Vanar Chain: The Layer 1 for Gaming and Entertainment

By Vanar Foundation

Abstract

The landscape of blockchain technology has evolved significantly, with more than a decade of history shaping its trajectory. Over this time, we have witnessed numerous challenges obstructing the widespread adoption of blockchain in various promising sectors, including DeFi, gaming, entertainment, metaverse, real estate, healthcare, banking and micro transactions applicable to so many other verticals. Among these challenges, the high cost of transactions, slow transaction speeds, and the complex process of introducing new users to the blockchain ecosystem have stood out as significant hurdles. These challenges are to be addressed so that blockchain technology can be adopted at a larger scale to attract billions of users.

Vanar, a groundbreaking initiative, has been carefully designed to address these critical issues head-on. Our unwavering commitment is to provide a blockchain platform that is exceptionally fast, with fixed transaction costs reduced to an astonishingly low $0.0005 per transaction, and a user-friendly onboarding process that can seamlessly welcome billions of new users into the blockchain fold.

1. Introduction

Vanar arose from a fundamental necessity that is the need for a fast, cost-effective blockchain capable of onboarding billions of users while ensuring robust security is put in place. In facilitating the entry of new users into the web3 space, Vanar actively encourages providers to construct the essential infrastructure required for a seamless user experience, akin to the familiar landscape of web2. Vanar commits to delivering this infrastructure directly on top of the blockchain from the outset. Through the provision of account-abstracted wallets, Vanar aims to significantly alleviate the challenges faced by new users, allowing them to effortlessly embrace the advantages of blockchain technology without the typical friction experienced at the outset of their web3 journey.

The Vanar team boasts a cumulative experience of over a decade in the realms of gaming, virtual reality (VR), augmented reality (AR), and the metaverse since its ideation. We possess an intimate understanding of the pain points plaguing these domains and are dedicated to crafting a blockchain solution that adeptly resolves these issues. Our goal is to establish Vanar as the preferred infrastructure for gaming and metaverse projects, delivering a platform that meets the unique needs of these dynamic and rapidly growing sectors.

2. Vanar Approach

Vanar's approach to build the blockchain is simple and efficient in terms of choosing a battle-tested blockchain as its starting point and doing improvements and changes to the protocol to achieve the business goals that Vanar envisions around speed, cost and user onboarding. For this Vanar is to be built on top of the Go Ethereum codebase that is already audited, running in production and very well tested and trusted by millions.

Vanar will make changes to the protocol to ensure:
1. It is always cheap for the end users
2. Fast to build nice user experiences with quick response times
3. Secure and fool proof so that brands and projects build on Vanar with confidence
4. Scalable enough to accommodate billions of users to the ecosystem
5. On top of everything we aim to have 0 carbon footprint that is by using the infrastructure that runs purely on green energy.

To achieve all this we have carefully decided what exact changes are required at protocol level including block time, block size, transaction fees, block rewards, consensus mechanism and so on. Further details for the protocol level changes are explained in the following section under 'Protocol Improvements and Changes'.

3. Protocol Improvement and Changes

A number of protocol level changes are proposed which are required to achieve what Vanar is aiming to target in terms of its fundamental commitment to provide a fast, super cheap and a secure blockchain for everyone. Below are the changes and improvements supposed to be made at protocol level.

3.1. Fixed Fee

One of the key challenges that most blockchains have is the variable and expensive fees to process the blockchain transactions. Due to the varying nature of the transaction fee based on the network gas price no one can predict about the future costs of running a sustainable application particularly where volume of the transactions is huge.

This is one of the fundamental promises of the Vanar Chain to address this pain point with predictable and fixed fees for the transactions with regards to dollar value rather than the native gas token price. This ensures that in the event of the gas token market price reaching higher values like 10x or 100x for example, the end user will still pay as low as $0.0005 for any transaction settled on the Vanar Chain.

3.2. Speed

The significant hurdle faced by contemporary blockchains lies in their inherent slowness, posing a considerable challenge when aiming to create seamless user experiences. The demand for responsive and interactive platforms is increasingly crucial, as users expect swift responses to their actions. Building applications on a slow blockchain can lead to delays in transaction confirmations and hinder the overall responsiveness of the user interface.

