OPN Chain Whitepaper

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1. Abstract

This whitepaper outlines the architecture, design principles, and features of a groundbreaking Layer 1 blockchain built on the Cosmos SDK framework. Our innovative blockchain, referred to as OPNChain, combines the power of Cosmos SDK with Ethereum Virtual Machine (EVM) compatibility, offering developers and users a seamless and efficient experience in building and deploying decentralized applications.

The Cosmos SDK is a blockchain development framework designed to facilitate the creation of flexible, customizable, and scalable blockchain solutions. At the same time, the EVM (Ethereum Virtual Machine) serves as the runtime environment for smart contracts on Ethereum, enabling developers to build decentralized applications (DApps) with on-chain smart contracts. OPNChain combines these advanced technologies to deliver a robust platform that integrates security, scalability, and interoperability, addressing the complex needs of modern blockchain applications.

By leveraging the strengths of the Cosmos SDK and EVM, OPNChain empowers a wide range of use cases. These include decentralized and personalized AI-driven applications (AI Agents), tokenization of tangible assets to enhance liquidity and accessibility (Real-World Assets), management and incentivization of IoT-driven networks like EV charging stations and telecom infrastructure (DePIN), and distributed AI model training, privacy-preserving data exchange, and ethical AI governance (DeFAI). This integration makes OPNChain a pioneering platform for driving innovation and supporting the next generation of decentralized applications.

2. Introduction

OPNChain aims to bridge the worlds of Cosmos SDK and Ethereum by providing a secure, scalable, interoperable, and EVM-compatible blockchain. Leveraging the capabilities of Cosmos SDK, our blockchain is designed to offer enhanced performance, upgradability, and developer-friendly tools while maintaining compatibility with existing Ethereum infrastructure. This unique combination ensures that OPNChain stands out as a versatile and robust solution for decentralized application development.

3. Limitations of Existing Layer 1 Chains

Current Layer 1 (L1) blockchains, while groundbreaking in many respects, exhibit several limitations that hinder their widespread adoption and efficiency:

3.1 Scalability Issues

Many L1 blockchains struggle with scalability, resulting in slow transaction processing times and high fees during peak usage periods. This limitation restricts the practical use of these blockchains for applications requiring high throughput and low latency.

3.2 Interoperability Challenges

Lack of interoperability among different blockchains limits the potential for cross-chain interactions and collaborations. This siloed nature of existing blockchains hampers the flow of assets and information across networks, reducing the overall utility of blockchain technology.

3.3 Upgradability Constraints

Upgrading blockchain protocols often requires hard forks, which can be disruptive and contentious within the community. This challenge impedes the ability to implement necessary improvements and adapt to evolving technological and market conditions.

3.4 Security Concerns

While many blockchains offer robust security features, vulnerabilities still exist, particularly in terms of consensus mechanisms and network attacks. Ensuring comprehensive security remains a critical concern for existing L1 blockchains.

4. Proposed Solution: OPN Chain

OPN Chain addresses these limitations through its innovative approach, integrating Cosmos SDK's modular framework and EVM compatibility :

4.1 Scalability and Performance

By implementing efficient consensus mechanisms such as Tendermint Byzantine Fault Tolerance (BFT) and leveraging the robust capabilities of the Cosmos SDK, OPN Chain achieves high throughput and scalability, ensuring reliable and efficient transaction processing even during high-demand periods.

4.2 Interoperability

Inter-Blockchain Communication (IBC) allows the OPN Chain protocol to communicate with other Cosmos SDK-based blockchains that have IBC enabled. It is a cross-chain communication protocol that has many possibilities including asset transfer and cross-chain execution. An upcoming canonical Ethereum-OPN Chain bridge will make it possible to bridge ERC-20 tokens from other EVM compatible chains to the IOPn ecosystem.

4.3 Upgradability

The Cosmos SDK framework allows for on-chain governance and seamless runtime upgrades without the need for hard forks, enabling continuous improvement and adaptation of the protocol in a decentralized manner.

4.4 Security

OPN Chain enhances security by integrating Byzantine fault tolerance consensus proven security mechanisms, including rollups and inscriptions. This hybrid approach ensures robust protection against network attacks and other vulnerabilities.

5. Key Features

5.1 Cosmos SDK Integration

Utilizes the cosmos SDK for modular development, easy upgrades, and interoperability with other cosmos SDK chains.

- Example: On-chain upgradability of OPN Chain.

5.2 Ethereum Virtual Machine Compatibility

Full compatibility with EVM, allowing seamless migration of existing Ethereum smart contracts and DApps to Cosmos SDK-EVM.

- Example: Transitioning a popular DeFi protocol from Ethereum to OPNChain for better performance and lower fees.

5.3 Scalability and Performance

Implements Cosmos SDK's advanced consensus mechanisms, including Proof-of-Stake (PoS), to achieve high throughput and scalability.

- Example: Applications with large numbers of transactions benefiting from OPNChain's ability to handle large volumes of transactions.

