

XODE Network

XODE Blockchain network comprises several essential components, each playing a distinct role in the functioning and interoperability of the blockchain within the broader Polkadot ecosystem.

Here are the key components:

- **Parachain:** At the core of the network is the parachain itself. This is an independent blockchain that connects to the Polkadot/Kusama Relay Chain through a designated parachain slot. Parachains have their own set of rules, consensus mechanisms, and governance structures tailored to their specific use cases and requirements.
- **Parachain Slot:** A parachain slot is a limited resource within the Polkadot/Kusama Relay Chain allocated to individual parachains. Securing a parachain slot allows the parachain to connect to the Relay Chain and participate in the Polkadot network. Slots are obtained through a decentralized auction mechanism, where parachain projects bid DOT/KSM tokens to secure a slot for a specified period.
- **Polkadot/Kusama Relay Chain:** The Relay Chain serves as the heart of the Polkadot network, facilitating communication and interoperability between parachains. It coordinates consensus among validators, manages the security of the network, and facilitates the transfer of messages and assets between parachains.
- **Collators:** Collators are responsible for producing block candidates on behalf of parachains. They collect transactions, execute state transitions, and package them into blocks that are subsequently submitted to validators for finalization. Collators play a crucial role in maintaining the operation and integrity of parachains.
- **Validators:** Validators are responsible for finalizing blocks on the Relay Chain and ensuring the security and consensus of the network. They participate in the block production and consensus process by proposing and validating blocks, staking DOT/KSM tokens as collateral, and participating in governance decisions.
- **Message Passing Protocol:** Parachains communicate with each other and the Relay Chain through a message passing protocol. This protocol enables the transfer of messages, assets, and data between parachains, allowing for interoperability and collaboration across the Polkadot network.
- **Bridges:** Bridges are connectors that facilitate communication between parachains and external blockchains or networks. They enable the transfer of assets and data between different blockchain ecosystems, expanding the reach and utility of parachains beyond the Polkadot network.

These components work together to create a dynamic and interoperable ecosystem within the Polkadot network, enabling parachains to collaborate, exchange assets, and access shared security while maintaining their autonomy and sovereignty.

XODE Blockchain Collator Node and Relay Chain Validator Node

In XODE Blockchain within the Polkadot ecosystem, the relationship between collators and validators is crucial for the operation and security of the network. Let's dive into the technical details of how these roles interact:

Collator

- Collators are responsible for producing block candidates on behalf of parachains. They collect transactions, execute state transitions, and package them into blocks.

- When a collator collects transactions, it compiles them into a block along with other necessary data such as the current state of the parachain.
- Collators operate independently and are typically associated with specific parachains. They maintain a local copy of the parachain's state and execute transactions according to the rules defined by the parachain's consensus mechanism.
- After assembling a block, the collator broadcasts it to the network for validation.

Validator

- Validators are responsible for finalizing blocks on the Polkadot Relay Chain and ensuring the security and consensus of the network.
- In the context of parachains, validators play a crucial role in validating the blocks produced by collators. They verify the correctness of the transactions, execute the state transitions, and ensure that the blocks adhere to the rules and protocols of the Polkadot network.
- Validators participate in the block production and consensus process by proposing and validating blocks. They are selected to participate in block production based on their stake in the network and their reputation as trustworthy validators.
- Validators validate blocks submitted by collators by verifying the transactions and executing them against the current state of the parachain. They ensure that the transactions are valid, the state transitions are correct, and the blocks comply with the consensus rules of the network.