Recognizing the paramount importance of speed in shaping user experiences, Vanar addresses this challenge head-on. Our blockchain is engineered to deliver exceptional speed, boasting block time that is capped at a maximum of 3 seconds. This impressive turnaround time ensures that transactions are confirmed swiftly, facilitating near-instantaneous interactions and responses to user actions.

Vanar's commitment to high-speed block finality is driven by the understanding that rapid transaction processing is fundamental to fostering a user-friendly environment. By drastically reducing the time it takes for transactions to be finalized, Vanar sets the stage for applications and projects to offer users a level of interactivity and responsiveness that is crucial for delivering an optimal and engaging experience. In essence, Vanar's emphasis on super-fast block time finality is a strategic response to the challenge of sluggish blockchains, ensuring

that user experiences on the platform are not only efficient but also seamlessly responsive.

3.3. Throughput

Achieving high throughput in a blockchain network is a crucial aspect for ensuring efficient transaction processing. In the context of a blockchain with a 3-second block time and a gas limit of 30 million for a block, the system is optimized for rapid and scalable transaction execution.

With a 3-second block time, the network can produce blocks at a frequent interval, allowing for a faster confirmation of transactions. This rapid block generation ensures that the blockchain stays responsive to the transaction demands of its users, reducing the overall latency in the system.

The gas limit of 30 million per block provides a substantial capacity for including transactions in each block. Gas is a measure of computational effort required to execute transactions on the blockchain. A higher gas limit allows for more complex and computationally intensive transactions to be processed within each block, enhancing the versatility and functionality of the blockchain.

In combination, the 3-second block time and a gas limit of 30 million create a dynamic environment where a significant volume of transactions can be processed swiftly and efficiently. This high throughput is particularly advantageous for applications requiring quick confirmation times, such as real-time financial transactions, gaming platforms, and decentralized applications with interactive user interfaces. Overall, the combination of a short block time and ample gas limit contributes to a blockchain system optimized for handling a large number of transactions with minimal delay.

Keeping all this in consideration we propose to launch the Vanar chain with 3 seconds block time and a gas limit of 30 million per block that gives us the advantage to create blocks at a high frequency and ensure higher throughput for the end users and projects.

3.4. Transaction Ordering

In the Vanar blockchain we have a fixed fee model for the transactions so the transactions are processed on a first come first serve basis. This is also because we want to give a fairplay ground for everyone no matter what the size of the project. The protocol ensures that the validator who is sealing the block picks the transactions in the order they are received in the transaction mempool.

Within the Vanar blockchain, our approach to transaction fees adopts a fixed fee model, ensuring that transactions are processed on a straightforward "first come,

first serve" basis. This deliberate choice aligns with our commitment to providing a level playing field for all participants, regardless of the size or scale of their projects.

The fixed fee model is designed to promote fairness and inclusivity within the Vanar ecosystem. By adhering to a first-come, first-served processing mechanism, every participant, whether a small-scale project or a larger initiative, is afforded an equal opportunity to have their transactions included in the blockchain.

To implement this approach, the protocol is structured to ensure that the validator responsible for sealing a block follows the chronological order of transactions as they are received in the transactions mempool. This means that transactions are processed in the sequence in which they enter the system, enhancing transparency and equitable access to the blockchain's processing capabilities.

