qedit

Privacy & Security Considerations of CBDC and Stablecoins

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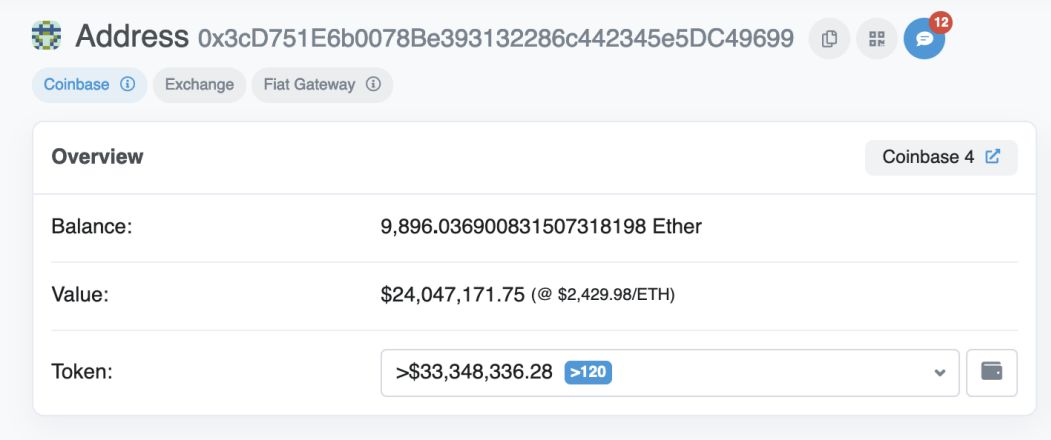
The Importance of Privacy on Blockchain

Blockchains are NOT private by default.

Transactions can be read and linked by anyone.

Tools exist to inspect the data stored on blockchains (e.g.: Ethereum)



Most users are not aware of the non-private nature of blockchains & DLs

Pros

- More difficult to hide criminal activity and fraudulent behaviour
- Governments can audit blockchains to track the wellbeing of the system

Cons

- People can take advantage of public data to identify users and monetize on private data
- Validators of blockchains can front-run the transactions by adding theirs before

WHAT IF THERE EXISTED A TOOL THAT PROVIDES THE BEST OF BOTH WORLDS?

- Cryptography can unlock all the value of applications while maintaining the privacy of the data and the individual, and ensuring that trust is not needed in interactions
- Cryptography can also enable checks on usage to ensure proper behavior of individuals and prevent fraud and criminal activity. Furthermore, authorities can audit

State-of-the-art of Privacy-Enhancing Techniques

1. Zero-Knowledge Proofs

➔ enables integrity of computation and privacy of data
➔ used today on blockchains for scalability and to preserve privacy of transactions, can unlock auditability
➔ in CBDC can be used for gov to audit financial behavior

1. Multi-Party Computations

➔ enables computation on private distributed data
➔ used today for private key management (multi-signature, key recovery, ...)
➔ in CBDC can be also used to enhance future apps

3. Homomorphic Encryption

➔ enables cloud computations on private data
➔ used today for basic statistical aggregation, future use includes machine learning on private data
➔ in CBDC can be used for credit score computation

4. Differential Privacy

➔ enables private analysis of data, deriving macro results
➔ used today to aggregate data from users without revealing individual users(US census, mozilla firefox)
➔ in CBDC can be used for macro-usage of financial sys.

Unlocking the Full Value of CBDC and Stablecoins

For CBDC to succeed we need

- Censorship resistant system
- Trustless interactions
- Privacy of transactions and data
- Unique user identification
- Integrity of the system, prevent fraud
- Auditability of behavior and taxes

In fact, IDENTITY is core aspect

- Single identity onboarded
- Transactions are not linkable
- Anonymous interactions
- Privacy of transactions and data
- Authority can deanonymize behavior only when fraudulent triggers happen

THANK YOU