5.4 Interoperability

Enables easy integration with other blockchains and networks within the Cosmos SDK ecosystem, promoting collaboration and cross-chain communication.

- Example: A supply chain management system interacting with various blockchains for enhanced transparency and efficiency.

5.5 Governance and Upgradability

Employs on-chain governance mechanisms for decentralized decision-making, ensuring a transparent and community-driven approach to protocol upgrades.

- Example: Community voting on protocol improvements and updates.

5.6 Developer Tools and Documentation

Provides a comprehensive set of developer tools, libraries, and documentation to simplify the creation, testing, and deployment of smart contracts and DApps.

- Example: Extensive tutorials and SDKs to facilitate new developers joining the OPNChain ecosystem.

6. Technical Architecture

6.1 Consensus Mechanism

Implements Tendermint Byzantine Fault Tolerance (BFT) for efficient and secure block production. Continuous research and development to explore alternative consensus mechanisms.

6.2 Runtime Module Structure

Utilizes cosmos SDK's modular architecture to organize runtime modules efficiently, allowing for easy customization and future enhancements.

6.3 EVM Compatibility Layer

Incorporates a specialized compatibility layer to seamlessly execute EVM-based smart contracts on the EVM blockchain.

6.4 Bridge to Ethereum

Develops a two-way bridge to facilitate asset transfers and interoperability between Cosmos SDK and the Ethereum network, ensuring security and efficiency.

7. EVM Compatible Application Layer

7.1 Seamless Transition for Developers

One of the primary advantages of EVM compatibility is the seamless transition it offers to developers. Existing smart contracts written in Solidity, the smart contract programming language, can be effortlessly migrated to EVM-compatible blockchains. This ensures that developers can leverage their existing knowledge and codebase while taking advantage of the unique features and capabilities of a new blockchain.

The compatibility with EVM also extends to developer tools and frameworks. Platforms supporting EVM compatibility provide a familiar development environment, enabling developers to use well-established tools such as Truffle, Remix, and MetaMask. This ease of transition accelerates the adoption of new blockchain platforms, fostering a more dynamic and collaborative development landscape.

7.2 Interoperability and Ecosystem Expansion

EVM compatibility acts as a key enabler for interoperability between different blockchain networks. Projects built on EVM-compatible blockchains can seamlessly interact with decentralized applications and smart contracts deployed on the Ethereum network. This interoperability fosters a more connected and collaborative blockchain ecosystem, where assets and information can flow seamlessly across different chains.

Furthermore, EVM compatibility opens the door to cross-chain collaborations and partnerships. Projects can leverage the strengths of different blockchains while maintaining compatibility with Ethereum's vast ecosystem. This interconnectedness promotes innovation and the development of decentralized solutions that transcend the limitations of a single blockchain.

7.3 Diverse Use Cases and Decentralized Finance (DeFi)

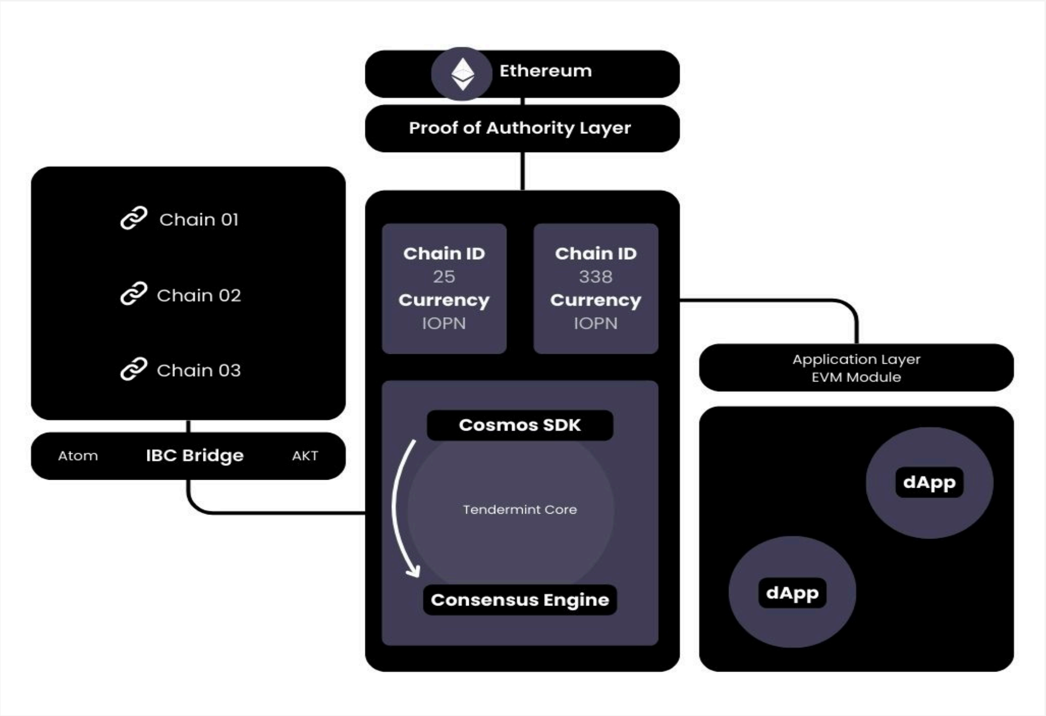
EVM compatibility significantly expands the range of use cases for blockchain platforms. Decentralized Finance (DeFi) applications, which have achieved immense popularity on Ethereum, can be effortlessly ported to EVM-compatible blockchains, providing users with greater accessibility to DeFi services. This compatibility ensures a smooth transition for developers and encourages innovation by leveraging existing Ethereum-based ecosystems.

