenient and unrestrained economic activities. This monetization model is a very important, commonly-sited component of the metaverse. The particularly important questions for the MEVerse metaverse ecosystem are how conveniently the fee-based model can be developed and applied from the standpoint of providers such as DApps and DAOs and how well the economic activities in the ecosystem are rewarded from the perspective of users.

MEVerse builds an ecosystem based on the MEV governance token as the key currency, along with the tokens from other MApps providing content in various fields. MApps can easily issue the special tokens that suit their business and content characteristics and will be offered an environment to freely trade their MApp tokens through the MEVerse's own decentralized exchange (DEX). The Metaverse users can also acquire a variety of MApp tokens through a designated amount of activities and trade these tokens using their unique account and keystore.

MEVerse Mainnet

MEVerse seeks to improve blockchain performance through four distinguished technologies and maximize the utility of the chain, characterized by outstanding scalability, low fees, and high interoperability based on the cross-chain and customized multi-chain structure

3.1. MEVerse Mainnet

Technology Performance	Chain Performance
Consensus Algorithm: PoF(Proof of Formulation)	Ultra High Speed: 9,000 TPS on Average
Block Redesign	Gateway: Cross-Chain Technology
Level Tree Validation	Customized Multi-Chain Structure
Parallel Sharding	User-Friendly System: Low Fees and Guaranteed MApp Independence (Scalability)

3.1.1. Consensus Algorithm: PoF (Proof-of-Formulation) U.S.P(United States Patent) Application Number: 62717695

- Prompt creation and dissemination of blocks
- Real-time confirmation through Observer Node, minimizing unnecessary fork
- Impartial mining & prevention of wasting resource

MEVerse came up with a new consensus model, replacing the existing models like PoW (Proof-of-Work; verify calculation process) or PoS (Proof-of-Stake; verify stake) and preventing unnecessary fork. The new consensus model is PoF (Proof-of-Formulation) and blocks are generated in a designated order, agreeing on the block mining order. This allows the block generation and dissemination to be faster, as the dissemination range of blocks are reduced. In addition, instant confirmation is made possible through the Observer Node.

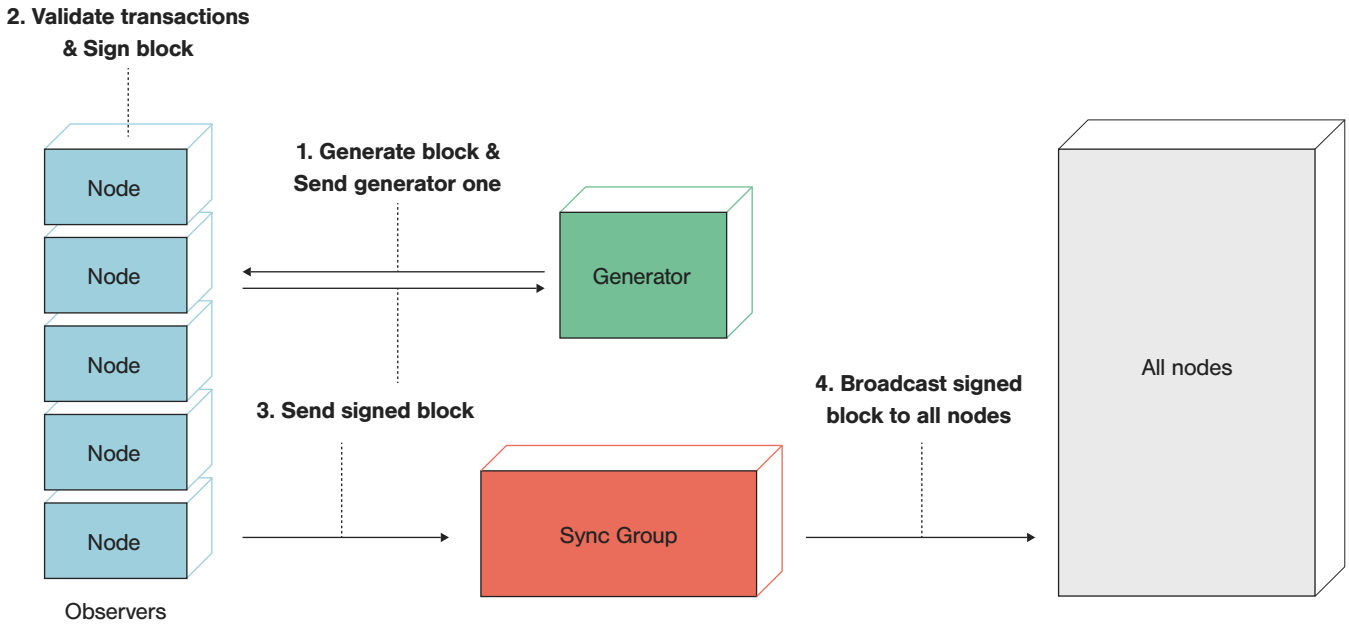
The Proof-of-Formulation technology developed by MEVerse, verifies the validity of the generated blocks and guarantees the authenticity within the network.

PoW algorithm raises the level of difficulty through mining competition, resolving the issue of civil attack or double spending attacks. PoS algorithm resolves the issue of high-power consumption of PoW as the mining reward is allocated proportionate to the amount of coins. In DPoS algorithm, the token possessor uses the block generator or the witness system to carry out mining and verification, resolving the transaction speed issue. That is, in a general blockchain network, blocks can be generated simultaneously from networks all over the world. Thus, it uses a method in which block generation time is adjusted through level of difficulty in order to prevent fork, resulting in a serious reduced speed of the blockchain.

MEVerse resolves the issue with an innovative design as the Formulator group reaches a consensus on the block mining order. The Formulator group consists of all the nodes that generate blocks and maintain them and all the groups of mining nodes that participated in block generation are the Formulator group. The block generation process of MEVerse consists of a block generator and a synchronization group. The Formulator group shares and confirms the block generation sequence in the network and carries on the block generation following the shared and synchronized sequences.

The highest rank Formulator generates the blocks, and the next blocks are generated by the runner up, continuing this well-organized circulatory process. Ultra-high-speed transaction mechanism is provided, and a stable block generation is executed. MEVerse came one step closer to decentralization through the PoF consensus model and complemented the setbacks of the existing algorithms by actualizing an ultrahigh speed transaction speed.

1) Block Generation through Formulator Group Verification



The block generation order of PoF (Proof-of-Formulation) follows the score rank of the Formulator group. The highest node is allocated with the role of block generator and 2nd-10th ranks are given the role of the synchronization group.

The block generator generates blocks, signs and then sends them to the next Observer Node. Next, the Observer Node uses the public key of the next highest ranked block generator to confirm blocks and signatures. Observer node confirms at least 3 of the 5 blocks through signatures. The next synchronization group receives the blocks and confirms the entire transaction record and Observer Node's signature, adding blocks to the blockchain and sending the synchronized result to all the connected nodes.

After the 1st node who generated blocks goes out of the group, the 11th node comes in and the sequence begins again. The order is all determined by block height so it cannot be changed randomly and also cannot be forged as every node verifies the same result.

Like this, the synchronization group disseminates blocks, lightening the traffic burden of Observer Nodes and block generators and disseminating the generated blocks swiftly. When the generated blocks are added to the blockchain, the prior 1st node automatically moves down the rank and the runner up becomes the 1st rank, generating the next blocks.

All the nodes which receive blocks confirm the blocks and signatures. As a result, blocks with false transactions are denied and are not added into the chain. Likewise, the block generation process of PoF (Proof-of-Formulation) reduces the time of block generation and verification, uses synchronized sequence to generate blocks, and prevents fork, as Observer Nodes verify the process real-time. In addition, as the block generation and synchronization are subdivided, each group can focus their energy on a certain task, lightening the burden of the network.

The synchronization group and Observer Node all focus on the designated role, so overload of the network is avoided. For the most efficient block generation process, the highest rank node can generate blocks continuously. Limitations in block generation are initially set as default but can be amended through governance.

In order to participate in the Formulator group, MEVerse tokens must be held. Observer Nodes are operated by MEVerse first, then will be delegated to the governance (such as MApps and etc.) In the case of reward, MEVerse coins will be given to the Formulators participating in the MEVerse chain, and MApp tokens will be given to Formulators that hold that MApp's token. These are the basic concepts, but the MApp developers can offer the option of setting up their own compensation plan for the Formulators of their MApps.

All of the Formulators that generate blocks have a Formulator Account. All of these Formulator Accounts will be imported and ordered using their most recently created block information as well as information when participating in the Block Generation Round. This order sheet utilizes the information in the block and is generated by the block, so all nodes have the same order sheet. At the beginning of the Block Generation Round, the Observer Nodes submit and agree to a top Formulator list, which enables Formulators to connect online, since there is no guarantee that all Formulators are online.

The agreed top Formulator will be sent a block generation message, reviewed via Round State, and then collect the Observer Signature once the block is verified. In this process, when a majority get together, they recognize and propagate the block.

Synchronization groups and seed node groups have no additional rewards associated with Formulator compensation as the Formulators continue to be rotated into each group in turn during the process. The Observer Node is a watchdog node that performs only block verification and notification, with no separate participation rewards.

