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Solana✕

Powered by
MultiversX Sovereign Chains

Solana^X – A Solana L2 Built on MultiversX Sovereign Chains Technology, Bringing Everything We Love About Solana, Minus Wallet Drains, Congestion and Downtime

Abstract

Solana has become a vibrant hub for community experimentation with meme coins, fast DeFi applications, and a thriving NFT culture. However, the network faces significant challenges, including wallet drains, congestion, and downtime, which hinder its full potential.

To address these issues, we propose a Solana Layer 2 built on MultiversX Sovereign Chains technology. This solution leverages advanced consensus mechanisms, high throughput, and robust security features to eliminate wallet drains, reduce congestion, and ensure continuous uptime, thereby enhancing the overall user experience and scalability of the Solana ecosystem.

Introduction

The SovereignChain SDK is the culmination of extensive development, research, and architectural design. It leverages advanced technologies from the MultiversX Layer 1 chain, providing a comprehensive package for developers to create new appChains. This package includes explorers, wallets, bridges, VMs, SDKs, and more, ensuring that SovereignChains inherit the innovative properties of MultiversX.

Innovations and Features For Solana^X

Ethereum Layer 2 solutions, including Optimistic Rollups and Zero-Knowledge (zk) Rollups, offer a way to increase transaction throughput and lower transaction fees, effectively acting as bypasses to Ethereum's congested network.

Consensus and Transaction Processing:

- **Novel Consensus Technology:**
  Reduces pBFT communication rounds from 5 to 3. Transaction processing occurs in parallel across all validators and the leader, dedicating approximately 90% of the time to transaction processing.

- **Built-in MEV Protection:**
  Ensures a fairer and more secure environment for users and developers.

- **Smart Accounts:**
  Enabled by default, offering multiple built-in functions and enhancements.

- **On-Chain Guardians:**
  Protect funds even if the seed phrase is compromised.

- **Relayed Transactions:**
  Fully supported, with the relayer covering gas fees on behalf of the user.

- **Integrated Paymasters:**
  With RelayedV3 support.

- **Multi-Calls and Composable Actions:**
  Support for account abstraction, subscriptions, passkeys, and more.

- **Integrated Interoperability:**
  Native Cross Chain Operation modules facilitate seamless interactions with the MultiversX mainchain, Ethereum, and other chains.

Performance and Efficiency:

- **High Throughput:**
  Capable of 30,000 TPS with 1-second blocks on inexpensive hardware (16GB RAM, 4-core processors). Over 100,000 TPS can be achieved on better hardware.

- **No Wallet Drains:**
  ESDTs (Electronic Standard Digital Tokens) support fungible, non-fungible, semi-fungible, and DeFi assets, launched permissionlessly.

- **SpaceVM:**
  The fastest and most secure VM, running on top of WASM, with the most precompiles for builders.

- **Integrated DNS and Liquid Staked Assets:**
  Support for Herotags and liquid staked assets to enhance decentralization.

- **On-Chain Governance:**
  Supports complex composable tasks.

- **Re-Entrancy Protection:**
  Built into the design.

- **Customizable Fees:**
  No transaction fees or customizable fees, with options for relayed transactions and paymasters.

Built-in Interoperability and Native Cross Chain Operations

Starting from the Native Cross Chain operation module between MultiversX and SovereignChain, it is possible to establish integrated native cross-chain operations between SovereignChain and the Solana mainchain.

Process

1. Solana Light Clients: All SovereignChain validators run Solana light clients to monitor events and transactions on the L2 contract, starting with deposit transactions.

2. Block Headers: Validators add Solana block headers to the SovereignChain BlockHeader. If a Solana block contains successful transactions towards the L2 contracts and is finalized, validators create an INCOMINGTX and add it to the SovereignChain block.

3. Incoming Transactions:If the leader does not add the INCOMINGTXs, the block is not signed by validators.

Outgoing Transactions

1. OutgoingTX SC: Created to facilitate faster fund transfers from Sovereign to Solana and enable complex interoperability between contracts on Sovereign and Solana, especially those written in WASM using the CrossChain Async module.

2. OutgoingTXMiniblock: Validators create an OutGoingTXMiniblock and sign its hash with their private keys, enabling operations to happen instantly on Solana.

3. Posting Transactions: The current consensus leader posts the OutGoingTXs and the signature on Solana promptly, monitored by other validators via their light clients.

4. MultiSignature Verification: The L2 contract on Solana verifies the multiSignature over the hash. Validators register their public keys on the Solana contract, and ⅔+1 of the active validators must sign the message.

Asynchronous Composability

A new OPCODE for cross-chain asyncCall is added to SpaceVM, allowing contracts to call cross-chain other contracts and ensuring they receive results or funds in case of errors. This works best with WASM-based contracts written in SpaceCraftSDK.

Process

1. CrossChain AsyncCall: The SC on SovereignChain calls the crossChain asyncCall towards a Solana contract, including funds and execution.

2. OutgoingOperation: The OutGoingTX contract is called, and the OutGoingOperation requested by the SC is included in the OutGoingMiniblock signed by validators.