The ability to support EVM-compatible smart contracts also fosters the creation of diverse decentralized applications (DApps). From non-fungible tokens (NFTs) to supply chain management and gaming, EVM compatibility empowers developers to explore and implement a wide variety of groundbreaking use cases. This versatility enhances the blockchain ecosystem, driving innovation and contributing to the broader adoption of blockchain technology.

In summary, EVM compatibility serves as a transformative feature for blockchain platforms, enabling seamless developer transitions, fostering interoperability, and broadening the spectrum of potential applications. As blockchain technology advances, EVM compatibility will remain a cornerstone for collaboration and the proliferation of decentralized solutions across numerous industries.

8. Cosmos SDK Based Network Layer

The Cosmos SDK provides an efficient and innovative foundation for building OPNChain. By leveraging this advanced framework, we can tap into its comprehensive set of built-in features, such as peer-to-peer networking, consensus mechanisms, governance functionality, and EVM implementation. This approach allows us to focus on the unique aspects of OPNChain, significantly streamlining development without compromising on functionality. The high degree of customization offered by the Cosmos SDK is particularly valuable in achieving our Ethereum compatibility goals, enabling us to create a highly scalable and interoperable platform while maintaining flexibility and innovation.

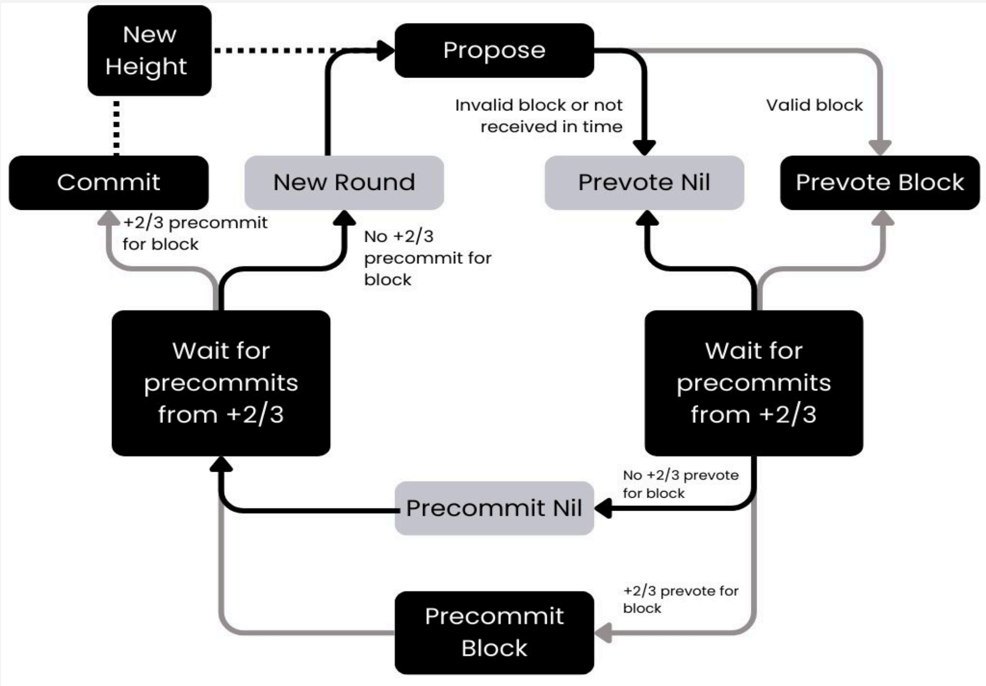


8.1. Modular Architecture

- At the core of Cosmos SDK's technical design is its modular architecture. Cosmos SDK allows developers to build blockchains with a high degree of flexibility by breaking down the system into interchangeable, reusable components known as pallets. Each pallet represents a specific functionality, such as consensus algorithms, governance mechanisms, or token standards. This modular approach streamlines blockchain development, allowing developers to pick and choose the functionalities that suit their specific use case, making it an ideal framework for a wide range of applications.

8.2. Consensus Mechanisms

- OPN Chain utilizes Tendermint Byzantine Fault Tolerance (BFT) as its consensus mechanism, providing a highly efficient and secure approach tailored to the needs of our platform. BFT enables trusted validators to secure the network, ensuring fast transaction processing and high throughput, which is crucial for scalability. Unlike traditional consensus mechanisms like Proof-of-Work (PoW) or Proof-of-Stake (PoS), PoA does not rely on resource-intensive mining or staking, making it more energy-efficient while maintaining a high level of security. This makes PoA an ideal choice for OPN Chain, as it supports the platform's goals of fast, reliable, and secure transaction processing, while offering a clear and manageable validator structure for governance.