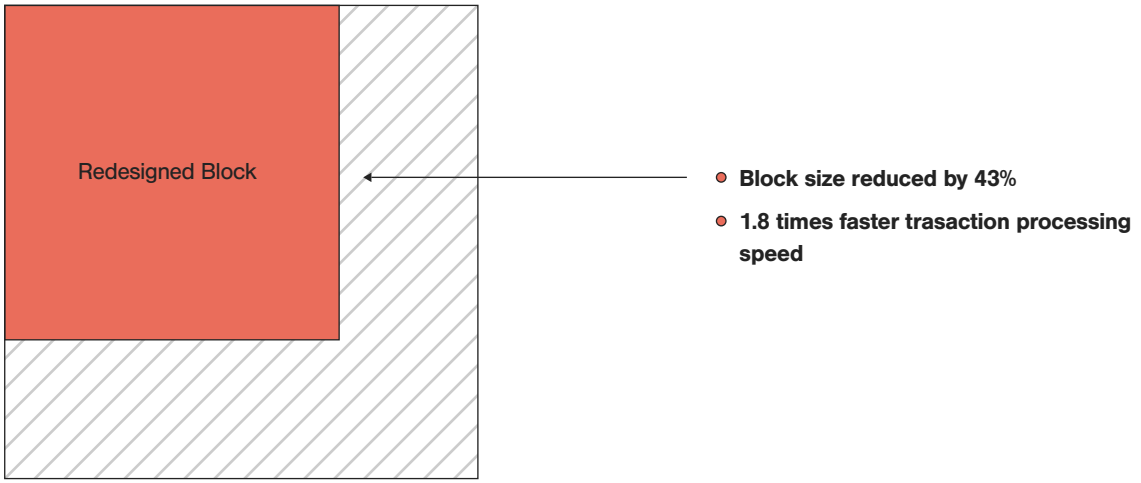
2) Fork Prevention

As a result of such an efficient and innovative system, Fork is prevented.

When two blocks of the same height go into the Observer Node, fork is detected as 3 out of 5 nodes required signature. Fork, therefore, is prevented as the Observer Node detects the collision in signature.

If Observer Node deviates from the normal protocol due to security threats, the chain is put to a stop and assets are protected via Panic Protocol. If the Formulator group deviates from the normal protocol, that Formulator is put to a stop via Formulator Ban Protocol. (For further detailed information on MEVerse's Proof-of-Formulation consensus model, see Appendix 6.2)

3.1.2. Block Redesign Technology



MEVerse newly designed and upgraded the block structure, which is the core of the blockchain technology. Blocks that were 560 bytes in one transaction have been reduced to under 360 bytes, leading to faster transaction speeds. This is the most fundamental approach to enhance the transaction speed regardless of changes in protocol or design such as to the consensus algorithm and sharding model.

1) Block Structure Redesign

U.S.P(United States Patent) Application Number: 62717703

The block structure is the basis of blockchain technology, directly leading to the processing speed and storage volume. MEVerse redesigned the block structure to reduce block size, increase processing speed and decrease index volume needed for operation. Blocks consist of a block header and a transaction list, the latter taking up most of the volume. Thus, reducing each transaction size concurrently leads to reduced blocksize, volume, network traffic and block processing time.

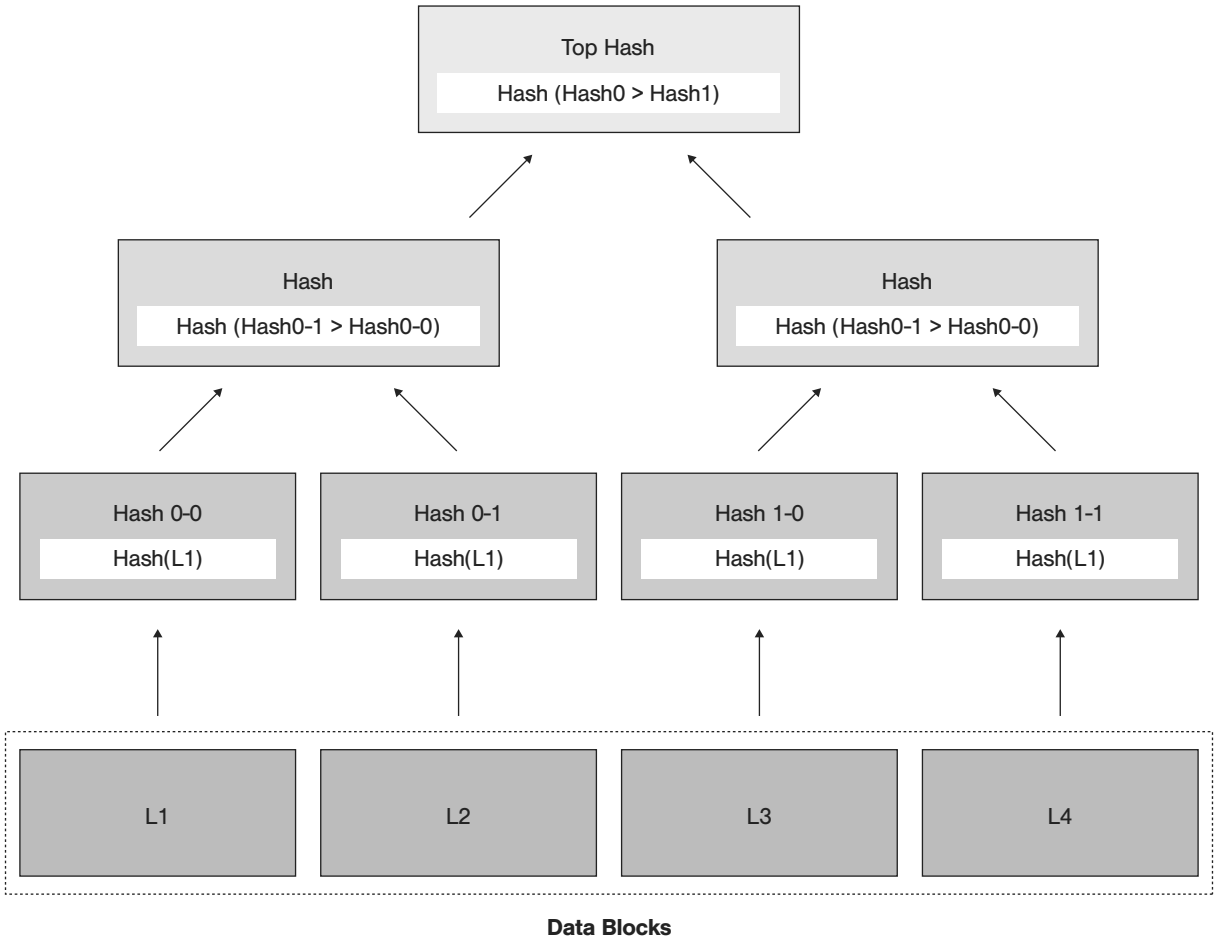
Vin and signature take up the biggest volume of transactions. In Bitcoin, vin is indicated with transaction hash and the used TxID and N. Additionally, many possessors can put coins in the vin of one transaction, meaning that the number of signatures required is equivalent to the number of vin. 32 Bytes of TxID, 4 Bytes of N and 65 Bytes of signature results in a total of 101 Bytes per coins.

In MEVerse, TxID is indicated with block height and transaction location within the block, reducing the TxID to 6 Bytes and N to 2 Bytes. Moreover, only coins of one possessor can be used in one transaction to reduce the required number of signatures. Statistics show that the average transaction size of Bitcoin is 560 Bytes, including approximately 3 vin and 3 vouts. By changing it to MEVerse's new block structure the size reduces by 43%, resulting in 320 Bytes.

Making use of the block height and transaction location within blocks give various advantages in operation as well. The existing verification method utilizes transaction hash, thereby requiring index DB to find the original transaction. Thus, in Bitcoin, 50 GB index is required to process 100 GB data. However, in MEVerse, a large index is unnecessary as the TxID indicates the coordinates of the hashtransaction and addition index DB is not used in the process.

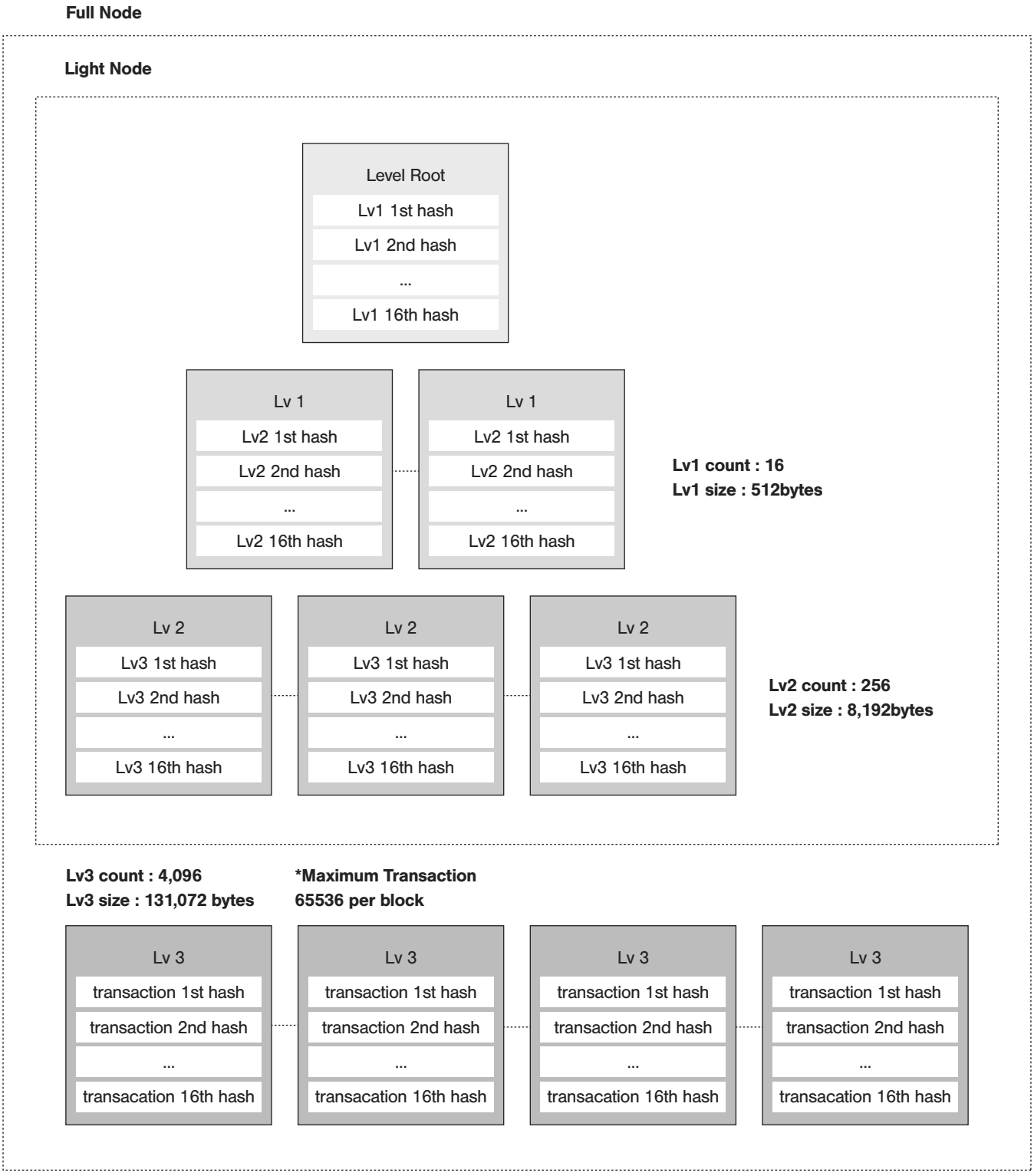
The MEVerse chain takes less time to create and verify blocks with its Block Redesign technology, enabling an efficient mining environment and providing a high level of performance that blockchain technology can use in real life.