3. Execution on Solana: Every outgoing TX is executed on Solana. For async execution, the L2 SC gathers all received tokens and results.

4. Deposit Call: A deposit call is made automatically inside the L2 contract, monitored by validators' light clients. In case of failure, the deposit call is made with the same tokens initially used, including the error message.

5. CallBack Function: Validators create an incomingTX of callBack, which reaches the SC on SovereignChain, triggering the defined callBack function.

6. Completion: The SC on SovereignChain completes its execution.

The ultimate push for Web3 adoption

Solana has successfully introduced the masses to Web 3 with its fast transactions, engaging DeFi applications, and vibrant NFT culture. However, to sustain and expand this success, it is crucial to address the issues of wallet drains, congestion, and downtime.

MultiversX Sovereign Chains technology offers a robust solution, ensuring 100% of the fun with zero wallet drains, congestion, and downtime.

We invite builders and innovators to leverage this technology to expand on Solana's success story, creating a more secure, scalable, and efficient blockchain ecosystem. Let's continue to push the boundaries of what's possible and further scale Solana by means of a Layer 2 that enables an even deeper push on Web3 technology into mainstream adoption.
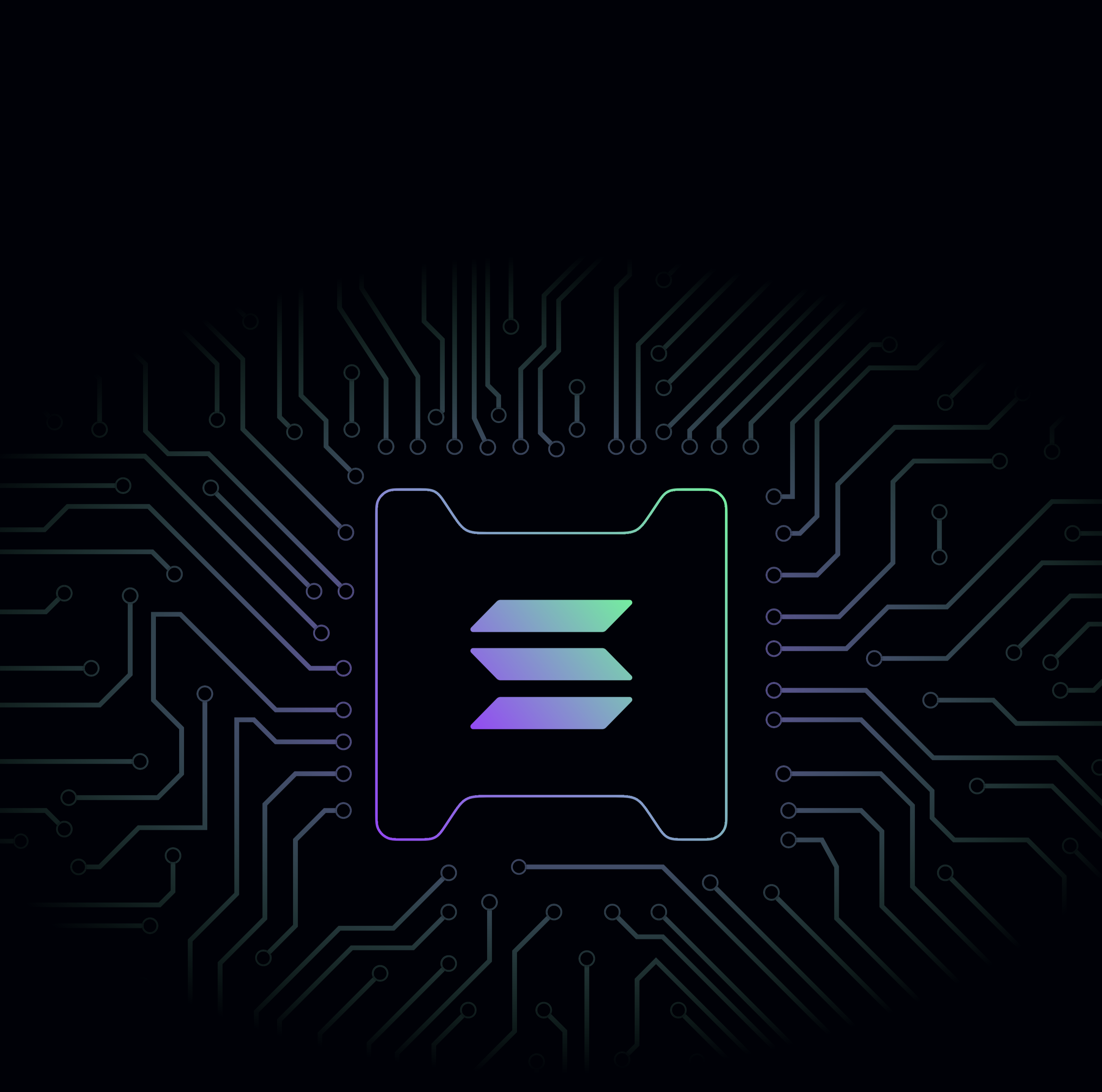
We call on like minded developers, builders and visionaries to pick up these tools and create something amazing.

It's time to build!