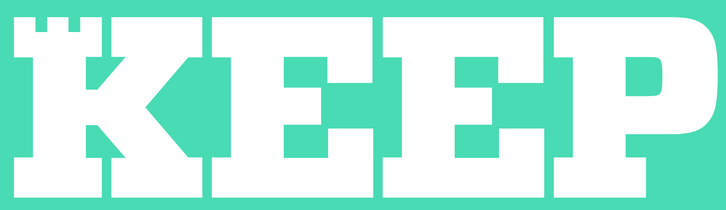

Business Primer

Last updated: June 18th, 2018

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Background

Public blockchains have brought unprecedented transparency and auditability with records that are immutable, reliable, and censorship-resistant.

However, any smart contract published to the blockchain can be easily accessed by competing interests. When companies consider building applications on the blockchain, privacy is one of the primary issues that arise.

Basic use cases of smart contracts are extremely limited by this lack of privacy. Functions like verifying real-world identity only to intended parties or sharing secure information after specific conditions have been met are nearly impossible without publishing this confidential information to the public blockchain.

Introducing Keep

By creating a bridge between the public blockchain and private data, contracts can harness the full power of blockchain technology, without compromising on reliability or transparency. Keep is that privacy layer.

We use keeps, or private enclaves, to securely encrypt and store private data. On-chain keeps will be protected using secure multi-party computation (sMPC), generating, securing, storing, encrypting and transmitting data across many individuals.

Keep provides the first production-ready sMPC system for distribution on the public Ethereum blockchain.

With this system, each individual is given access to a small portion of a secret which is encrypted. To gain or share access to that secret, the outputs are reported back from all the individuals and decrypted to reveal the secret. Keep is Ethereum's first private computer, able to store and compute data hidden even from itself.

This unique approach allows for the safe transfer of information from one party to another on the public blockchain without each individual needing to be online, providing a superior solution to current hash-reveal solutions, private blockchains, and zero-knowledge proofs alone.

Applications

Keeps allow contracts to access stored private data that can be bought, sold, transferred, and revealed on the public blockchain, enabling interactivity with far more private data than any other solution available today.

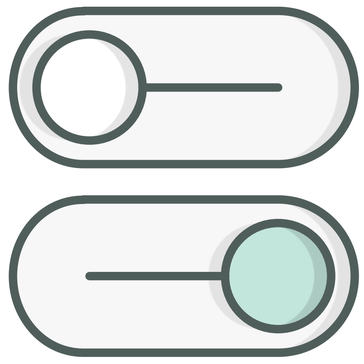
Bitcoin gave you currency. Monero gave you private currency. Ethereum gave you Smart Contracts. Keep gives you private Smart Contracts. Built for every situation in which a smart contract interfaces with sensitive data.

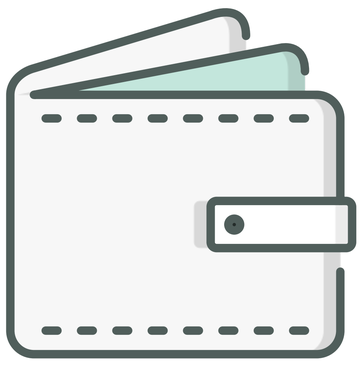
Decentralized Signing

Acting as a digital notary, contracts will be able to assert their identity off-chain without requiring a third party confirmation of blockchain state. Integrating with tools like PGP, SSH, and TLS keep is a bridge to public private key infrastructure.

Dead Man Switch

Knowing when to expose private information is just as important as keeping it hidden. With keeps you can have trusts, estate plans, and other contracts automatically activated to expose instructions and transfer funds.





Custodial Wallets

Ethereum smart contracts can use keeps to generate their own cryptocurrency wallets to send Bitcoin, Litecoin, and Dash. Boom, cross-chain exchange.