In essence, Vanar's commitment to a fixed fee model and a first-come, first-served processing order underscores our dedication to fairness, openness, and providing an accessible platform for projects of all sizes within the blockchain ecosystem.
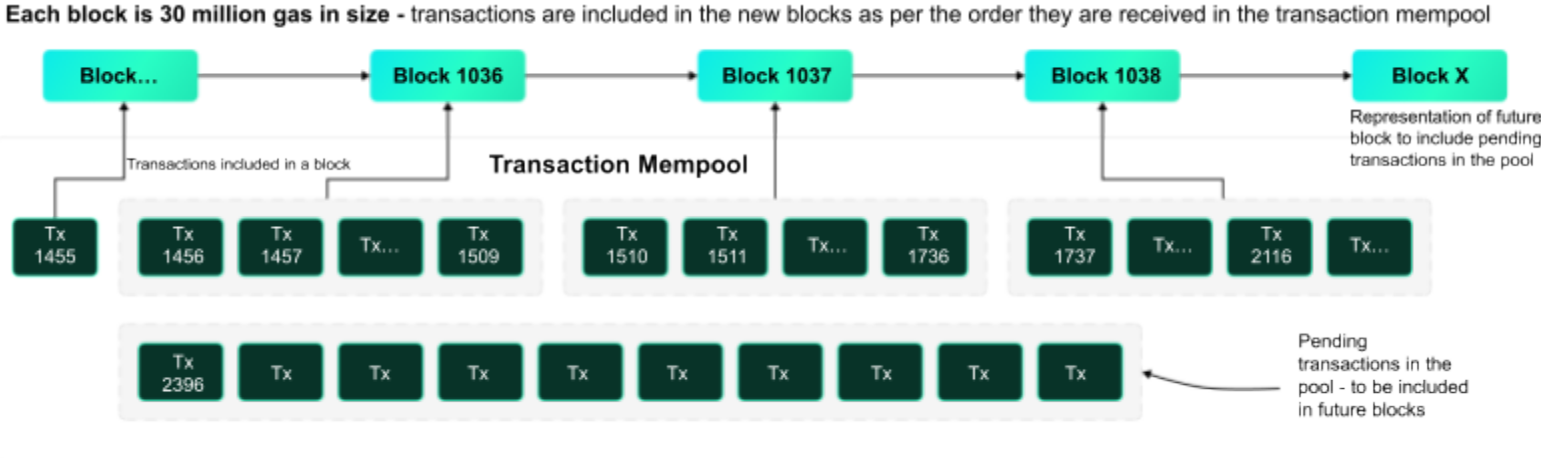

Each block is 30 million gas in size - transactions are included in the new blocks as per the order they are received in the transaction mempool

Fig. 1 Transaction Ordering - First In First Out Model - Transactions are ordered and included in blocks based on time and nonce

3.5.   Native Gas Token

Like any blockchain, Vanar is to have its own native token with a hard cap on maximum supply. This native gas token is going to have a lot of other utilities on top of its native purpose that is to serve as the gas token for the transactions.

More details are covered in the subsequent sections where you can know more about its minting and utilities in detail.

3.6. EVM Compatibility

To build an ecosystem and have a faster adaptability and interoperability with other key players in the blockchain space we at Vanar carefully decided to be an EVM compatible blockchain which has a greater demand with a massive number of protocols already built on top of EVM blockchains. There are a lot of tools already available and a developer community who is well versed with the EVM based blockchains and same goes with a number of protocols and projects already built on the EVM chains. This EVM compatibility opens the avenue for existing developers and projects to migrate easily to the Vanar ecosystem if they want to do a complete transition or if they want to expand on the network of chains supported by the end project.

In our strategic pursuit of fostering a thriving ecosystem and ensuring rapid adaptability and interoperability within the broader blockchain community, Vanar has deliberately chosen to be an Ethereum Virtual Machine (EVM) compatible blockchain. This deliberate decision stems from the widespread demand for EVM compatibility, with numerous protocols already established on EVM-based blockchains.

The EVM ecosystem boasts a plethora of tools and a robust developer community well-versed in the intricacies of EVM-based blockchains. This alignment not only facilitates a smooth transition for existing projects but also taps into a wealth of expertise and resources. The abundance of protocols and projects already thriving on EVM chains underscores the significant traction and recognition that EVM compatibility enjoys within the blockchain space.

By embracing EVM compatibility, Vanar strategically positions itself as an attractive option for existing developers and projects looking to migrate seamlessly. Whether opting for a complete transition or expanding their network of supported chains, developers and projects already entrenched in the EVM landscape find Vanar to be a conducive and compatible environment for their endeavors.

In essence, the decision to be EVM compatible serves as an open invitation for the broader blockchain community, providing a familiar and conducive space for collaboration, innovation, and growth within the Vanar ecosystem. This approach not only accelerates the onboarding process for existing projects but also enriches the overall blockchain landscape by fostering a collaborative and interoperable environment.

4. Fixed Fees

Vanar introduces the concept of fixed fees for the transactions in terms of the dollar value of the gas token to ensure that blockchain is always low cost and to help predict the gas costs to run any dApp on top of the Vanar Chain. This is one of the fundamental improvement areas that Vanar is focusing on to build a chain that is cheap and for everyone including small scale projects and massively big enterprise scale projects.

