



TOKEND

Solution Brief

Tokenization of Commodities

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Executive Summary

Tokenization is a part of the digitization processes, which provide the assessment, accounting, creation of digital records, etc. in commodity management and other accounting systems. Tokenization technology provides a new way to manage the lifecycle of ownership rights for commodities, creating interoperability between systems as well as introducing a faster and more reliable approach for secondary market trading. Tokenization increases the security and transparency of accounting by using cryptographic methods.

Tokenization advantages:

- Ability to transfer asset ownership rights peer-to-peer, instantly and reliably while not moving the physical asset itself;
- Increased liquidity, which leads to the broader client market;
- Introduction of new security standards, which presume cryptographic protection of digitized ownership rights as well as the elimination of a single point of failure;
- Usage of smart contracts for resolving system conflicts upfront and not after the fact of them being happened;

TOKEND is a white label blockchain software solution that contains modules which are necessary for building the infrastructure for commodity tokenization platform: identity and wallet management, p2p transfers, asset exchange, role management, and deposit / withdraw gateways. The purpose of TOKEND is to provide a way for startups and enterprises to build such a system fast, with minimal development expenses and risks.

Commodity tokenization principles

Commodity asset is stored by the custodian (an individual role on the asset management platform). Each unit of a commodity asset is tied to an exact amount of the corresponding tokenized asset. The owner of a tokenized asset is assumed to be a legal owner of a particular unit of commodity.

Asset creation and issuance

Asset tokenization process begins with creating this asset type on the platform and providing the physical asset to the custodian. Asset creation must be confirmed by the corresponding administrator. After the asset was created, an owner provides the



commodity to the custodian and can issue the commodity assets. The process of asset creation and issuance is shown in Figure 1 (the following example demonstrates sand as a commodity tokenized).

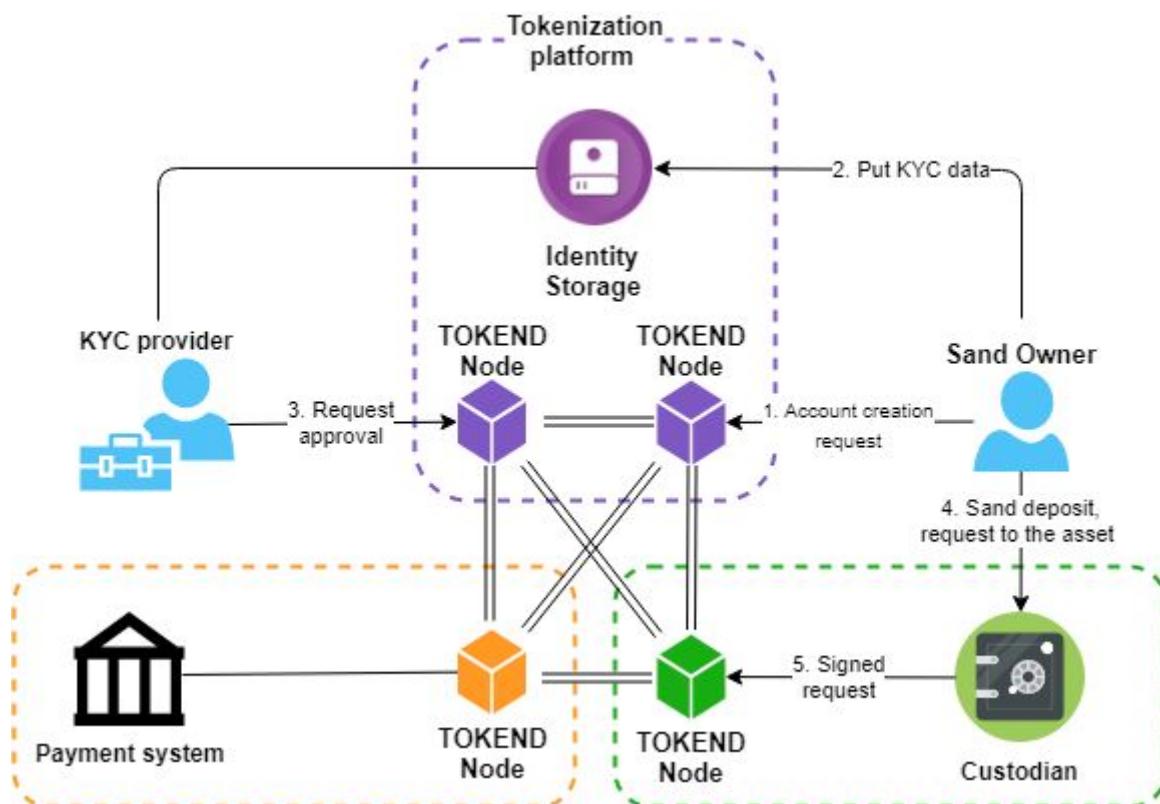


Figure 1. Asset creation and emission process

1. Sand owner creates a request for an account with the necessary permissions. The request is sent to the platform and can only be confirmed by an appropriate administrator.
2. Sand owner sends their KYC data to the Identity Storage. The storage is compatible with GDPR, and only administrators with appropriate permission have access to this data;
3. Personal data is transferred to the External KYC provider. After the KYC procedure is carried out by an external service, the KYC provider notifies an administrator with identification results. If the identification results are positive, the administrator confirms the request;
4. Client deposits sand to the custodian and creates the request on the creation and issuance of the corresponding tokenized asset. The request must be signed by the custodian and confirmed by an administrator with appropriate permission;
5. Custodian receives the commodities (in our case, sand), signs the request and sends it to the tokenization platform. The platform administrator verifies that the