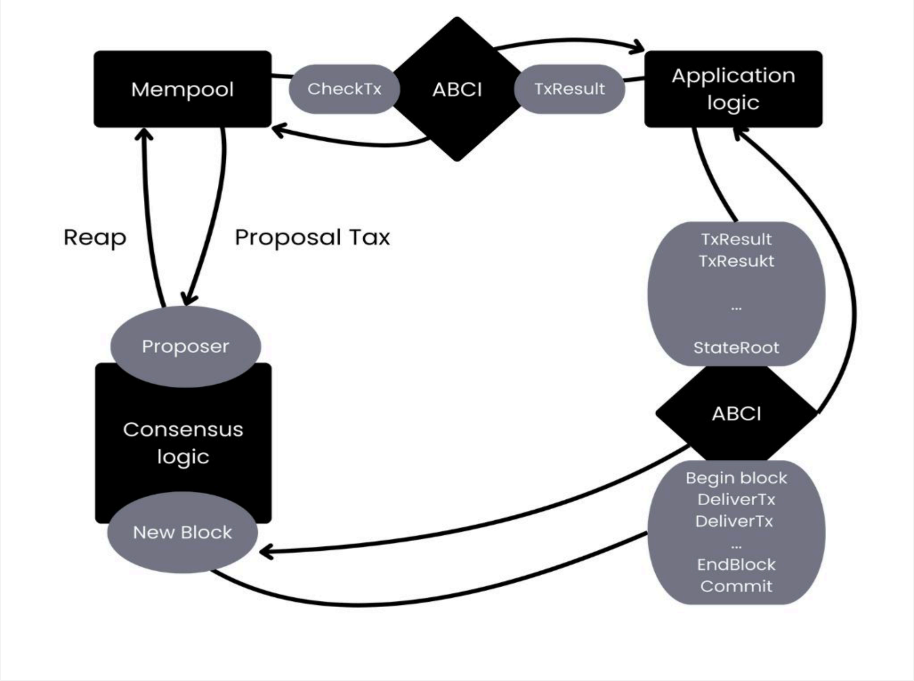
8.3. Interoperability

- Interoperability is a key focus of Cosmos SDK based blockchains. They are designed to seamlessly interact with each other, promoting a network of interoperable chains. This interoperability is achieved through Cosmos SDK's ability to communicate with other Cosmos SDK blockchains. As a result, developers can create specialized blockchains that can interoperate with the broader ecosystem, enabling the creation of complex, cross-chain decentralized applications.

8.4. Runtime Upgradability

- Cosmos SDK's unique feature of runtime upgradability allows for on-chain upgrades without requiring a hard fork. The runtime logic, including the consensus mechanism and pallets, can be modified without disrupting the blockchain's continuity. This enables the implementation of governance mechanisms for decentralized decision-making on protocol upgrades, ensuring a smoother and more adaptive development lifecycle.

- The application interface (ABCI) enables developers to use Tendermint for their applications in different programming languages and select a suitable development environment for them. The below diagram illustrates ABCI's whole working mechanism



9. Consensus: Byzantine Fault Tolerance (BFT)

9.1 BFT Mechanism

a. Validator nodes participate in proposing and confirming blocks through a two-step voting process (pre-vote and pre-commit).
b. Byzantine Fault Tolerance ensures the network remains secure even if up to one-third of validators act maliciously or fail.

9.2 Decentralization and Security

a. BFT mitigates centralization risks by relying on a diverse set of validators and incentivizing honest behavior through staking and slashing mechanisms.
b. *Example: Validators are required to stake tokens, and misbehavior results in penalties, ensuring accountability.*

9.3 Validator Selection

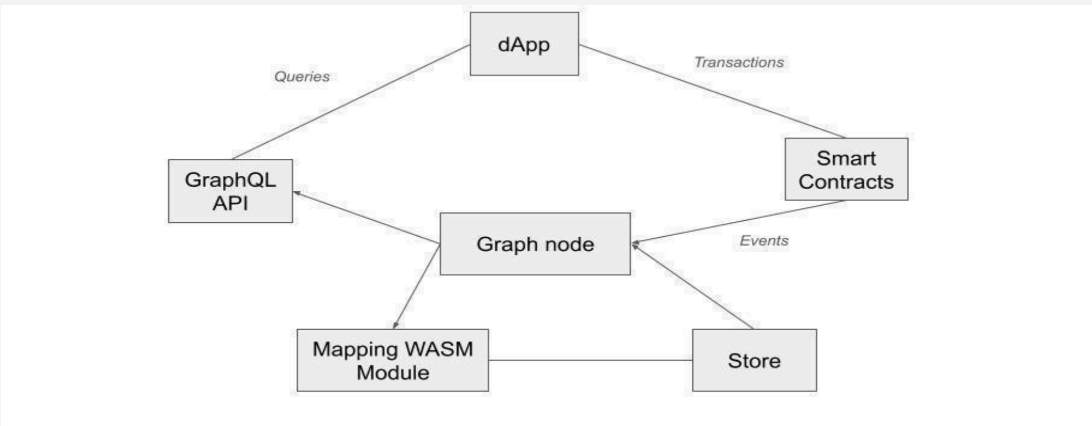
a. Token holders delegate their stake to elect validators, who are rated and retained based on performance and community trust.
b. *Example: Staking and governance processes allow transparent selection and monitoring of reliable validators.*