Vanar is to implement a tiered system to charge different transaction fees based on the transaction size (the gas it will consume). This scheme is purely introduced to keep the bad actors away and make it expensive if they try to misuse or attack the chain with massively big transactions consuming a lot of space in a block. All the transactions like token transfers, token swap, minting an NFT, staking, bridging and even other tasks like this will still cost the lowest fees that Vanar commits which is a small amount of the native gas token equivalent to $0.0005 at any given time.

4.1. Why different fees for different trier

The rationale behind different tiers or brackets of fixed fees for different sized transactions is based on the fact that in all the low fees blockchains there comes an inherent issues that an attacker can easily attack the chain with a lot transactions causing the system to be unavailable for others and this can choke the system completely while the attacker would require only a small amount of funds to do that.

Imagine if an attacker sends just 10,000 big transactions where each transaction is supposed to consume the full block, it means that with a block chain with 3 seconds of block time will require 30,000 seconds (that is 8 hours and 20 minutes) while the user will require only 5$ worth of the gas tokens if each such transaction is going to charge only $0.0005 per transaction. And if we charge like $1 (or more) for such transactions then it will be $10,000 to do the same attack costing a reasonable amount that would keep the bad actors away.

Below are the initially suggested brackets of fixed fees based on transaction size in terms of gas (the values mentioned here are not the final ones and can be changed to the optimal ones with regards to testnet and mainnet).

Gas Range	Fixed Fees (USD)
21,000 to 12,000,000	0.0005
12,000,001 to 1,500,000	1.5
15,000,001 to 2,000,000	3.0
20,000,001 to 25,000,000	7.5
25,000,001 to 30,000,000	15

4.2. How the fixed fees are managed

A fundamental commitment within the Vanar chain is the determination of transaction charges based on the dollar value of the gas token rather than the units of gas required for processing. This commitment is designed to ensure fairness for users, regardless of market fluctuations affecting the native gas token's price. However, a crucial question arises: How can the protocol manage the market-driven price, which inherently lies beyond its direct control?

The solution to this challenge lies in the proactive approach of the Vanar Foundation. The foundation undertakes the responsibility of calculating the VANRY token price by leveraging various on-chain and off-chain data sources. Through a meticulous process of data validation and cleansing, the foundation computes the market price of the VANRY token. This calculated price is then seamlessly integrated into the protocol, establishing a dynamic and adaptive system that adjusts transaction charges based on real-time market conditions.