3.1.3. LEVEL Tree Verification



- 90% reduced validation size, compared to Merkle Tree
- 5 times faster validation process

In the traditional Merkle Tree data structure, data is transmitted through P2P (peer-to-peer) or used in the verification process of data exchange in a database like Cassandra. This is mainly used when relatively big volume over 1 MB has to be processed by the node. Also, when only a proportion is recognized, not the whole Merkle Tree, clear verification is hard to be made. Thus, for clear and correct verification, the presence of the entire Merkle Tree is a prerequisite and entails a whole lot of calculation. Even if Merkle Tree guarantees the verification on a practical level, much memory and calculation are required for SPV (Simple Payment Verification).



MEVerse employs LEVEL Tree method, clustering 16 blocks as one unit to hash and hash that unit into 16 parts. This is a much more efficient system, making a tree where the hash process of the transaction is simplified, and each level has 16 subunits.

Using this tree system makes 1 route, 16 level 1s, 256 level 2s, 4,096 level 3s and total transaction list of 65,535 (In the serialization process, 2 Bytes is used to limit the maximum number; transaction variable can be 0-65,535). Considerably less memory and calculation resources are utilized, guaranteeing verification of transaction with less resource and network communication in mobile devices in which tree is saved.

A light node saves the LEVEL Tree, not the entire tree, and it requests information in need to the full node. If LEVEL 3 Tree data is saved, only 16 hash and 1 Transaction is sufficient to search specific transactions or verify the validity. Therefore, even if there is low memory, it can be used with a very fast verification process. (For further detailed information on MEVerse's Block Redesign and LEVEL Tree Verification, see Appendix 6.3)

3.1.4. Parallel Sharding

- Parallel action possible without double spending
- Focused on TPS enhancement through increase in shard numbers and each shard's TPS
- Able to process 9,000 transactions per one second

Parallel processing of transactions is a pivotal technology, actualizing high-speed transaction speed. In MEVerse, a transaction is allocated to shards according to a predetermined rule, and the transaction result is processed independently in each shard. That is, each shard operates independently without being included or mutually connected with other shards, meaning each shard has its own chain. One account can access all the shards with the same key and address.

Keys and addresses are basic tools to prove data change authority in blockchain, so users must own the keys and addresses before they can be accessed. This applies not only to shards but also to the mainchain. However, anyone can view the contents of a block or transaction regardless of whether they own a key or address.

In MEVerse's new sharding model, each shard operates independently as if it is a single mainchain to actualize the real sharding technology. The mainchain consists of and maintains various shard chains and each chain operates independently in a parallel structure, which means that double spending is not feasible in this design. This, in turn, provides an unmatched transaction speed, making all token and coin transactions fast and efficient.

Unlike single chain structure, each shard of MEVerse has an independent chain. Thus, each shard is not mutually influenced and processes in a parallel structure within an independent blockchain. Shard System basically does not share data and therefore, double spending caused by unsynchronized shared data is not possible in this design. Independent chains of shards actualize complete parallel structure, increasing the processing speed. (For further detailed information on MEVerse's Parallel Sharding Model, see Appendix 6.4)

Technology Performance

3.2.1. Lighting-Fast Speed: 9,000 TPS on Average

MEVerse accelerated the network and signature verification speed through performance innovation, raising an average chain speed to a staggering 9,000 TPS. MEVerse is designed for quick and balanced connection between peers through our own platform network design called Geolocational Balanced Peer Selection Algorithm. Here, a distance is determined by ping, and each group formed by distance accepts a specific number of nodes to prevent network bias at a certain distance. As an additional method to avoid the bias, the network distance is set equally at the maximum distance between each peer.
Keys and addresses are basic tools to prove data change authority in blockchain, so users must own the keys and addresses before they can be accessed. This applies not only to shards but also to the main-chain. However, anyone can view the contents of a block or transaction regardless of whether they own a key or address.

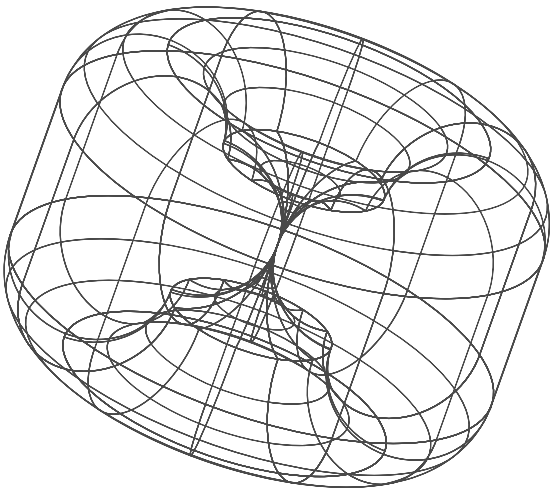
In a MEVerse transaction requiring multiple signatures, a user opens a multi-signature account and enters the multiple addresses corresponding to the approvers. The use of this account requires every signature for the addresses. This unambiguous account design reduces the complexity of the multi-signature scheme and simplifies validation procedures.

When parallel-processed on an 8-core CPU, the ECDSA (Elliptic Curve Digital Signature Algorithm) based on secp256k1 can perform an average of 9,000 verifications per second, which requires a network speed of 1.4 MB/s to process the transaction. This means that MEVerse can reliably process an average of 9,000 transactions per second.

MEVerse's TxID utilizes the height of the block containing a transaction and the position of the transaction within the block, not a transaction hash. This reduces the need for larger indexes and minimizes the burden of transaction retrieval. The signature-based verification allows for accurate verification without the use of a transaction hash, thereby enabling instant transaction retrieval and reducing the required index size and data volume.

In addition, MEVerse has an independently-developed parallel sharding algorithm, allowing individual shards to operate in parallel without double spending. As an innovative platform, MEVerse will continue to improve the speed and stability of the system to provide problem-free services for more users.

3.2.2. Gateway: Cross-Chain Technology



Gateway, as its name suggests, connects different blockchain networks. The linking between different networks is crucial in blockchain technology. The reason for that is interoperability, which means the interaction of different systems or software so as to increase convenience.

However, different blockchain networks, fundamentally incompatible with each other, are bound to have low interoperability. For example, DApp A based on Blockchain Mainnet B will not work on another Blockchain Mainnet C.

The interoperability between blockchain mainnets is still essential in real life. It enhances the convenient use of DApps on various platforms and facilitates token transaction and use, thus helping build and utilize an easy and convenient blockchain ecosystem. If one DApp can operate on various mainnets thanks to the interoperability, the accessibility of the DApp will increase and attract more users, eventually creating a flourishing user environment. To this end, MEVerse has introduced Gateway, a cross-chain technology to interoperate with multiple networks.

MEVerse's Gateway interchanges mainnet coins with other mainnet-based MEVerse tokens. To illustrate, the services usable with ERC-20-based MEVerse tokens can also be used by converting MEVerse coins via ERC-20-based MEVerse, and if one needs BEP-20-based MEVerse, the coins can be converted back to BEP-20-based MEVerse tokens. This is only possible because MEVerse is a cross-chain mainnet that supports multiple networks.

MEVerse seeks to build an environment where users can experience a broader blockchain ecosystem by continuously linking other networks through our cross-chain technology. Our gateway system also provides MApps with a more autonomous and independent operating environment on MEVerse.

MApps, operated on the MEVerse mainnet, can utilize the stable and excellent performance of MEVerse. Suppliers can not only configure their own mining ecosystem but issue tokens based on other chains thanks to Gateway. And our cross-chain service based on gateway technology can be used to operate multiple services with a single type of coin by setting up additional sub-chains besides the mainnet. In the MEVerse mainnet, an independent data space can be secured for each service through the configuration and operation of an individual chain for each service, thus maximizing scalability. Even when introducing a new service, a new chain can be set up without a separate hard fork or update in order to facilitates service operation and management and alleviate the hassle of development and testing.

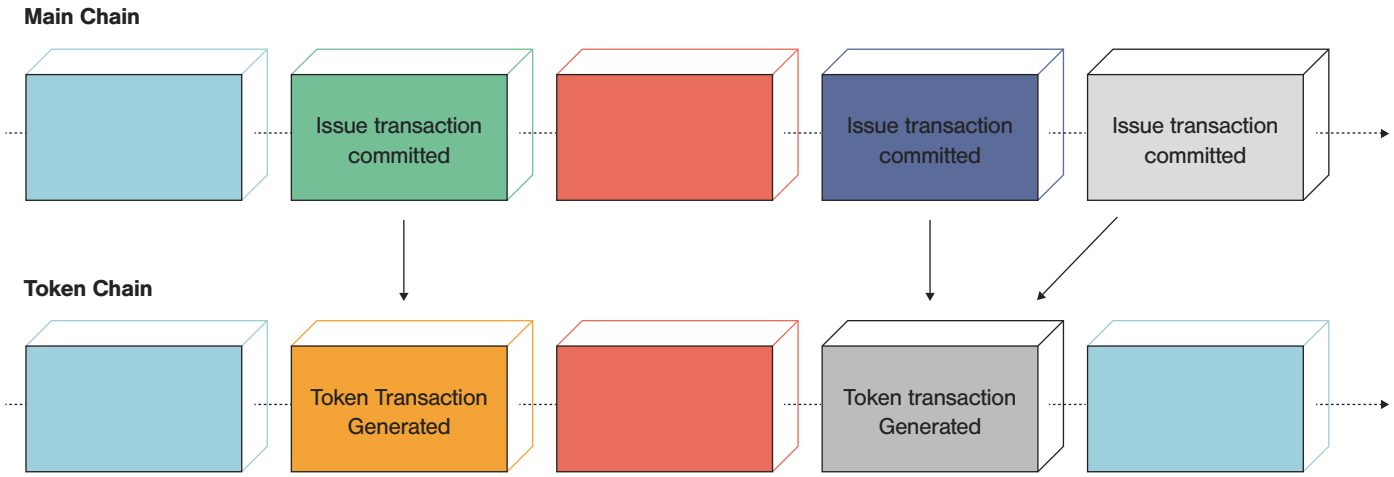
To recapitulate, the suppliers who use the services of the MEVerse mainnet can utilize various mainnet ecosystems through our gateway as well as interact with different ecosystems while easily operating their own services. MEVerse is the mainnet perfect for MApp services that attempt to expand their own ecosystem and stabilize their service.