10. Data Indexers - OPNGraph

The need for efficient and accessible data indexing solutions for OPNChain becomes significant. This section delves into the features, Architecture and Use cases of Data Indexers used in OPNChain.

10.1 Features

- Decentralization: The OPNGraph operates as a decentralized network of nodes, ensuring censorship resistance and fault tolerance. This decentralized approach aligns with the core principles of OPN Chain.
- Subgraph Development: Developers can create custom subgraphs, which are modular components defining how to index and query specific data on OPNChain. This flexibility allows for the creation of tailored data sets to meet the requirements of various Decentralised Applications.
- Efficient Querying: With a GraphQL-based query language, The OPNGraph allows developers to request precisely the data they need, streamlining the retrieval process and minimizing unnecessary data transfer.
- Historical Data Access: The OPNGraph provides extensive historical data, allowing developers to analyze trends, perform audits, and gain insights into blockchain activities over time. This capability is particularly valuable for projects requiring deep analytics.
- Tokenomics Data: The OPNGraph offers rich tokenomics data, including detailed information about token holdings, transactions, and token distribution. This data is crucial for projects in the DeFi space, aiding in informed decision-making.



11. OPNBridge

Interoperability within the blockchain space has become a crucial aspect of fostering collaboration and synergy between different blockchain ecosystems. The OPNBridge, a cutting-edge solution, addresses the need for seamless communication between Ethereum Virtual Machine (EVM) chains and bridges the gap to connect EVM chains with non-EVM chains.

The IOPNBridge operates as a decentralized protocol designed to enable the transfer of assets and data between OPNChain and other EVM-compatible and non-EVM-compatible chains. Leveraging smart contracts, oracles, and Inter-Blockchain Communication (IBC) protocols, the bridge facilitates secure and trustless movement of coins and other assets across distinct EVM and non-EVM chains.

For example:

1. Connecting EVM Chains: A user can seamlessly transfer assets like USDT between OPNChain and Ethereum without needing a centralized intermediary.
2. Connecting Non-EVM Chains: Through IBC, the bridge can facilitate interactions between OPNChain and chains like Cosmos or Polkadot, ensuring interoperability with non-EVM architectures.
3. Cross-Ecosystem Use Cases: NFT assets on OPNChain can be utilized within Solana's ecosystem or vice versa, creating a cross-chain utility.

The integration of IBC expands the potential for interoperability by enabling not only asset transfers but also data and application-level communications, making OPNBridge a pivotal component of blockchain connectivity.

11.1 Bridge Working Architecture

- Seamless Asset Transfers: OPNBridge facilitates smooth and secure asset transfers between Cosmos SDK EVM and Ethereum, promoting cross-chain interoperability.
- Example: Transferring tokens between OPN Chain and Ethereum for DeFi applications.

11.2 DeFi Integration

- The IOPNBridge plays a pivotal role in the DeFi space by allowing users to leverage assets from different EVM chains in decentralized finance applications. This opens up opportunities for cross-chain yield farming, lending, and liquidity provision, enhancing the overall efficiency and composability of the DeFi landscape.

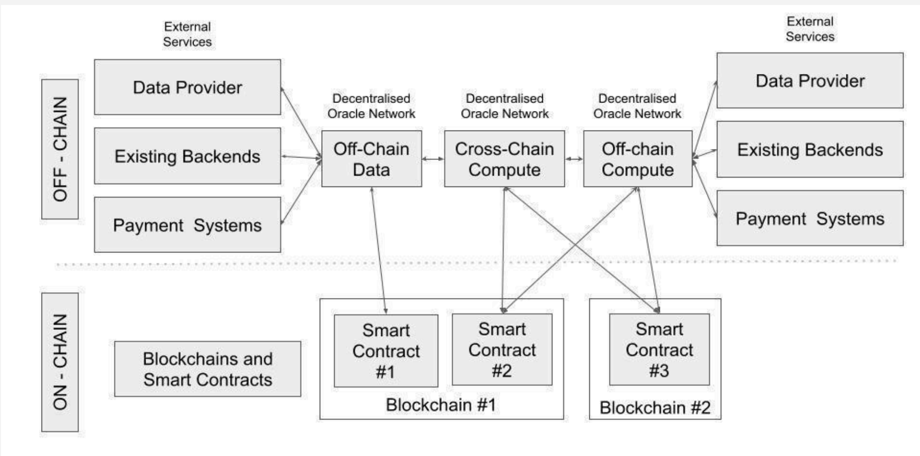
12. Oracle

Oracle plays a crucial role in OPNChain by providing external information to smart contracts. OPNChain are typically closed systems with limited access to external data. Oracle serves as bridges between OPNChain and the real world, allowing smart contracts to interact with data beyond the OPNChain Ecosystem.