By incorporating this solution, Vanar ensures that the transaction fees remain consistent, regardless of the market value of the underlying gas token. The tiering system proposed in the protocol leverages the dynamically computed VANRY token price, aligning with the commitment to fair and transparent transaction charging. In essence, this approach safeguards users from the impact of market volatility, providing a stable and predictable environment for transaction processing within the Vanar ecosystem.
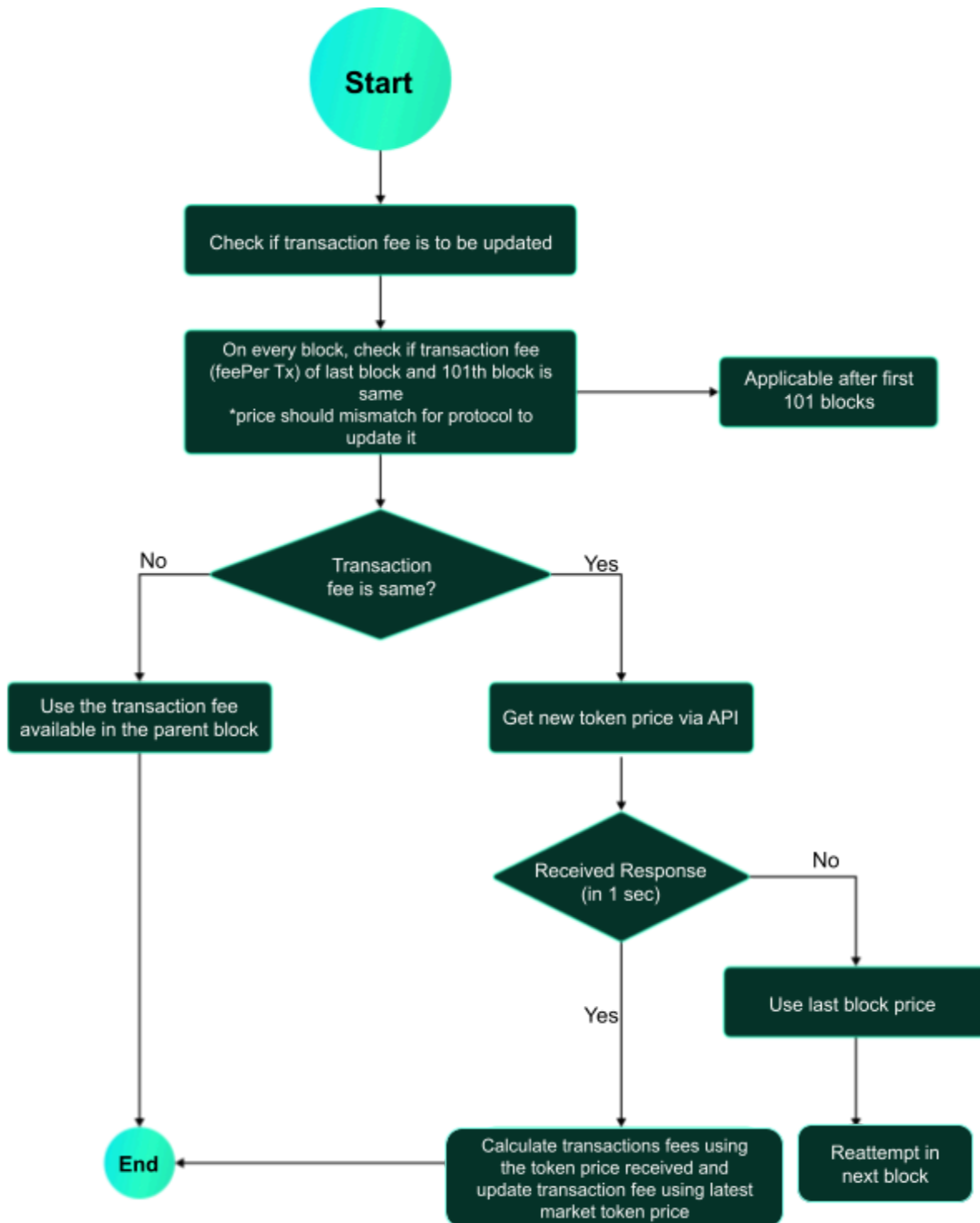
Fig. 2. Check token price every 100th block and update fees based on market price of the gas token

5. VANRY Token

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5.1. Native Gas Token

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5.2. Minting

VANRY token will be minted in only following two ways:

5.2.1. Genesis Block

Upon the Vanar blockchain's launch, an initial supply of VANRY gas tokens will be minted within the genesis block, providing the essential foundation for transaction processing and network functionalities. This strategic allocation ensures immediate access to resources integral to the Vanar ecosystem's operations from the outset.

Vanar represents an evolution from the existing 'Virtua' project, introducing the 'TVK' token with a maximum supply of 1.2 billion tokens. In alignment with this, Vanar will mint an equivalent amount of 1.2 billion VANRY tokens, establishing a seamless 1:1 token swap ratio. This intentional symmetry facilitates a smooth transition for the Virtua community, allowing them to seamlessly engage with the enhanced Vanar ecosystem while maintaining continuity with their existing token holdings.

5.2.2. Block Rewards

The VANRY token is meticulously designed with a maximum supply capped at 2.4 billion tokens, establishing a clear and finite limit to its availability. Notably, the token issuance mechanism is structured to ensure that, aside from the initial supply minted as genesis, all additional tokens will be generated as block rewards.

To maintain transparency and predictability in token issuance, a predefined rate has been established. This rate dictates the pace at which the remaining VANRY tokens will be minted, with each new block produced over a span of 20 years contributing to this incremental issuance. This extended timeframe not only allows for a controlled and gradual release of tokens but also introduces a measured and sustainable approach to token distribution over an extended period.