3.2.3. Customized Multi-Chain Structure

In the conventional blockchain network, transactions and smart contracts generated from DApps take place on a single blockchain. The caveat here is that transactions exceeding a certain processable amount can disrupt the network.

MEVerse has solved transaction overload by adding a customized solution using our own independent multi-chain technology in addition to the MApp onboarding technology of the existing blockchain platform. The custom multi-chain structure includes two types: the MApp onboarding solution and the customized solution.

Both solutions are available to companies and developers who want to utilize blockchain technology or develop blockchain-based services, allowing for free utilization of MEVerse's technologies.



1) MApp Onboarding Solution

Onboarding literally means “getting on board” on a ship or an airplane and figuratively means “settling in” at an organization like a company. For a blockchain network, it means that your service is incorporated into the platform chain to provide services (e.g., technology) smoothly.

MEVerse's MApp onboarding solution operates on the MEVerse main chain. This method is advantageous in that MEVerse can directly monitor nodes and servers, enabling backups at any time and prompt feedback. MEVerse's own blockchain technology, which increases the effectiveness of the blockchain by solving the problems of scalability, network congestion, and expensive fees, can also help MApps to be used and operate safely on the main chain.

2) Customized Solution

MEVerse's customized solution maximizes the usability of MEVerse's technologies, unlike the MApp onboarding solution.

By forking MEVerse's technologies, MApps can independently operate overall blockchain services, including the issuance of tokens and the operation of independent Formulators and Observer Nodes.

One of the greatest features of MEVerse's customized solution is that it can operate independently, regardless of the main chain, in the network without any issue even if the main chain is temporarily out of operation for some reason. Also, even if multiple companies or developers simultaneously use the MEVerse customized solution, the independent multi-chain structure, which is not interlocked with the main chain, will not cause any chain overload. Each independent chain that processes its own transaction does not affect the main chain or transactions.

3.2.4. User-Friendly System: Low Fees and Guaranteed MApp Independence (Scalability)

In a conventional blockchain, the main chain or a miner pool may be overloaded because the main chain contains too many MApps or the miner pool has to maintain and keep access to the sub chains while operating the main chain and a myriad of sub chains at the same time.

In case of network congestion in the blockchain, users attempt to pay higher fees to start their transactions in the blockchain as soon as possible. This induces competition in the fee structure, reducing the value of chain use as well as burdening the service users.

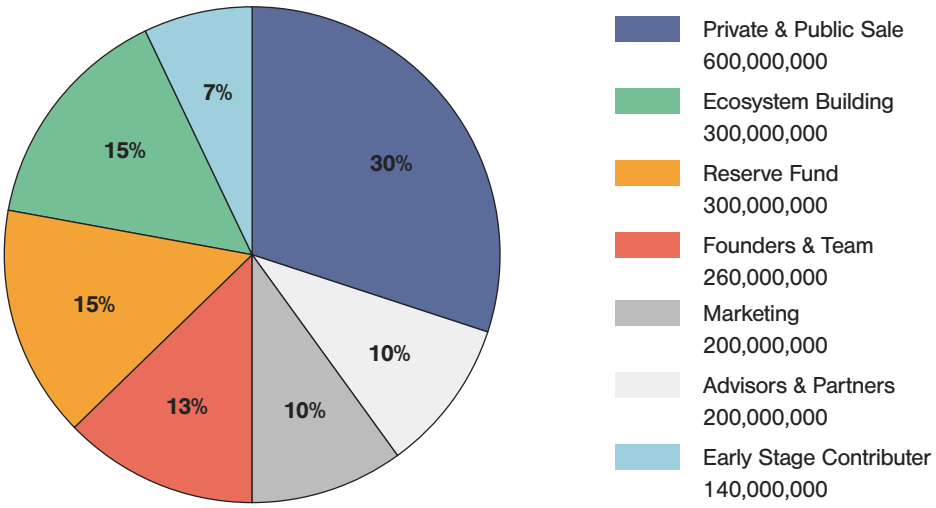
MEVerse minimizes this network congestion by guaranteeing independence for MApps. MEVerse allows seed and observer nodes to operate on an externally accessible server (public IP) to continuously synchronize with the network and maintain chain progression. For the customized solution, each sub chain builds its own Formulator without depending on that of the main chain, so even if the main chain stops running, all the sub-chains can continue to operate independently.

The MEVerse platform separates the realm of performance and data to ensure the independence of each MApp from others, providing infinite MApp scalability. In this system, every addition of an MApp expands the blockchain as well as the data chain. This separation of performance and data contributes to infinite scalability and in turn forms the multi-chain platform.

Our cross-chain service based on the gateway system is also used to operate multiple services with a single type of coin by setting up additional sub-chains besides the mainnet. For each individual service, a separate chain can be set up and operated to secure an independent data space, further boosting scalability.

As described above, MEVerse is striving to increase the independence and scalability of MApps in a variety of manners, minimize network congestion, and maintain the stable network without excessive fee competition.

Token Metrics



Category	Quantity	Percent
Private & Public Sale	600,000,000	30%
Ecosystem Building	300,000,000	15%
Reserve Fund	300,000,000	15%
Founders & Team	260,000,000	13%
Marketing	200,000,000	10%
Advisors & Partners	200,000,000	10%
Early Stage Contributer	140,000,000	7%
Total Amount of issue	2,000,000,000	100%

Disclamer

Please read this entire section carefully. If you are in any doubt as to the action you should take, please consult your legal, financial, tax or other professional advisor(s).

1.1. Legal Statement

a. This Lightpaper ("Lightpaper"), in its current form, is circulated for general information purposes only in relation to the platform and applications described in the Lightpaper ("Platform") as presently conceived and is subject to review and revision. Please note that this Lightpaper is a work in progress and the information in this Lightpaper is current only as of the date on the cover hereof. Thereafter, the information, including information concerning MEVerse Pte Ltd (the "Company") business operations and financial condition may have changed. We reserve the right to change, modify, add or delete parts of this Lightpaper or its associated website without notice for any reason or at any time.

b. No person is bound to enter into any contract or binding legal commitment in relation to the sale and purchase of the tokens native to the Platform ("MEVerse Token" or "Token") (as defined below) and no payment is to be accepted on the basis of this Lightpaper. Any sale and purchase of the Token will be governed by a legally binding agreement, the details of which will be made available separately from this Lightpaper. In the event of any inconsistencies between the abovementioned agreement and this Lightpaper, the former shall prevail.

c. This Lightpaper does not constitute or form part of any opinion on any advice to sell, or any solicitation of any offer by the issuer/distributor/vendor of the Token to purchase any Token nor shall it or any part of it nor the fact of its presentation form the basis of, or be relied upon in connection with, any contract or investment decision.

d. The Tokens are not intended to constitute capital market products, including, in particular, securities, debentures, units in a business trust, or units in a collective investment scheme, each as defined under the Securities and Futures Act (Cap. 289) of Singapore, or its equivalent in any other jurisdiction. Accordingly, this Lightpaper therefore, does not, and is not intended to, constitute a prospectus, profile statement, or offer document of any sort, and should not be construed as an offer of capital market products, securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment, or a solicitation for any form of investment in any jurisdiction.

e. No Token should be construed, interpreted, classified or treated as enabling, or according any opportunity to, purchasers to participate in or receive profits, income, or other payments or returns arising from or in connection with the Platform, the Token, or products, or to receive sums paid out of such profits, income, or other payments or returns.

f. This Lightpaper or any part hereof may not be reproduced, distributed or otherwise disseminated in any jurisdiction where offering coins/tokens in the manner set out this Lightpaper is regulated or prohibited.

g. No regulatory authority has reviewed, examined or approved of any of the information set out in this Lightpaper. No such action has been or will be taken in any jurisdiction.

h. Where you wish to purchase any Token, the Tokens are not to be construed, interpreted, classified or treated as: (a) any kind of currency other than cryptocurrency; (b) debentures, stocks or shares issued by any entity; (c) rights, options or derivatives in respect of such debentures, stocks or shares; (d) rights under a contract for differences or under any other contract with the purpose or pretended purpose to secure a profit or avoid a loss; or (e) units or derivatives in a collective investment scheme or business trust, or any other type of securities or capital market products.

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a. The Token, the Platform and related services provided by the Company and its Affiliates are provided on an “as is” and “as available” basis. The Company and its Affiliates do not grant any warranties or make any representation, express or implied or otherwise, as to the accessibility, quality, suitability, accuracy, adequacy, or completeness of the Token, the Platform or any related services provided by the Company and its Affiliates, and expressly disclaim any liability for errors, delays, or omissions in, or for any action taken in reliance on, the Token, the Platform and related services provided by the Company and its Affiliates.

b. The Company, its Affiliates and its directors, officials and employees do not make or purport to make, and hereby disclaim any representation, warranty or undertaking in any form whatsoever to any entity or person, including any representation, warranty or undertaking in relation to the truth, accuracy and completeness of any of the information set out in this Lightpaper.

c. To the maximum extent permitted by the applicable laws and regulations, the Company and its Affiliates shall not be liable for any indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this Lightpaper or any part thereof by you.