12.1 Features

- Real-World Integration: Oracles enable smart contracts to interact with and react to real-world events and data, expanding their use cases beyond the data native to the OPNChain.
- Smart Contract Automation: With oracles, smart contracts can automatically execute actions based on external triggers, such as payment confirmations, market prices, or IoT sensor readings.
- Decentralized Finance (DeFi): Oracles are fundamental in DeFi applications, providing price feeds for assets, information for lending and borrowing protocols, and facilitating decentralized exchanges.
- Supply Chain Management: Oracles can be used to verify and provide information about real-world events in supply chains, such as shipment arrivals, inventory levels, or production milestones.
- Insurance: Smart contracts in insurance applications can use oracles to obtain and verify external data, such as weather conditions or flight information, to trigger payouts.

12.2 Oracle Working Architecture



13. Decentralised Applications (dApps)

OPN Chain Network offers an open-source ecosystem consisting of a wide range of contributors, experienced validators, and dApp developers. Moving forward, OPN Chain's ecosystem-bootstrapping action-plan will continue to be launched to raise awareness of OPN Chain among web3 developers and support them for innovative application building in AI Agents, Real World Tokenisation, DePIN and DeFAI

OPN Chain's robust architecture, built on EVM compatibility and the Cosmos SDK framework, facilitates the development of three primary categories of advanced applications:

1. AI Agents: Harnessing high-speed processing capabilities and seamless cross-chain interoperability.
2. Real-World Asset (RWA) Tokenization: Leveraging EVM compatibility for accurate and efficient asset representation.
3. Decentralized Physical Infrastructure Networks (DePIN): Utilizing a secure and scalable consensus mechanism for reliable operations.
4. Decentralized AI (DeFAI): Enabling distributed AI model training, privacy-preserving data exchange, and ethical AI governance, all powered by the interoperability and scalability of OPN Chain.

Implementation Architecture

Smart Contract Layer

- EVM-compatible contracts support all application categories.
- BFT consensus ensures reliable and consistent execution.
- IBC protocol enables efficient cross-chain operations.
- Gas-optimized execution ensures cost-effective transactions.

Infrastructure Integration

- High-availability RPC endpoints support uninterrupted connectivity.
- Oracle integration.
- Analytics platform support for monitoring and optimization.
- Developer frameworks, including Truffle Suite, Hardhat, and web3.js, streamline application development.

Application-Specific Implementations

13.2. AI Agents

Technical Features:

- Autonomous execution of smart contracts.
- Real-time data processing through integrated oracles.
- Cross-chain deployment of AI models.

Example Use Cases:

- Decentralized Trading: AI agents analyze market conditions across multiple chains and execute arbitrage opportunities with sub-second finality.
- Supply Chain Optimization: Autonomous agents process IoT data, predict inventory needs, and trigger restocking via smart contracts.
- Risk Assessment: AI-driven analysis enhances DeFi protocol evaluations and loan collateralization strategies.

Future Development Roadmap : AI Integration

- Multi-chain deployment of advanced AI models.
- Decentralized infrastructure for AI training.
- Agent-driven governance systems to enhance decision-making.

13.3. RWA Tokenization

Technical Features:

- Customizable token standards to represent diverse asset classes.
- Automated compliance verification mechanisms.
- Fractional ownership management for enhanced liquidity.

Example Use Cases:

- Commercial Real Estate: Tokenizing an office building into tokens with smart contract-managed rental distributions and automated property expense handling.
- Fine Art: Representing physical artworks as NFTs, enabling provenance tracking, royalty distribution, and fractional trading on decentralized exchanges.

Future Development Roadmap: RWA Expansion

- Tokenization of complex asset types, including carbon credits and intellectual property rights.
- Advanced automated compliance frameworks.
- Cross-chain asset trading protocols for greater liquidity.

13.4. DePIN Implementation

Technical Features:

- Seamless IoT device integration.
- Automated payment distribution.
- Real-time monitoring of physical infrastructure.

Example Use Cases:

- EV Charging Network: Smart contracts manage charging station operations, payment settlements, and real-time availability updates with predictive maintenance alerts.
- Decentralized Telecom: 5G node management tracks bandwidth allocation and automates revenue distribution for node operators.

Future Development Roadmap: DePIN Evolution:

- Integration with smart city infrastructure.
- Support for autonomous mobility systems.
- Management of decentralized energy grids for sustainable operations.

13.5. DeFAI

DeFAI Implementation

Technical Features:

- Distributed AI model training and inference across decentralized nodes.
- Privacy-preserving data exchange via encrypted datasets and federated learning.
- Automated smart contract-based incentivization for data and model contributors.
- On-chain governance for AI model updates and transparency.