The allocation of tokens as block rewards serves multiple purposes. Firstly, it incentivizes network participants, such as validators by rewarding them with newly minted tokens for their contributions to the network's security and functionality. Secondly, this gradual issuance mechanism helps prevent abrupt fluctuations in token supply, fostering a stable and well-balanced ecosystem.

By structuring VANRY's tokenomics in this manner, we aim to promote long-term sustainability and value appreciation. The carefully planned issuance schedule aligns with the project's vision for stability, fairness, and the creation of a robust economic foundation for the VANRY token within the blockchain ecosystem.

5.3. Tokens Distribution

There will be a total supply of 2.4 billion tokens in total. Out of this 1.2 billion tokens will be minted at the genesis that is the total supply of TVK tokens and as part of the upgrade TVK holders will be able to swap TVK for VANRY on 1:1 ratio. The additional supply 1.2 billion VANRY token distribution will be allocated as follows:
- 83% of the new tokens will be dedicated to validator rewards
- 13% to development rewards
- 4% to airdrops and other community incentives
- No team tokens will be allocated

5.4. Block Rewards Distribution

The intricate mechanism of block rewards distribution within the Vanar ecosystem is meticulously orchestrated through a dedicated rewards contract. This sophisticated contract serves as the conduit through which the rewards earned by validators, democratically chosen by the community through the voting process, are shared among those who participated in the selection.

In this dynamic ecosystem, the community actively engages in the selection of validators, exercising their voting power to endorse candidates they deem reliable and trustworthy. Validators, upon securing the community's trust and successfully participating in the consensus mechanism, earn block rewards. These rewards, symbolizing the fruits of network security and validation efforts, are then channeled through the rewards contract.

The rewards contract, designed with transparency and fairness in mind, plays a pivotal role in the equitable distribution of these block rewards. It ensures that those who have actively staked their VANRY tokens and contributed to the validator selection process receive their rightful share of the rewards. This mechanism not only establishes a direct link between the community's

decision-making power and the economic benefits within the Vanar ecosystem but also fosters a sense of shared ownership and collaboration.

By implementing a rewards contract for block distribution, Vanar reinforces its commitment to a decentralized and community-driven ethos. This innovative approach transforms the distribution of block rewards into a transparent, automated, and fair process, aligning with the principles of inclusivity and empowerment that define the Vanar blockchain.

5.5. ERC20 Token

The VANRY token functions as the native gas token on the Vanar blockchain, serving essential roles in transaction fees and network operations. To enhance its utility and promote interoperability, we are introducing a wrapped ERC20 version of VANRY. This ERC20-wrapped token is primarily accessible on the Ethereum chain, allowing seamless integration with established decentralized applications (dApps) and protocols within the Ethereum ecosystem. The implementation of a robust bridge infrastructure ensures secure token movement between Vanar, Ethereum, and potential future Ethereum Virtual Machine (EVM) chains. Enabling interoperability between EVM based chains.

The ERC20-wrapped VANRY token's compatibility with ERC20 standards brings additional advantages, particularly for projects and protocols inherently supporting ERC20 tokens. Platforms like Uniswap, designed for token swapping, and other applications compatible with the ERC20 standard can effortlessly integrate and interact with the ERC20-wrapped VANRY token. This strategic move not only expands the token's accessibility within the Ethereum ecosystem but also fosters a dynamic and interconnected multi-chain environment, promoting collaboration and innovation across various blockchain platforms and protocols.

6. Consensus Mechanism

Vanar is poised to employ a hybrid consensus mechanism, primarily relying on Proof of Authority (PoA), complemented by a Proof of Reputation (PoR) mechanism to enhance network security. Initially, the Vanar Foundation will take on the responsibility of running all validator nodes. However, Vanar welcomes external participants to join the ecosystem as validators through a PoR mechanism. This approach not only diversifies the network's validator base but also introduces a democratic element through community voting.

The Proof of Reputation system serves as a robust means of onboarding new members into the Vanar ecosystem. Individuals seeking to become validators can participate based on their reputation within the community. This reputation is earned through active and positive contributions, aligning with the values and objectives of the Vanar network.

The inclusion of community voting in the validator selection process further ensures a democratic and decentralized governance structure.