1.4. Cautionary Note on Forward-Looking Statements

a. Certain information set forth in this Lightpaper includes forward-looking statements regarding the future of the project, future events, achievements, and projections. These statements are not statements of historical fact and may be identified by but not limited to words and phrases such as “will”, “estimate”, “believe”, “expect”, “project”, “anticipate”, or words of similar meaning. Such forward-looking statements are also included in other publicly available materials such as presentations, interviews, videos, etc. Information contained in this Lightpaper constitutes forward-looking statements including but not limited to future results, performance, or achievements of the Company or its Affiliates.

b. The forward-looking statements involve a variety of risks and uncertainties. These statements are not guarantees of future performance and no undue reliance should be placed on them. Should any of these risks or uncertainties materialize, the actual performance and progress of the Company or its Affiliates might differ from expectations set by the forward-looking statements. The Company or its Affiliates undertake no obligation to update forward-looking statements should there be any change in circumstances. By acting upon forward-looking information received from this Lightpaper, the Company or its Affiliates' website and other materials produced by the Company or its Affiliates, you personally bear full responsibility in the event where the forward-looking statements do not materialize.

1.5 Potential Risks

By purchasing, holding and using the Tokens, you expressly acknowledge and assume the risks set out in this section. If any of these risks and uncertainties develops into actual events, the business, financial condition, results of operations and prospects of the Company or its Affiliates may be materially and adversely affected. In such cases, you may lose all or part of the value of the Token. Such risks include but are not limited to the following:

Risks Relating to the Tokens

a. There may not be a public or secondary market available for the Tokens.

I. The Tokens are intended to be native Tokens to be used on the Platform, and the Company and its Affiliates have not and may not actively facilitate any secondary trading or external trading of Tokens. In addition, there is and has been no public market for the Tokens and the Tokens are not traded, whether on any cryptocurrency exchange or otherwise. In the event that the Tokens are traded on a cryptocurrency exchange, there is no assurance that an active or liquid trading market for the Tokens will develop or if developed, be sustained. There is also no assurance that the market price of the Tokens will not decline below the purchase amount paid for the Tokens, which is not indicative of such market price.

II. A MEVerse Token is not a currency issued by any central bank or national, supra-national or quasi-national organisation, nor is it backed by any hard assets or other credit. The Company and its Affiliates are not responsible for nor do they pursue the circulation and trading of the Tokens on the market. Trading of the Tokens merely depends on the consensus on its value between the relevant market participants, and no one is obliged to acquire any Token from any holder of the Token, including the purchasers of the Tokens, nor does anyone guarantee the liquidity or market price of the Tokens to

any extent at any time. Accordingly, the Company and its Affiliates cannot ensure that there will be any demand or market for the Tokens, or that the price upon which the Tokens were purchased is indicative of the market price of the Tokens if they are made available for trading on a cryptocurrency exchange.

Risks Relating to the Company, its Affiliates and the Platform

a. Limited availability of sufficient information.

The Platform is still at an early developmental phase as of the date of this Lightpaper. Its governance structure, purpose, consensus mechanism, algorithm, code, infrastructure design and other technical specifications and parameters may be updated and changed frequently without notice. While this Lightpaper contains the key information currently available in relation to the Platform, it is subject to adjustments and updates from time to time, as announced on the Company's website. Purchasers will not have full access to all the information relevant to the Tokens and/or the Platform. Nevertheless, it is anticipated that significant milestones and progress reports will be announced on the Company's website.

b. The digital assets raised in the sale of the Tokens are exposed to the risks of theft.

Whilst the Company and its Affiliates will make every effort to ensure that any cryptocurrencies received from the sale of Tokens are securely held through the implementation of security measures, there is no assurance that there will be no theft of the cryptocurrencies as a result of hacks, mining attacks, sophisticated cyber-attacks, distributed denials of service or errors, vulnerabilities or defects on such blockchain addresses, or any other blockchain, or otherwise. Such events may include, for example, flaws in programming or source code leading to exploitation or abuse thereof. In such event, even if the sale of Tokens is completed, the Company and its Affiliates may not be able to receive the cryptocurrencies raised and the Company and its Affiliates may not be able to utilize such funds for the development of the Platform, and the launch of the Platform might be temporarily or permanently curtailed. As such, the distributed Tokens may hold little worth or value. The Tokens are uninsured, unless you specifically obtain private insurance to insure them. In the event of any loss or loss of value of the Tokens, you may have no recourse.

c. The blockchain address(es) may be compromised and the digital assets may not be able to be retrieved.

The blockchain address(es) are designed to be secured. However, in the event that the blockchain address(es) for the receipt of purchase amounts or otherwise are, for any reason, compromised (including but not limited to scenarios of the loss of keys to such blockchain address(es), the funds held at such blockchain address(es) may not be able to be retrieved and disbursed, and may be

permanently unrecoverable. In such event, even if the sale of the Tokens is successful, the Company and its Affiliates will not be able to receive the funds raised and the Company and its Affiliates will not be able to utilize such funds for the development of the Platform, and the implementation of the Platform might be temporarily or permanently curtailed. As such, distributed Tokens may hold little worth or value.

d. There is no assurance of any success of the Platform and the Company and its Affiliates may cease the development, launch and operation of the Platform.

I. The value of, and demand for, the Tokens hinges heavily on the performance of the Platform. There is no assurance that the Platform will gain traction after its launch and achieve any commercial success. The Platform has not been fully developed, finalized and integrated and is subject to further changes, updates and adjustments prior to its launch. Such changes may result in unexpected and unforeseen effects on its projected appeal to users, and hence impact its success. There are no guarantees that the process for creating the Tokens will be uninterrupted or error-free.

II. While the Company has made every effort to provide a realistic estimate, there is also no assurance that the cryptocurrencies raised in the sale of Tokens will be sufficient for the development and integration of the Platform. For the foregoing or any other reason, the development and integration of the Platform may not be completed and there is no assurance that its systems, protocols or products will be launched at all. As such, distributed Tokens may hold little or no worth or value.

III. Additional reasons which may result in the termination of the development, launch or operation of the Platform includes, but is not limited to, (aa) an unfavorable fluctuation in the value of cryptographic and fiat currencies, (bb) the inability of the Company and its Affiliates to establish the Platform or the Tokens' utility or to resolve technical problems and issues faced in relation to the development or operation of the Platform or the Token, the failure of commercial relationships, (cc) intellectual property disputes during development or operation, and (dd) changes in the future capital needs of the Company or its Affiliates and the availability of financing and capital to fund such needs. For the aforesaid and other reasons, the Platform may no longer be a viable project and may be dissolved or not launched, negatively impacting the Platform and the potential utility and value of distributed MEVerse Tokens.

e. There may be lack of demand for the platform and the services provided, which would impact the value of the Tokens.

I. There is a risk that upon launching of the Platform, there is a lack of interest from consumers, merchants, advertisers, and other key participants for the Platform and the services, and that there may be limited interest and therefore use of the Platform and the Tokens. Such a lack of interest could impact the operation of the Platform and the uses or potential value of the Tokens.

II. There is a risk of competition from alternative platforms that may have been established, or even from existing businesses which would target any segment of the potential users of the Platform fulfilling similar demands. Therefore, in the event that the competition results in a lack of interest and demand for the Platform, the services and the Tokens, the operation of the Platform and Token value may be negatively impacted.

f. The Company and its Affiliates may experience system failures, unplanned interruptions in its network or services, hardware or software defects, security breaches or other causes that could adversely affect the Company or its Affiliates' infrastructure network, or the Platform.

I. The Company and its Affiliates are unable to anticipate or detect when there would be occurrences of hacks, cyber-attacks, mining attacks (including but not limited to double-spend attacks, majority mining power attacks and "selfish-mining" attacks), distributed denials of service or errors, vulnerabilities or defects in the Platform, the Tokens, or any technology (including but not limited to smart contract technology) on which the Company, its Affiliates, the Platform, the Tokens, rely on or any other blockchain. Such events may include, for example, flaws in programming or source code leading to exploitation or abuse thereof. The Company and its Affiliates may not be able to detect such issues in a timely manner, and may not have sufficient resources to efficiently cope with multiple service incidents happening simultaneously or in rapid succession.

II. Although the Company and its Affiliates will be taking steps against malicious attacks on its appliances or its infrastructure, which are critical for the maintenance of the Platform and its other services, there can be no assurance that cyber-attacks, such as distributed denials of service, will not be attempted in the future, and that any of such security measures will be effective. Any significant breach of security measures or other disruptions resulting in a compromise of the usability, stability and security of the Company and its Affiliates' network or services, including the Platform.

Risks Relating to the Participation in the Sale of Tokens

a. You may not be able to recover the purchase amount paid for the Tokens.

Except as provided under any applicable terms of sale or prescribed by applicable laws and regulations, the Company is not obliged to provide you with a refund of the purchase amount. No promises of future performance or price are or will be made in respect to the Tokens, including promises of inherent value or continuing payments, and there is no guarantee that the Tokens will hold any particular value. Therefore, the recovery of the purchase amount may be impossible or may be subject to applicable laws and regulations.

b. You may be subject to adverse legal and/or tax implications as a results of the purchase, distribution and use of the Tokens.

I. The legal character of cryptocurrency and cryptographic assets remain uncertain. There is a risk that the Tokens may be considered securities in certain jurisdictions, or may be considered to be securities in certain jurisdictions in the future. The Company and its Affiliates does not provide any warranty or guarantee as to how the Tokens will be classified, and each purchaser will bear all consequences of the Tokens being considered securities in their respective jurisdictions, and bear the responsibility of the legality, use and transfer of the Tokens in the relevant jurisdictions.

II. Further, the tax treatment of the acquisition or disposal of such cryptocurrency or cryptographic assets might depend on whether they are classified as securities, assets, currency or otherwise. As the tax characterization of the Tokens remains indeterminate, you must seek your own tax advice in connection with the purchase, acquisition or disposal of the Tokens, which may result in adverse tax consequences or tax reporting requirements for you.

c. The loss or compromise of information relating to the purchaser wallet and your method of accessing the Platform may affect your access to and possession of the Tokens.

