

De Layer: EVM-Compatible Subnet on Bittensor

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Introduction

Bittensor is a network designed to decentralize the operation of AI models, offering a substrate for various specialized subnets. These subnets, functioning within the Bittensor ecosystem, leverage its decentralized nature to further expand functionalities. This litepaper introduces De Layer - a subnet specifically engineered to support EVM (Ethereum Virtual Machine)-compatible code, enabling users to execute Ethereum-like transactions and smart contracts within the Bittensor network.

Background

The Ethereum Virtual Machine (EVM) stands as the cornerstone of Ethereum's functionality, enabling the execution of smart contracts and the operation of decentralized applications (DApps) across a globally distributed network. EVM compatibility signifies a system's ability to understand and execute Ethereum-based code, thereby creating a standardized environment that encourages the development and deployment of interoperable blockchain applications. This standardization has catalyzed a wave of applications based on smart contracts.

Expanding on this, the significance of EVM compatibility extends beyond mere interoperability; it represents a bridge between varied blockchain networks, allowing them to leverage Ethereum's established infrastructure and its developer community. By integrating EVM compatibility, networks can integrate an extensive array of existing tools, DApps, and community resources. This integration is crucial for emerging networks seeking to establish a foothold in the competitive blockchain landscape, as it enables them to offer a familiar environment to developers and users accustomed to Ethereum's ecosystem. Consequently, an EVM-compatible subnet within Bittensor is not just a technical enhancement; it's a strategic expansion that aligns with the broader range of services.

Use Cases

The De Layer subnet on Bittensor broadens the network's utility by enabling a diverse range of blockchain applications and services that are foundational to the decentralized ecosystem. This integration allows for the deployment of various core functionalities which are the established standards in modern-day decentralized networks.

Within this subnet, users can engage with decentralized exchanges (DEXs), facilitating peer-to-peer trading without the need for central intermediaries, thereby enhancing liquidity and trading efficiency. De Layer also supports the creation of cross-chain bridges, enabling seamless asset transfers and interoperability between Bittensor and other blockchain networks. Furthermore, it can host a variety of DeFi protocols, offering decentralized services such as lending, borrowing, and yield farming, all within a secure and permissionless environment.

Additionally, De Layer is capable of supporting NFT marketplaces for the minting, buying, and selling of non-fungible tokens, along with the infrastructure for Decentralized Autonomous Organizations (DAOs), enabling community-driven governance and decision-making. The integration of smart contract oracles further extends the subnet's capabilities, allowing external data to inform and trigger smart contract executions. This collective suite of applications not only enriches the Bittensor ecosystem but also aligns with the broader vision of creating a versatile, interoperable, and user-centric decentralized platform.

Technical Overview

The technical architecture of the EVM-compatible subnet within Bittensor is designed to uphold the principles of decentralization, security, and efficiency, emphasizing a sophisticated integration of EVM functionalities with Bittensor's distinctive network features.

Consensus Mechanism

The subnet employs a specialized consensus protocol that harmonizes with Bittensor's overarching consensus framework. It adapts the Nakamoto-style consensus, inherently resistant to Sybil attacks, tailored to accommodate EVM transactions. This adaptation ensures that the integrity and chronological order of transactions are maintained, while also aligning with the energy-efficient and scalable nature of Bittensor's network. The consensus mechanism is optimized to handle EVM-specific operations, ensuring compatibility and seamless execution of smart contracts and Ethereum-based transactions.

Integration with Miners and Validators

Bittensor's ecosystem comprises neurons (miners) that contribute to the network's AI-driven services, and the subnet leverages this structure by intertwining these neurons with the EVM-compatible layer. Miners in the subnet are tasked with processing transactions, executing smart contracts, and maintaining the network's state. They participate in the consensus process, proposing blocks and ensuring the network's security and continuity. Validators, on the other hand, play a critical role in verifying the blocks proposed by miners, ensuring that they adhere to the network's rules and the EVM's standards. They rank miners by their blocks' fulfillment of current gas targets, cooperation, and stability. This dual-layer of participation fortifies the network's resilience and aligns the incentives of various stakeholders.

Reward Mechanism

Participants in the subnet can earn rewards through various mechanisms designed to incentivize the maintenance and security of the network. Miners receive rewards for successfully proposing and adding new blocks to the blockchain, which includes transaction fees and a network-specific block reward. Furthermore, the miners' rewards are dependent on their rank assigned by the validators, with the lowest ranked miners being removed from block production. Validators are rewarded for their role in overseeing and endorsing the validity of blocks, ensuring that only legitimate transactions are confirmed and appended to the blockchain.

Roadmap

The development team is currently in the alpha phase of the subnet, focusing on core functionalities and security features. The roadmap includes further integration with Bittensor's AI models, and a comprehensive testnet launch, to create a fully-functional EVM-compatible environment. At later stages, the project will deploy a decentralized exchange, allowing for TAO (the native token of Bittensor) to be traded fully trustlessly, and introduce enhanced developer tools – a block explorer and a deployment toolkit.

Conclusion

De Layer is an EVM-compatible subnet of the Bittensor network. Its purpose is to elevate developer interest in Bittensor network. By creating a layer familiar to a significant number of blockchain developers, it aims to accelerate the growth of the entire Bittensor ecosystem.