request was signed by both parties (commodity owner and custodian), confirms it, and as a result, the tokenized asset is issued on the owner's account.

Commodity sales

Participants can also transfer assets to each other or trade them for some other tokenized assets or fiat currencies, which are accepted by the system. The transfer process is an operation which involves account balance update - the number of tokens is added to one of the participants and subtracted from another.

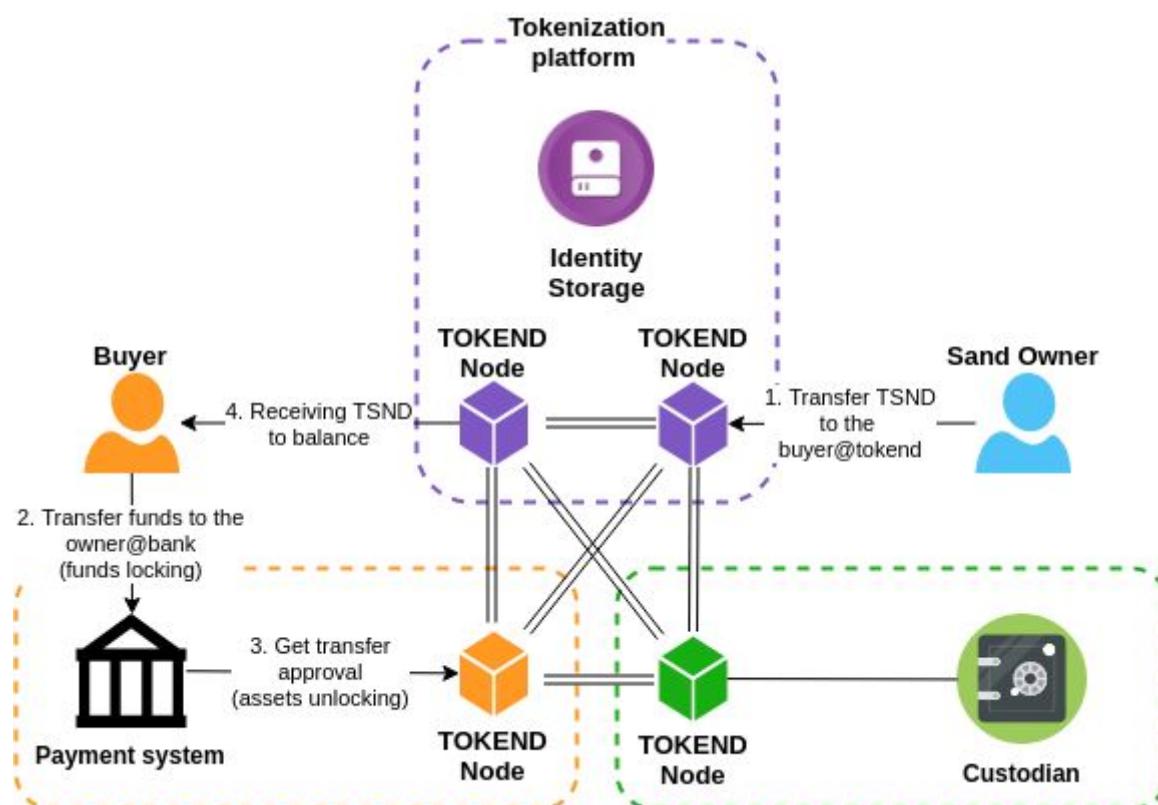


Figure 2. Commodity sale process

1. Sand owner transfers the tokenized asset to the balance of the buyer. If required, the buyer must first obtain permission to manage this type of asset. Tokenized assets are blocked and awaiting payment confirmation.
2. Buyer sends funds to the sand owner's account (internal or external). To perform a payment in an external payment system, the Payment Service Integration Module (PSIM) is used (both fiat currency and cryptocurrency). If payment is used within the system (for example, a tokenized dollar), then transfers can be collected into one atomic transaction.



3. If the transfer is confirmed, PSIM signals to the platform that the tokenized assets can be unlocked.
4. Tokenized assets are being sent to the buyer account.