There is a risk that you may lose access to and possession of the Tokens permanently due to loss of unique personal ID created on the Platform, and other identification information, loss of requisite private key(s) associated with the purchaser wallet or vault storing the Tokens or any other kind of custodial or purchaser errors.

d. Blockchains may face congestion and transactions may be delayed or lost.

Most blockchains used for cryptocurrency transactions are prone to periodic congestion during which transactions can be delayed or lost. Individuals may also intentionally spam the network in an attempt to gain an advantage in purchasing cryptographic tokens. This may result in a situation where block producers may not include your purchase of the Tokens when you intend to transact, or your transaction may not be included at all.

Privacy and data retention issues

As part of the Token sales, the verification processes and the subsequent operation of the Platform, the Company may collect personal information from you. The collection of such information is subject to applicable laws and regulations. All information collected will be used for purposes of the Token sales and operations of the Platform, thus it may be transferred to contractors, service providers and consultants worldwide as appointed by the Company. Apart from external compromises, the Company and its appointed entities may also suffer from internal security breaches whereby their employees may misappropriate, misplace or lose personal information of purchasers. The Company may be required to expend significant financial resources to alleviate problems caused by any breaches or losses, settle fines and resolve inquiries from regulatory or government authorities. Any information breaches or losses will also damage the Company's reputations, thereby harming its long-term prospects.

Macro Risks

a. General global market and economic conditions may have an adverse impact on the Company and its Affiliates' operations and the use of the Platform.

I. The Company and its Affiliates could be affected by general global economic and market conditions. Challenging economic conditions worldwide have from time to time, contributed, and may continue to contribute, to slowdowns in the information technology industry at large. Weakness in the economy may have a negative effect on the Company and its Affiliates' business strategies, results of operations and prospects.

II. Suppliers on which the Platform relies for servers, bandwidth, location and other services could also be negatively impacted by economic conditions that, in turn, could have a negative impact on the Company and its Affiliates' operations or expenses.

III. There can be no assurance, therefore, that current economic conditions or worsening economic conditions or a prolonged or recurring recession will not have a significant adverse impact on the Company and its Affiliates' business strategies, results of operations and prospects and hence the Platform, which may in turn impact the value of the Tokens.

b. General global market and economic conditions may have an adverse impact on the Company and its Affiliates' operations and the use of the Platform.

I. Regulation of the Tokens, the offer and sale of Tokens, cryptocurrencies, blockchain technologies, and cryptocurrency exchanges is currently undeveloped or underdeveloped and likely to rapidly evolve. Such regulation also varies significantly among different jurisdictions, and is hence subject to significant uncertainty. The various legislative and executive bodies in different jurisdictions may in the future adopt laws, regulations, guidance, or other actions, which may severely impact the development and growth of the Platform, the adoption and utility of the Tokens or the issue, offer, and sale of
II. the Tokens by the Company. Failure by the Company and its Affiliates or users of the Platform to comply with any laws, rules and regulations, some of which may not exist yet or are subject to interpretation and may be subject to change, could result in a variety of adverse consequences against the Company and its Affiliates, including civil penalties and fines.

III. Blockchain networks also face an uncertain regulatory landscape in many foreign jurisdictions. Various jurisdictions may, in the near future, adopt laws, regulations or directives that affect the Platform, and therefore, the value of the Tokens. Such laws, regulations or directives may directly and negatively impact the operations of the Company and its Affiliates. The effect of any future regulatory change is impossible to predict, but such change could be substantial and materially adverse to the development and growth of the Platform and the adoption and utility of the Tokens.

IV. To the extent that the Company and its Affiliates may be required to obtain licenses, permits and/or approvals (collectively, the "Regulatory Approvals") to carry out its business, including that of the creation of the Tokens and the development and operation of the Platform, but are unable to obtain such Regulatory Approvals or if such Regulatory Approvals are not renewed or revoked for whatever reason by the relevant authorities, the business of the Company and its Affiliates may be adversely affected.

V. Further, should the costs (financial or otherwise) of complying with such newly implemented regulations exceed a certain threshold, maintaining the Platform may no longer be commercially viable and the Company and its Affiliates may opt to discontinue the Platform and/or the Tokens. Further, it is difficult to predict how or whether governments or regulatory authorities may implement any changes to laws and regulations affecting distributed ledger technology and its applications, including the Platform and the Tokens. The Company and its Affiliates may also have to cease operations in a jurisdiction that makes it illegal to operate in such jurisdiction, or make it commercially unviable or undesirable to obtain the necessary Regulatory Approval(s) to operate in such jurisdiction. In scenarios such as the foregoing, the distributed Tokens may hold little or no worth or value.

c. There may be risks relating to acts of God, natural disasters, wars, terrorist attacks, riots, civil commotions widespread communicable diseases and other events beyond the control of the Company and its Affiliates.

The sale of the Tokens and the performance of the Company, its Affiliates and/ or the Platform's activities may be interrupted, suspended or delayed due to acts of God, natural disasters, wars, terrorist attacks, riots, civil commotions, widespread communicable diseases and other events beyond the control of the Company and its Affiliates. Such events could also lead to uncertainty in the economic outlook of global markets and there is no assurance that such markets will not be affected, or that recovery from the global financial crisis would continue. In such events, the Company and its Affiliates' business strategies, results of operations and outlook may be materially and adversely affected, and the demand for and use of the Tokens and the Platform may be materially affected. Further, if an outbreak of such infectious or communicable diseases occurs in any of the countries in which the Company, its Affiliates, and the participants of the Platform have operations in the future, market sentiment could be adversely affected and this may have a negative impact on the Platform and its community.

d. Blockchain and cryptocurrencies, including the Tokens are a relatively new and dynamic technology. In addition to the risks highlighted herein, there are other risks associated with your purchase of, holding and use of the Tokens, including those that we cannot anticipate. Such risks may further materialize as unanticipated variations or combinations of the risks discussed herein.

1.6. No further Information or Update

No person has been or is authorized to give any information or representation not contained in this Lightpaper in connection with the Tokens, the Platform, the Company or its Affiliates and their respective businesses and operations, and, if given, such information or representation must not be relied upon as having been authorized by or on behalf of the Company or its Affiliates.

1.7. Language

This Lightpaper may be translated into other languages. If any disagreement should arise due to different language translations, the version in English will prevail.

1.8. Advice

No information in this Lightpaper should be considered to be business, legal, financial or tax advice regarding the Token, the Platform, the Company or its Affiliates. You should consult your own legal, financial, tax or other professional advisor(s) regarding the Token, the Company or its Affiliates and their respective businesses and operations. You should be aware that you may be required to bear the financial risk of any purchase of the Tokens for an indefinite period of time.

Appendix

6.1. Token Chain and Token Issue

1) Token Chain

MEVerse's MApp has to issue each token, which enables an independent Token Chain. By setting the Genesis information, such as total quantity of token, account composition,Observer Node public key, seed node, IP, Lockup, selling of token, and performing TokenCreation Transaction, the Token Account is created. Such information can be used to designate Token Chain node, comprising a network. Until this point is the early stages of the composition and following this, that chain separates itself from the main-chain, with its blocks operating. Smart Contract of MApp operates in each of the Token Chain, resolving the execution fee or overload problems in the prior mechanisms where different MApps overlapped. Token Chain takes the block from the mainchain in order to issue the token and also for the sake of inter-chain function. During this process, TokenIssueTransaction that needs to be done in Token Chain is processed, recording the point processed in block header and issuing tokens.

2) Token Issue

TokenIssueTransaction can be used when token sale information is in the initial value of the created token. When the user deposits token in Token Account through TokenIssueTransaction, it is verified and authenticated via that sale information. Token Chain processes the information that needs to be processed within the Token Chain, out of all the mainchain transactions. This is the point when real tokens are issued.

iii) Interchain Communication

Basically, MApps of MEVerse are operated as independent blockchains. Thus, in order to support inter-chain communication among MApps, interchain technology is required. Interchain technology is operated in the process by which each MApp chain regularly reports its block header to the mainchain, leading to the inscription of that information. This allows tokens to be transferred from one MApp to another. The transferred token is completely deleted in the chain that sent it, and the chain that receives the token takes—the newest block header information from the mainchain. It also approaches the chain with Light Node, receiving tokens and finalizing the process to create tokens. This means that a chain could be in possession of different types of token and that Smart Contract can be operated via such different types of tokens.

Only tokens that are authenticated can be transferred to MApps that authenticate the act of receiving tokens from other MApps. Then, the execution fee and token to be paid, is set. Such authentication is done by the founder of Token Account, as the founder issues TokenAllowanceTransaction in the very TokenAccount.

6.2. Proof-of-Formulation

Consensus refers to a common understanding on block generation, in particular it signifies who generates the next block or who chooses the blocks out of the generated blocks in the chain process. The prior consensus used a method that disseminated blocks throughout the network for the arbitrary users to mine. However, this requires high recovery of confirmation or block time, as miners are able to generate subsequent blocks only when the new blocks are disseminated throughout the whole network. As a way to deal with this problem, only a select number of miners were picked in order to achieve lower block time.

MEVerse has come up with a PoF(Proof-of-Formulator), allowing fast generation and dissemination of blocks by using Formulator reward sequence to designate the mining target and narrow down the dissemination range. Additionally, the existence of Observer Node allows immediate authentication and prevents fork of blocks. Anyone can make Formulators, so the door is open to all. Low block time can be achieved as the mining sequence of the Formulator is fixed, making the dissemination range of new blocks very small.

1) Rank Table

RankTable calculates the score on all FormulationAccount and ranks the scores. All node has a RankTable and because the score is calculated through transaction and chain height, the list is the same. The authority to generate new blocks is given to the Formulator with the highest rank. When the block is generated and thus included in the score, the sequence changes and the authority can go to another.