By implementing a PoR mechanism and incorporating community voting, Vanar promotes a reliable and sustainable ecosystem. Validators, chosen through a democratic process, represent stakeholders with proven reputations, thereby enhancing the overall resilience and trustworthiness of the Vanar blockchain. This thoughtful integration of consensus mechanisms not only reinforces the security of the network but also sets the stage for long-term sustainability and community-driven governance.

The Vanar community will require to stake the VANRY tokens into a staking contract that will give them the right to vote along with other staking benefits.

7. Validators and Block Rewards

Validators serve as indispensable contributors to the robust functioning and security of a blockchain network. In the Vanar ecosystem, validators play a pivotal role in both securing the network and validating transactions, ensuring the integrity of the blockchain. Their responsibility extends to creating new blocks, a foundational process that fortifies the overall structure of the Vanar blockchain. In recognition of their crucial contribution to network security, validators receive block rewards, providing a fair incentive for their active participation in the consensus mechanism.

Each new block produced by validators in the Vanar ecosystem results in the minting of a specific amount of new VANRY tokens, constituting a reward for their role in maintaining network security. This system ensures that validators are duly acknowledged and compensated for their commitment to the ecosystem's stability. Importantly, the block rewards are not solely confined to the validators; a portion of the newly minted tokens is shared among the node validators, while another segment is allocated to the community members who participated in the voting process to elect validators.

The release schedule for block rewards follows a well-defined curve, spanning over 20 years. This predetermined curve outlines the quantity of new gas tokens to be minted within specific time units, such as monthly intervals. The distribution is orchestrated to be even across the number of blocks producible in the designated time frame, considering a block time of 3 seconds. This meticulous design not only ensures a fair and predictable distribution of rewards but also establishes a sustainable incentive structure for validators and the broader community over an extended period.

8. Interoperability

Vanar is going to be 100% EVM compatible to ensure that we don't compromise on the interoperability side of the ecosystem. Vanar will be using GETH, which is Ethereum

implementation in the Go programming language. GETH is the most battle-hardened and tested client.

We are setting and ensuring the fundamental rule "What works on Ethereum, works on Vanar" to ensure that Vanar is 100% EVM compatible. With this Vanar will be able to onboard existing projects like DeFi, NFT marketplaces, games etc as well with 0 to minimal changes to grow the ecosystem at a faster pace.

Vanar is committed to achieving complete compatibility with the Ethereum Virtual Machine (EVM), standing as a testament to our dedication to preserving seamless interoperability within the blockchain ecosystem. To fulfill this commitment, Vanar will leverage GETH, the Ethereum implementation in the Go programming language, recognized for its battle-hardened nature and extensive testing.

By aligning ourselves with the EVM standard, Vanar adheres to the fundamental principle: "What works on Ethereum, works on Vanar." This adherence guarantees a robust compatibility framework, allowing projects and applications that function smoothly on Ethereum to seamlessly transition and operate on the Vanar blockchain. The adoption of GETH further strengthens this compatibility, as it is a well-established and proven client in the Ethereum ecosystem.

The strategic decision to maintain 100% EVM compatibility holds strategic significance. It ensures that Vanar can readily onboard existing projects, including those in the realms of DeFi, NFT marketplaces, and gaming, with minimal to zero adjustments. This compatibility approach facilitates a swift and smooth transition for projects already established on Ethereum, fostering a rapid and expansive growth of the Vanar ecosystem.

In essence, Vanar's commitment to EVM compatibility, coupled with the use of GETH, positions the platform as an ideal choice for existing projects seeking a seamless migration path, thereby fostering a vibrant and diverse ecosystem on the Vanar blockchain.

9. Smart Contracts

Smart contracts are indispensable components within the Ethereum Virtual Machine (EVM), constituting first-class citizens within the EVM ecosystem. These self-executing contracts, coded to autonomously execute predefined functions when specified conditions are met, form the backbone of decentralized applications (dApps) and various blockchain functionalities. In alignment with this paradigm, Vanar positions itself as an Ethereum-compatible blockchain, seamlessly integrating with the EVM and inherently supporting smart contracts as integral elements of its ecosystem.

Being EVM-compatible implies that Vanar natively embraces the Solidity programming language, the predominant language for developing smart contracts on the Ethereum blockchain. Solidity provides a versatile and expressive environment for coding decentralized applications, allowing developers to articulate complex logic and execute intricate functionalities within smart contracts. Vanar's compatibility with Solidity ensures a smooth transition for developers familiar with Ethereum's development landscape, providing a familiar and conducive environment for creating and deploying smart contracts.