Example Use Cases:

1. Decentralized Predictive Analytics: AI models provide data-driven insights for industries like finance, healthcare, and supply chain, with contributions and rewards tracked on-chain.
2. Personalized AI Assistants: AI agents tailored to individual user preferences, operating on user-owned data without centralized control, ensuring data privacy and sovereignty.
3. Autonomous Marketplaces: AI-driven decentralized marketplaces for data, services, and models, enabling direct transactions without intermediaries.

Future Development Roadmap: DeFAI Evolution

1. Integration with IoT Devices: Enable intelligent decision-making at the edge for real-time applications like smart homes and autonomous vehicles.
2. Collaborative AI Frameworks: Facilitate cross-chain AI training and deployment, leveraging multiple blockchain ecosystems.
3. Decentralized AI Governance: Implement community-driven mechanisms for ethical AI development, ensuring fairness and accountability across all AI applications.
4. Energy-Efficient AI: Develop sustainable AI processing by utilizing decentralized energy grids and edge computing nodes.

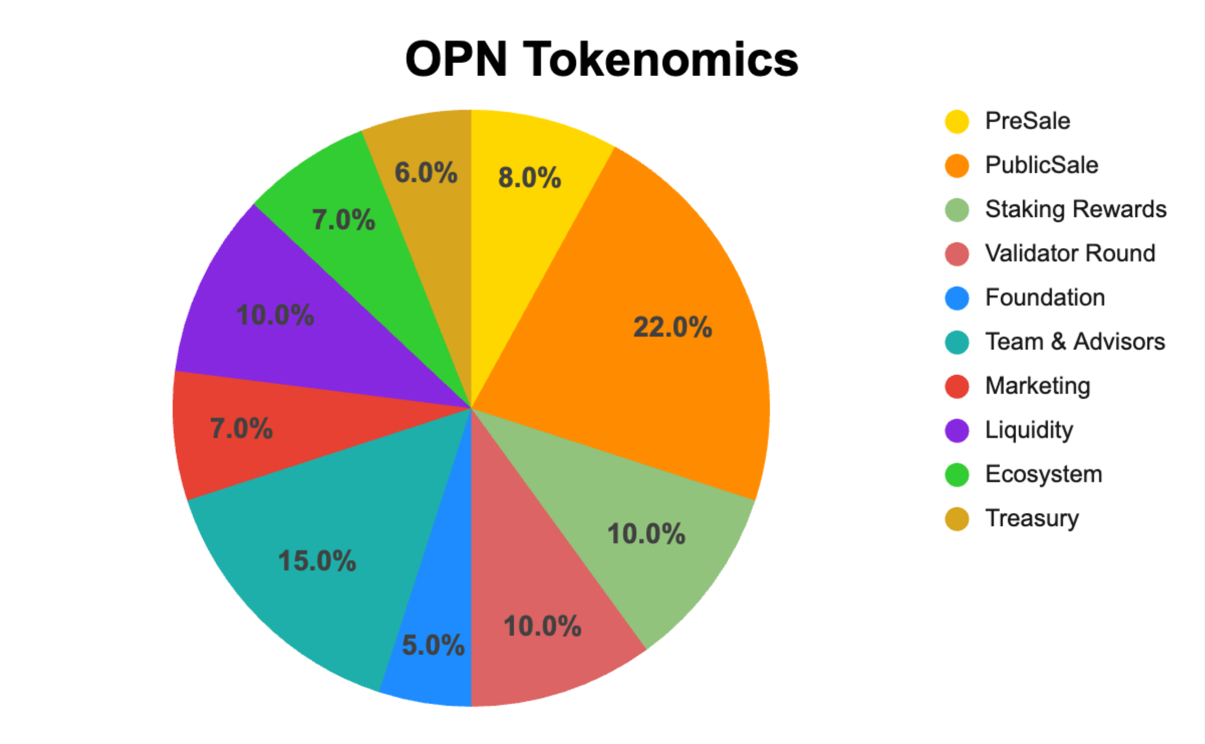
14. $OPN Coinomics

OPNChain has a total coin supply of **25 billion OPN coins.**

Total Supply : **25,000,000,000 OPN Coins (25 Billion OPN Coins)**

Coin Distribution

- PreSale: 2,000,000,000 Coins
- PublicSale: 5,500,000,000 Coins
- Staking Rewards: 2,500,000,000 Coins
- Validator Round: 2,500,000,000 Coins
- Foundation: 1,250,000,000 Coins
- Team & Advisors: 3,750,000,000 Coins
- Marketing: 1,750,000,000 Coins
- Liquidity: 2,500,000,000 Coins
- Ecosystem: 1,750,000,000 Coins
- Treasury: 1,500,000,000 Coins



Validator Requirements

1. **Testnet**

   The testnet requires a minimum of 4 validators to operate, with a maximum capacity of 40 validators. This allows for flexibility and robustness in the testing phase, ensuring that the network can handle various conditions before going live.