Score of RankTable consists of phase and hash. Phase is a value related to time, showing how many times the RankTable has turned. The new Formulator always participates in the RankTable with a LargestPhase+1 value. After the generation of blocks, the Formulator's phase is increased so that a reasonable sequence is secured. The details are as follows:

Score : uint64(Phase) << 32 + uint64(binary.LittenEndian.Uint32(hash[:4]))

This signifies that every Formulator is guaranteed with one mining opportunity in every phase and different Formulator sequence is provided in different phrases, in order to prevent potential attack or collusion of and against Formulators.

2) Connectivity

In order to prepare for DDoS attack, every Formulator accesses Observer Node, therefore hiding the IP of Formulators and maintaining systematic sequence and process. Thus, Observer Node assumes the responsibility of all costs of protecting DDoS and security. It is able to provide protection with high efficiency and with less cost, as it consists of relatively smaller amounts. This, in turn, enables Observer Node to receive real-time information about the Formulator's activity. The Observer Node can increase transparency by revealing node status and structure information to Formulators and users.

If the turn comes for the unconnected node, TimeoutCount can play its role to continue the mining process by excluding such unconnected nodes. Formulators whose turn is skipped, are aware of such, making users able to monitor with ease.

3) Block Generation

The block generation is performed according to the agreed generation order among the Formulators, and the block reward goes to the Formulator that generated it. The block generation order is synchronized using the aforementioned Formulator synchronization. Within a balanced network the algorithm is managed and directly (or via multiple peers) assesses connections to make agreements of block generation order corresponding across the network. Block generation is only possible by the first ranked node here and since signature is required, only the first ranked node can create forked blocks. This means that with the Observer Nodes confirming in real time, forks will never occur.

The mining group consists of A) the 1st place generator group, B) a synchronization group consisted of 2nd to the 5th place. The synchronization group agrees on the compensation order, and the Observer Node performs the content verifications.

In other words, the block generator generates a block, sends the generated block to the synchronization group and the Observer Node, and the synchronization node confirms the generator sequence and header, proceeds to sign it, and sends it to the Observer Node.

The Observer Node receives 6 signatures from the synchronization group and reviews all transaction signatures in the block and exchanges signatures between Observer Nodes. If three signatures from the five Observer Nodes are collected, the block is complete and the Observer Node sends the completed signature part to the synchronization group.

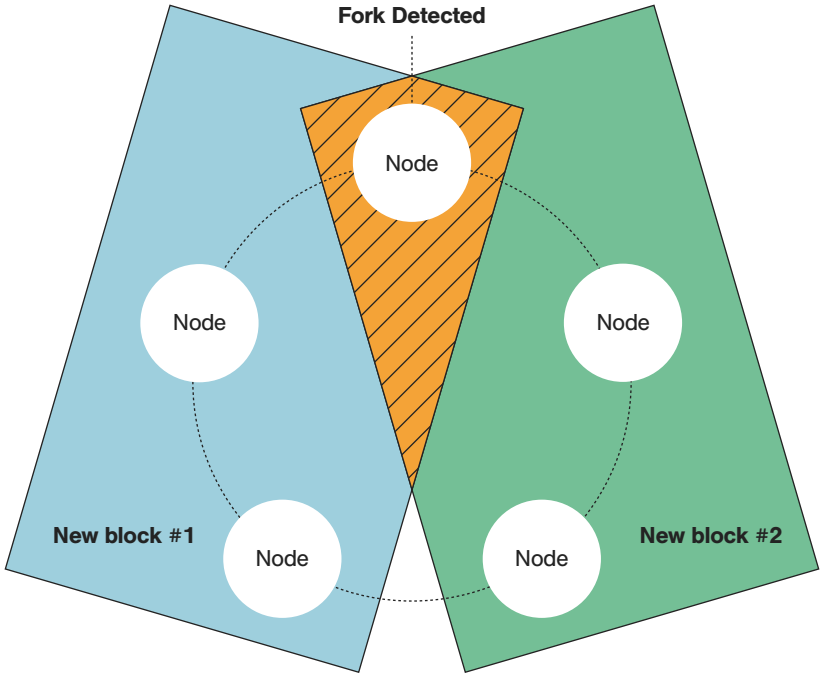
The synchronization group creates a completed block by attaching the signature to the previously received block and sends it to the standby group, which then distributes the block to the network. The block generator in this fashion can quickly generate a block, and since 3/5 of the Observer Nodes signed it, a fork is not possible as at least one Observer Node will detect the fork before it forms.
Also, since the synchronization group proceeds to sign the sequence for verification purposes, a biased Observer Node signature is prevented. And the role division of synchronization and standby group divides the transmission traffic while ensuring that the block propagates as fast as possible throughout the network.

To expedite mining, the 1st rank node can send both the 2nd rank and the Observer Nodes the generated block so that the 2nd rank can be prepared in advance. Of course, if the block sent by the first rank has a problem or fails to sign, the recipient node will discard the flawed block and prepare for a new one. This acts as a catalyst for expedited signing if the generated block is without problems.

If the first rank node fails to generate a normal block within 1 second, the second order node generates a new block on its own to be safe. If afterwards the first rank node still fails to create a regular node for over 3 seconds, the 2nd rank immediately propagates its created block and continues with block generation. The Observer Node confirms that the first rank did not create for more than 3 seconds and proceeds with the signing process.

4) Fork Prevention

When the highest rank Formulator generates a block and receives the signatures of the Observer Nodes, the Observer Nodes sign and store the block. When the signature is signed by the synchronization group, it receives the block and the blockchain progresses so that if a fork block occurs, it cannot go past the Observer Node, preventing a fork from happening by design.



3/5 sign prevent chain form forking

The concept is that when the Formulator order is correctly configured, the 1st rank node only has the right to generate and sign the block, at which phase making two or more blocks to fork the blockchain will be stopped by the Observer Nodes. Therefore, if the Formulator rank order is synchronized, it is possible to only receive blocks that are not forked, simply by verifying the block generator and Observer Node signatures. The generated block therefore is decisive, and all transactions approved by the Observer Node are immediately confirmed.

Through the implementation of Observer Nodes, the attacker cannot create fork blocks to induce double payments. Furthermore, since the subject of block generation is a Formulator, blockchain maintenance is also done by individuals who created the Formulators, and since the Observer Nodes require no compensation, the reward is solely given to the individuals in possession of the Formulators.

6.3. Block Redesign and LEVEL Tree Validation

1) Block Redesign

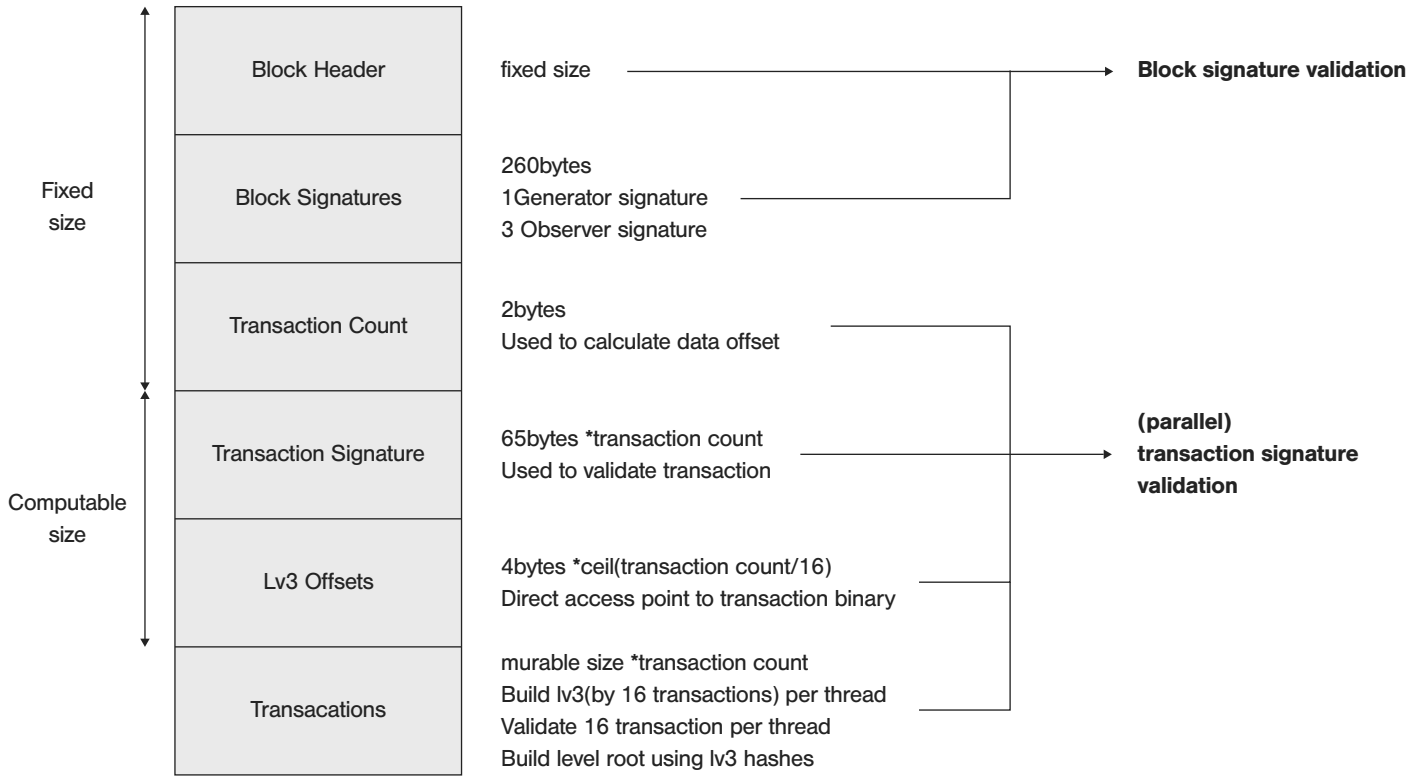
A block consists of a block header, a transaction and a signature. In the traditional header, transactions of the previous block and the Merkle Tree root hash using TxID are included. Merkle Tree, however, has an inefficient computational structure, making it difficult to verify and exchange Light Node data with a simple transaction list. Therefore, we at MEVerse, replaced the Merkle Tree validation with LEVEL Tree validation. Merkle Tree is often used in P2P network systems to detect changes when sending data, but it requires the entire tree to function.

