

# Getting Started

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# Introduction

**BPX Chain** is a new generation Ethereum-compatible blockchain based upon an innovative consensus algorithm, **Proof of Space and Time (PoST)**, originally pioneered by the Chia Network. Proof of Space is a cryptographic technique where farmers prove that they allocate unused hard disk space to the network. Proof of Time increases the overall security of the blockchain.

Compared to **Proof of Work** blockchains, BPX Chain provides the same level of security and decentralization, with a fractional power consumption. Compared to **Proof of Stake** blockchains, BPX is more censorship-resistant and avoids the centralization tendency where wealthier participants gain an outsized influence.

BPX Chain generates new blocks using hard drives and is compatible with Chia K-32 plots, enabling simultaneous farming with other PoST-based cryptocurrencies.

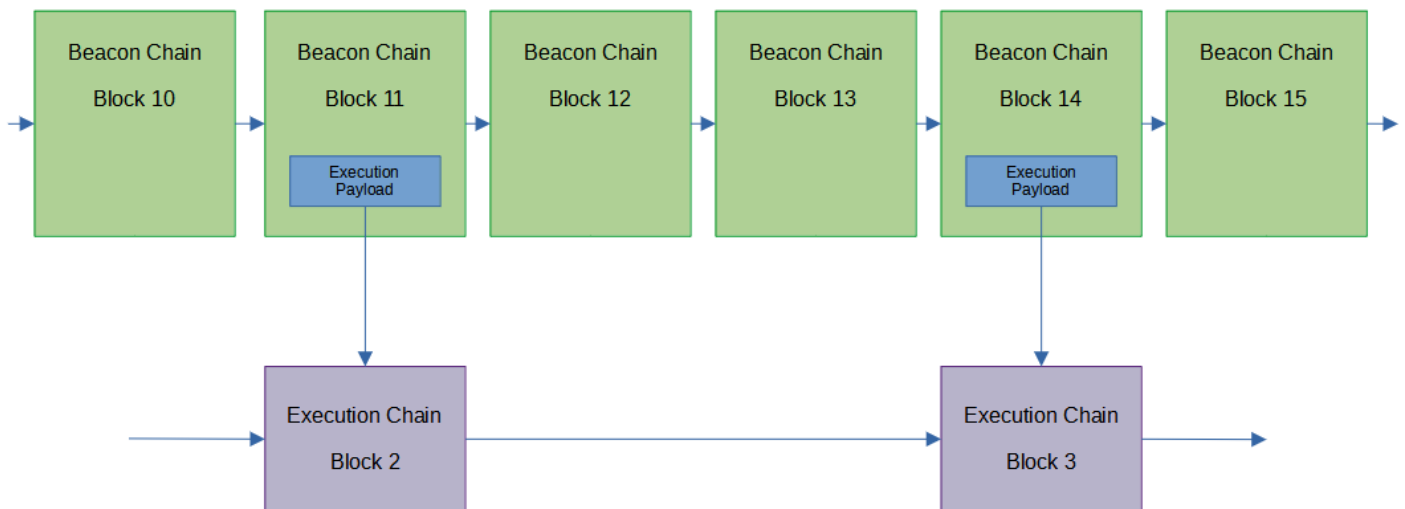
BPX Chain is fully compatible with Ethereum Virtual Machine. Existing Ethereum-based solutions can be seamlessly migrated to BPX without modifying source code. BPX also supports the standard Web3 RPC API, ensuring compatibility with popular wallets (e.g., MetaMask, Trust Wallet) and developer tools (e.g., Remix IDE, Web3.js). BPX Chain provides standard interface for fungible and non-fungible tokens, compatible with the appropriate interfaces in other blockchains (e.g. ERC-20, TRC-20, BEP-20).

The BPX cryptocurrency powers the network, facilitating transaction fees and rewarding farmers who help secure the chain.

# Beacon and Execution Chain

BPX comprises two distinct blockchains: the **Beacon Chain** and the **Execution Chain**, each responsible for specific tasks, with unique block structures and differing block production intervals. As a result, the peak heights of the Beacon Chain and Execution Chain diverge.

Certain blocks on the Beacon Chain, known as **transactional blocks**, include an **execution payload** - the data structure that enables the local reconstruction of a full Execution Chain block.



Both chains require separate client applications, called the **Beacon Client** and **Execution Client**, respectively.

Synchronization with Execution Chain without synchronization with Beacon Chain is not possible because Execution Chain does not have any built-in consensus algorithm but relies on data received from Beacon Chain.

Synchronization with Beacon Chain without synchronization with Execution Chain is not possible because execution payloads in some beacon blocks must be validated by the execution client.

Such a mechanism naturally forces following both chains by each BPX full node.

## Beacon Chain

Beacon Chain manages the Proof of Space and Time consensus. The beacon chain blocks contain proofs of space, VDF outputs, addresses to which the block reward should be paid, and execution payloads that allow you to recreate the full execution block locally.

# Execution Chain

Execution Chain is an EVM compatible chain. Execution blocks contains user transactions, smart contracts and logs.

# BPX vs Ethereum

If you are familiar with how Ethereum works, the following tips will help you better understand the BPX Chain:

1. The BPX Execution Chain functions identically to Ethereum's Execution Chain.
2. The BPX Execution Client is a Go-Ethereum (geth) fork, modified only for the genesis block, bootnodes, and DNS keys.
3. BPX Chain retains the Ethereum protocol, APIs, block and transaction structure unchanged.
4. All Ethereum-compatible wallets, developer tools, and applications that support a custom chainId are compatible with BPX out of the box.
5. Smart contracts written in Solidity can be deployed on the BPX network without modifying their source code.
6. The BPX Beacon Chain and Beacon Client differ significantly from Ethereum's setup but use the same Engine API.
7. BPX uses the withdrawal mechanism introduced in Ethereum's Shanghai hard fork to distribute block rewards.

# BPX vs Chia

If you are familiar with how Chia works, the following tips will help you better understand the BPX Chain:

1. The BPX Beacon Chain is based on the Chia blockchain architecture, where all transactional and monetary functions have been replaced by a mechanism that controls an independent EVM-compatible execution layer.
2. The BPX Beacon Client is a heavily modified fork of the Chia reference client, though the BPX Chain itself is not a Chia fork.
3. The Beacon Client solely provides consensus updates for the EVM-based Execution Chain that runs in parallel and cannot function properly without the Execution Client.
4. BPX Beacon Chain does not handle transactions, lacks an integrated wallet, and does not display information on farmed coins; all such data is managed by the Execution Chain.
5. Many commands, APIs, and graphical interfaces of the Beacon Client are identical or similar to those in Chia.
6. BPX Chain does not use a coin set model neither CLVM.