Withdrawal

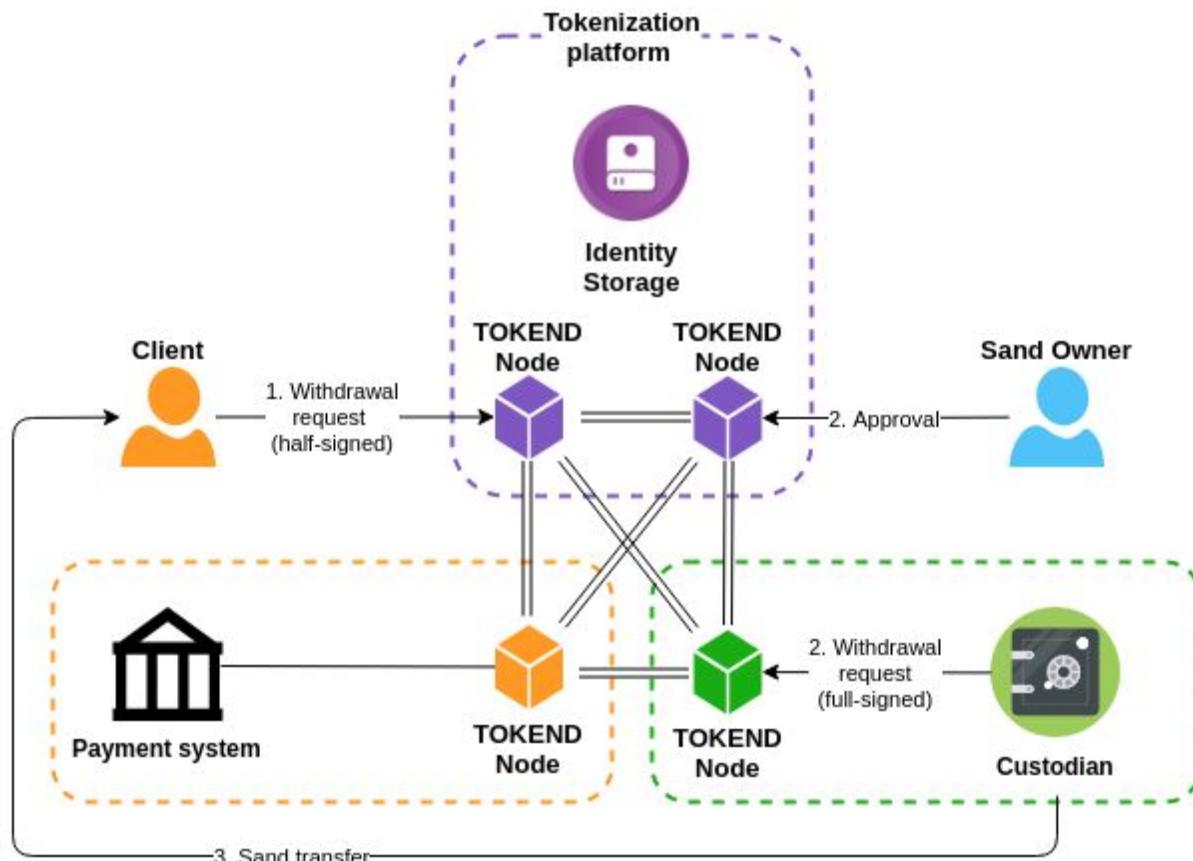


Figure 3. Withdrawal process

1. Client creates a request to withdraw an asset from the platform. Note that for this, an asset must support the withdrawal operation. In order for the request to be processed, it must also be signed by the asset owner and a custodian.
2. Custodian signs the request with their private key. The owner processes the request, verifies the signatures, and confirms it.
3. Custodian transfers an indicated amount of asset to the client. The corresponding tokenized asset on the platform is destroyed.



Business Benefits of using the commodity tokenization platform:

For the platform owner:

- Ability to expand the partner network by introducing new business opportunities (such as establishing a shared digital identity ecosystem)
- Flexible user permission management that can be configured according to particular jurisdiction;
- User data is stored on the users' device and never transferred through the network.
- Transparency for asset ownership rights provenance history (it is possible to trace each transaction, who initiated it and when);
- Lower expenses on infrastructure maintenance as well as on the provision of the user private data security
- Provision of a convenient and functional IT infrastructure for clients.

For the End customer:

- Ability to explicitly prove what has and has not been done by a user in the system;
- Lower transaction fees, which are a result of lower expenses on infrastructure maintenance;
- Information about the user's operations is securely kept on their device (even if a platform owner decides to outwit, end clients will have a proof of this fact in their digital wallet).



Learn More

<https://tokend.io/>

<https://docs.tokend.io/>

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About TOKEND

TOKEND is a white label blockchain software platform that consolidates best practices of tokenization solutions. It allows you to issue, transfer and exchange your assets with a high level of privacy, security, and auditability while following regulations of your jurisdiction. TOKEND is designed for enterprises who are willing to take advantage of tokenization or experiment with blockchain technology without the need for maintaining the expensive team of blockchain experts and within the shortest time to market.