

Reduction of congestion in world_state (state-db) in a multi asset Blockchain environment.

In blockchain systems, shifting from a nonce per account model to a nonce per currency type presents significant advantages. This approach allows for parallel processing of transactions involving different currencies, enhancing efficiency and scalability. By decoupling the transaction sequence from the user's account and tying it to the specific currency type, it reduces network congestion and enables faster transaction processing. This novel structure is particularly beneficial in multi-currency blockchain platforms, where it optimizes resource utilization and improves overall system performance.

To explain the parallel execution of transactions involving two different currencies (ex. XMN and XUNI) in a blockchain environment expressed in a table:

User	Transaction 1	Curr.	Amt.	To	Transaction	Curr.	Amt.	To
A	Send	XMN	50	B	Send	XUNI	5	B
B	Receive from A	XMN	50	-	Receive from A	XUNI	5	-
B	Send	XMN	150	C	Send	XUNI	15	C
C	Receive from B	XM	150	-	Receive from B	XUNI	15	-

Technical Explanation:

In a blockchain system where each currency (XMN and XUNI) has a unique nonce associated with it, rather than with the user's account, it's possible to execute transactions in parallel. This system can allow a wallet to simultaneously send two different types of transactions (e.g., XMN and XUNI) without waiting for one to complete before starting the other.

Here's how it works:

- Parallel Processing**: Since the nonce is tied to the currency and not the account, each currency operates independently. This means a transaction in XMN does not have to wait for a transaction in XUNI to complete, and vice versa.
- State-DB Modifications**: The blockchain maintains a state database (state-db) that records the balances and transaction histories for each currency. When a transaction is initiated, the state-db is updated for that specific currency type only. This segregation of currency types allows the system to process transactions for XMN and XUNI concurrently.
- DAG Chains**: Using Directed Acyclic Graph (DAG) technology, the blockchain can efficiently process these parallel transactions. DAG allows for non-linear processing, which is ideal for handling multiple transactions simultaneously without the need for a strict sequential order.

4. ****Impact on Gas and Fees****: By allowing parallel processing, the system reduces the load on network resources. Each currency type can be processed independently, meaning the popularity or congestion in one currency (like XMN) doesn't affect the processing speed or fees for the other (like XUNI).

In summary, this system enables a more efficient and scalable approach to handling multiple currency transactions on a blockchain, leveraging the unique nonce assignment to each currency for parallel processing and independent state-db updates.