By adopting EVM compatibility and native support for smart contracts, Vanar extends its commitment to interoperability and developer-friendly environments. This compatibility with Solidity not only eases the onboarding process for existing Ethereum projects but also opens avenues for cross-chain collaboration and innovation within the Vanar ecosystem. As a result, developers can seamlessly leverage their Solidity expertise to build and deploy decentralized applications on the Vanar blockchain, fostering a dynamic and interconnected blockchain ecosystem.

10. Staking

Staking emerges as a pivotal and rewarding element within the Vanar ecosystem, providing token holders with the opportunity to actively participate in the network's governance and earn attractive rewards. VANRY token holders can engage in staking by locking up their tokens, not only accruing rewards but also gaining voting power in the validator selection process. This dual functionality ensures that stakers not only benefit from the network's success but also play a crucial role in shaping its integrity.

VANRY stakers wield the power to influence the validator landscape by voting for their preferred candidates. Successful validators, elected through this democratic process, subsequently distribute a portion of their earned block rewards to those who supported them through staking. This mechanism ensures that VANRY stakers directly share in the rewards generated by validators, thereby creating a dynamic and mutually beneficial relationship.

While the specifics of the rewards associated with staking, beyond voting power, will be refined in the future, Vanar remains committed to ensuring that staking is not only attractive but also a highly rewarding journey for token holders. This deliberate approach allows for flexibility and adaptability, aligning with the evolving needs and dynamics of the Vanar ecosystem. Ultimately, staking becomes not just a means of earning rewards, but a fundamental way for token holders to actively contribute to and benefit from the success of the Vanar blockchain.

10.1.　Delegated Proof of Stake

Vanar's Delegated Proof of Stake (dPoS) model sits alongside the Proof of Reputation protocol. It allows VANRY token holders to stake their tokens into a pool and delegate their stake to available (or candidate) validators who have been chosen to be reputable. The rewards earned by these PoR approved validators are shared among the validators and the VANRY token holders who delegated their staked tokens to those validators.

The Delegated Proof of Stake (dPoS) model on the Vanar Chain is designed to enhance inclusivity, security, and efficiency by leveraging community involvement and reputable validators. By staking and delegating tokens, VANRY token holders play a crucial role in securing the network and are rewarded for their participation.

This approach not only promotes decentralization and secures the network but also aligns the interests of validators and token holders, ensuring the long-term sustainability and resilience of the Vanar Chain.

11.　Security

In the pursuit of constructing a highly efficient and cost-effective blockchain, Vanar places an unwavering emphasis on maintaining the highest standards of security throughout every phase of protocol design and implementation. The commitment to security is a cornerstone guiding the evolution of Vanar, and numerous measures are in place to fortify its integrity. These measures encompass a multi-faceted approach, ensuring a robust security posture that instills confidence at every level.

One critical aspect of Vanar's security strategy involves subjecting protocol-level changes to rigorous scrutiny. Renowned auditing firms, specializing in blockchain security, play an integral role in thoroughly analyzing and vetting proposed protocol modifications. This external validation process acts as a stringent checkpoint, guaranteeing that any alterations introduced at the protocol level adhere to the highest security standards.

Furthermore, Vanar prioritizes coding practices that align with industry best practices. The development team meticulously follows established coding standards to ensure not only the efficiency and functionality of the code but also its resilience against potential security vulnerabilities. Code-level changes undergo comprehensive audits conducted by reputable auditing firms, providing an additional layer of scrutiny and validation.

An additional layer of security is enforced through the careful selection and management of validators within the Vanar ecosystem. Validators, pivotal entities responsible for block validation and network security, are exclusively entrusted to well-established and trusted parties. This strategic choice ensures that those operating as validators are reputable entities, further solidifying the overall security and reliability of the Vanar blockchain.

In summary, Vanar's commitment to security spans a multi-pronged approach, encompassing rigorous auditing, adherence to coding best practices, and a careful selection of trusted validators. These collective measures form a robust defense against potential security threats, establishing Vanar as a blockchain that seamlessly combines speed and cost-effectiveness with an uncompromising commitment to security.