In reality, the block is received from a single node and the Merkel Tree's size is almost equivalent. It is thereby difficult to use it for partial verification using P2P data transmission, which is the same as simply performing additional SHA 256 from a different angle.

MEVerse's block consists of a block header and a transaction list, using a LEVEL structure to support Light Node and parallel processing. The basic block structure is:

Block: {BlockHeader, TransactionSignature[], Transaction[], BlockSignature}
BlockHeader: {Version,HashPrevBlock,HashLevelRoot,Timestamp,Timeout, FormulationAddress}

The LEVEL Tree is a hexadecimal tree structure binding 16 transaction hashes and using the hash of that bind once again. In other words, the LEVEL Tree is a structure in which the maximum number of inscribable transactions per block is 65535, and each level designed to have 16 offspring. Thus, there are levels 1, 2, and 3 (Lv1, Lv2, Lv3). In the block header, HashLevelRoot using 16 Lv1s is inscribed; Lv1 is a hash value using 16 Lv2s; and Lv3 uses a hashed value occurring from 16 concatenated hashes. When forming the hash, HashFunction (Hash1 + 8bits + Hash2 + 8bits ... + 8bits + Hash16)—a function that hashes the values concatenated by inserting a designated pattern of 8bits padding between hash values—is used so as to improve speed and reduce the possibility of falsification and tampering.



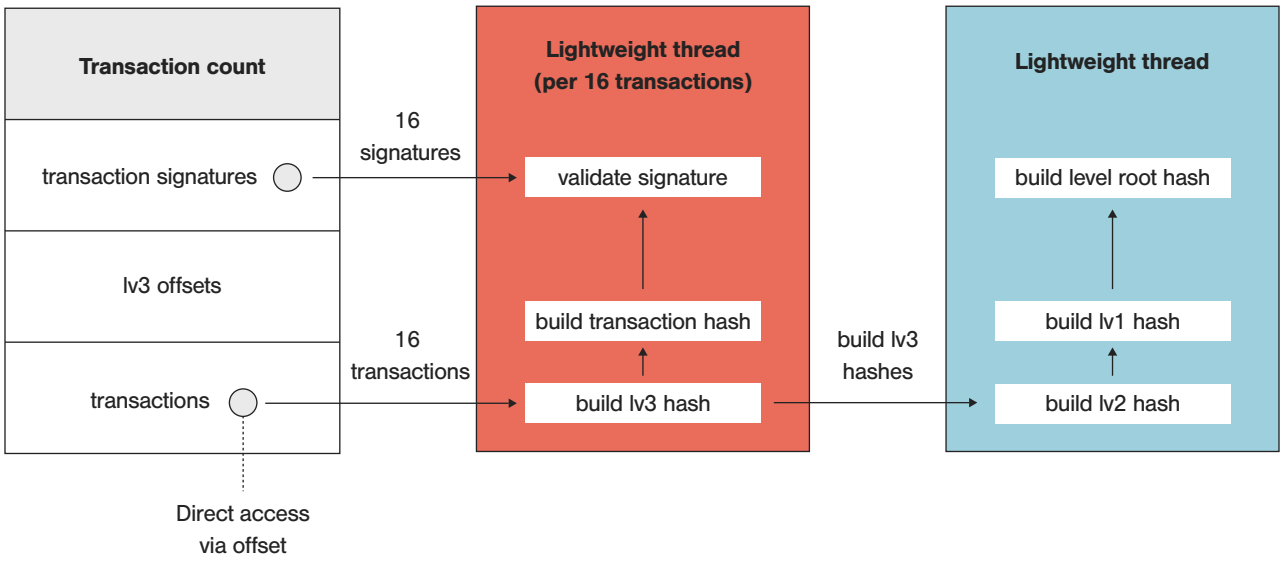
Serialization of the next block is designed to expedite verification of blocks in parallel, with the following structure:

BlockSerialization: {BlockHeader, BlockSignature, TransactionCount, Level 3indexes, TransactionSignatures, Transactions}
BlockSignature: {CreatorSignature, Signatures[9]}

First off, the BlockHeader and the TransactionCount here are of fixed sizes; Level3indexes and TransactionSignature are of fixed sizes proportional to the TransactionCount. This allows for immediate checks of binary positions of Transactions, and using Leve3indexes allows for a quick parallel verification of binary data since hexadecimal-bound transactions can be located immediately.

BlockSignature — a signature using hash value for BlockHeader— consists of the signature of the generator, the block generator group, and the Observer Node. Block generation is performed by the block generator, reward order performed by the generator and the block generator group, and the content is confirmed by the Observer Node. Here, the blocks with Observer Node signatures (those that have completed verification) are also transmitted with the TransactionSignatures input; the individual node also verifies both the transaction and the signature, preventing erroneous transactions by design.

2) LEVEL Tree Validation

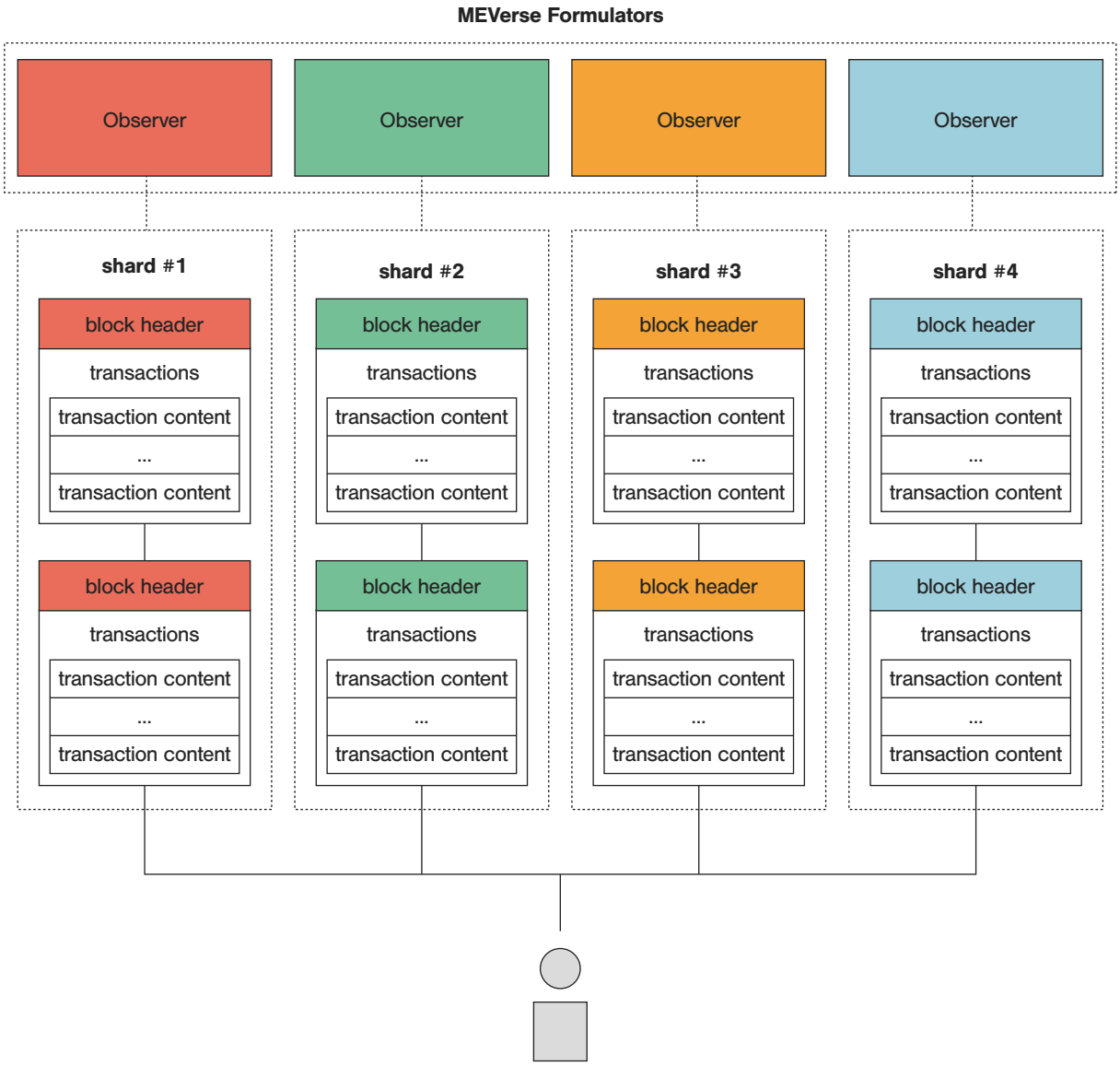


Overall consistency of a transaction can be verified by constructing a level with a transaction's hash and comparing it to the HashLevelRoot. The validation of the signature can be verified by comparing the signature, transaction, and level in parallel by dividing the TransactionSignatures in 16s and dividing the transaction in threads of 16 using Level3indexes. Since all such functions are read operations, they can be carried out simultaneously. Upon receiving a block, verifying transactions by 16 and composing Lv3 from the hash from verification and verifying by LEVEL Tree throughout.

The level structure is also advantageous for the verification of the Light Node. The Light Node has 512 Bytes per Level 1 and 8192 Bytes per Level 2, so the Light Node can contain 8880 Bytes of validation data per block including the block header. If it is necessary to have data on a particular transaction, the Height will be displayed in the TxID, so the block can be immediately known, and since the position is displayed on the index, knowing which LEVEL Tree node contains a particular transaction is immediately possible. By importing 16 transactions that correspond to a tree in Level3 (512 bytes and 3600 Bytes respectively) the contents can be verified through the tree structure. Therefore, a lightweight node can perform high level transaction verifications with low data reception.

6.4. Parallel Sharding

The sharding described below refers to processing a transaction in parallel by using multiple nodes as shards.



Multiple shard chain with one address

MEVerse regards each shard as an independent blockchain, operating in a fully parallel fashion. However, a user's public and private keys can be viewed and used as if they were processed as a single entity, using the same value regardless of the shard. Using this method, we at MEVerse came up with a complete parallel shard mechanism that from the beginning, has no chance of double spending.