2. **Mainnet**

For the mainnet, the minimum number of validators is significantly higher at 24, with no specified maximum limit. This ensures a higher level of decentralization and security as the network scales.

15. Conclusion

OPNChain represents a significant advancement in blockchain technology, combining the strengths of Cosmos SDK and EVM compatibility to create a powerful and versatile platform for decentralized application development. By addressing the limitations of existing Layer 1 chains, OPNChain paves the way for a more scalable, interoperable, and secure blockchain ecosystem.

16. Annexure

I. Glossary of Terms

A

Abstract
A concise summary of the whitepaper, outlining the key architecture, design principles, and features of OPNChain, a Layer 1 blockchain that integrates Cosmos SDK and EVM compatibility.

B

Byzantine fault tolerance

A consensus mechanism that ensures a distributed system can function correctly even if some nodes act maliciously or fail. BFT systems achieve agreement among honest nodes despite adversarial behavior, making them resilient against various types of faults. This is critical for maintaining security and reliability in decentralized networks like blockchain.

C

Coinomics Data
Information about token holdings, transactions, and distribution

Consensus Mechanism
A system used to achieve agreement on a single data value among distributed processes. OPNChain uses Byzantine Fault Tolerance (BFT) for this purpose.

Cosmos SDK

A modular framework for building custom blockchain applications on the Cosmos ecosystem. It provides pre-built components for consensus, governance, and token management, enabling developers to create interoperable, scalable, and secure blockchain solutions efficiently. The Cosmos SDK powers applications that leverage the Tendermint consensus engine.

D

Delegated Proof-of-Stake (DPoS)

A consensus mechanism where validator nodes (delegates) are elected to propose and confirm blocks, ensuring efficient and secure block production.

Decentralized Applications (DApps)

Applications that run on a decentralized network, leveraging blockchain technology for security and transparency.

DeFi (Decentralized Finance)

Financial services using blockchain technology, enabling peer-to-peer financial transactions without intermediaries.

E

Ethereum Virtual Machine (EVM)

The runtime environment for smart contracts in Ethereum, allowing developers to build decentralized applications using Solidity.

EVM Compatibility

The ability of OPNChain to execute EVM-based smart contracts, facilitating seamless migration of Ethereum DApps to OPNChain.

F

Framework Integration

Utilizing the Cosmos SDK framework for modular development, easy upgrades, and interoperability with other Cosmos SDK based chains.

G

Governance and Upgradability

Mechanisms for on-chain governance and protocol upgrades, enabling decentralized decision-making and continuous improvement of OPNChain.

I

Interoperability

The ability of OPNChain to integrate with other blockchains and networks, promoting collaboration and cross-chain communication.

OPNGraph

A decentralized data indexing solution for OPNChain, providing efficient data querying and historical data access through custom subgraphs.

OPNBridge

A protocol for asset and data transfer between OPNChain and other EVM-compatible and non-EVM-compatible chains, enhancing interoperability and DeFi integration.

M

Modular Architecture

A design approach using interchangeable, reusable components (pallets) for building flexible and customizable blockchains.

O

Oracle

A system that provides external information to smart contracts on OPNChain, enabling real-world integration and automation of smart contract actions.

P

Proof-of-Authority (PoA)

A consensus mechanism that relies on a limited number of trusted validators to secure the network. Validators are pre-approved and identified, ensuring fast transaction processing and high throughput. PoA is known for its energy efficiency and suitability for use cases requiring scalability and predictable governance.

Proof-of-Stake (PoS)

A consensus mechanism where validators are selected to create new blocks and validate transactions based on the amount of cryptocurrency they stake as collateral. PoS offers a more energy-efficient alternative to Proof-of-Work and promotes decentralization by allowing stakeholders to participate in securing the network.

Proof-of-Work (PoW)

A consensus mechanism that requires participants, called miners, to solve complex cryptographic puzzles to validate transactions and create new blocks. PoW ensures network security through computational effort and is the foundation of many early blockchains, including Bitcoin, though it is resource-intensive and energy-demanding.

S

Scalability and Performance
The ability of OPNChain to handle a large number of transactions efficiently, using advanced consensus mechanisms like DPoS.

U

Upgradability
The ability to perform on-chain upgrades without hard forks, allowing continuous improvements and adaptations in OPNChain.

V

Validator
A node in the DPoS consensus mechanism that proposes and confirms blocks, elected by token holders.

W

Whitepaper
A detailed document that outlines the architecture, design principles, and features of OPNChain.

II. Abbreviations

Abbreviation	Meaning
OPNChain	Open Network Chain
EVM	Ethereum Virtual Machine
DApps	Decentralized Applications
PoA	Proof-of-Authority
PoW	Proof-of-Work
PoS	Proof-of-Stake
BTC	Bitcoin
DeFi	Decentralized Finance
NFT	Non-Fungible Token
IOPN	Internet of People
SHA-256	Secure Hash Algorithm 256-bit
AI	Artificial Intelligence
GraphQL	Graph Query Language
IPFS	InterPlanetary File System