Encrypted Blockchain Storage

Keeps provide a bridge to private blockchain storage making it possible for smart contracts and DAO’s to store files privately. You no longer need to trust a third party with your most sensitive, private data. Think medical records, credit reports, and private financial data.

Marketplaces for Digital Goods

With keeps, you can easily and securely sell digital goods like ebooks, videos, MP3’s and more by keeping files private until payment is verified. There’s no need for a server and custom download processor to manage these files.

Incentives & Token Mechanics

Keeps must be highly available, robust against data loss, and maintain both confidentiality and data integrity.

Clients

Those who pay to use the keeps' storage capacity for secrets.

Providers

Those who hold keep tokens and use them to compute and store secrets.

Client Incentives

Clients have the ability to purchase private data storage on keeps using the native token or ETH. They can choose from different keep types depending on the secret being stored and the guarantees needed.

Provider Incentives

Providers are paid to use their computing power and storage by operating keeps. Providers stake the network token to be selected to secure new keeps. For each new keep they help operate, the provider is required to put down an additional security deposit, and the rate the provider pay is agreed upon. Over time, providers are paid out for securely running keeps, and risk loss of deposit and pending payments for misconduct.

Market

To bring clients and providers together, the network includes a fair provider selection process. All staking providers participate in a random beacon used to select which will participate in a new keep.

Token Mechanics

The KEEP token is a particular kind of utility token, sometimes called a “work token”. Providers must prove and lock up their holdings (“stake”) to participate in the network.

Staking helps maintain the integrity of the network, minimizing attack incentives, since providers will suffer a loss in staked value in the case of a negative externality. Staking also provides Sybil-resistance, making a network takeover incredibly expensive.

Team

The team is comprised of a seasoned group of software engineers, strategists, and operators who create, build, and grow products in the crypto space.

Matt Luongo, Project Lead

Matt has technical leadership experience at a number of companies. Founder of Fold along with Corbin and has been working in crypto for many years. He loves being a new dad and building systems.

Corbin Pon, Developer & Ops

Corbin is a graduate of the Georgia Tech College of Computing and native of Massachusetts. He’s worked extensively in defense industry and was a researcher for the application of technology in International Development before being convinced to start several companies with Matt.

Antonio Salazar Cardozo, Tech Lead

Antonio has crafted software across companies and open source projects for over 10 years, with a persistent emphasis on community, collaboration, quality, and usability.

Laura Wallendal, Growth

Laura has extensive experience with growth, sales, business development and marketing strategy at a variety of companies. She’s worked with teams of all sizes and has founded several tech companies.

Nik Grinkevich, Developer

With a decade of full stack and dev ops under his belt, Nik loves creating succinct and quality technical architecture. He’s worked in a variety of sectors including fintech, adtech, and edtech.

Erin Ng, Developer

Erin loves building beautiful applications, inside and out. She’s helped companies such as Fitbit, Apple and Microsoft create delightful web experiences. Before teaching herself to code, she studied art at UC Berkeley.

Prashanth Irudayaraj, Ops & Research

Prashanth has broad set of experiences ranging from Product Development at Alcoa, and Operations at Tesla. He worked as Research Faculty at the GTRI, where he was first introduced to cryptography & cryptocurrencies.

Lex Sheelan, Developer

Lex worked for IBM for the Global Business Services division and the Software Group. He authored the book, “Learning Functional Programming in Go” and is the inventor of 8 US Patents pertaining to IT security and data manipulation techniques.

Raghav Gulati, Developer

Raghav holds a background in math and distributed systems. His most recent job was at Backplane. Previously, he’s held engineering and lead roles at Shyp and Insightpool.

Philip Schlump, Developer

Philip was the founder and CTO of Senware, a successful startup which developed and marketed an Oracle Database maintenance product called AutoDBA. Since 2014 Philip has been working on an open source development environment, Go-FTL.

Jakub Nowakowski, Developer

Jakub is a software engineer with a financial background. He has been involved in multiple banking and telecom projects across all stages of the Software Development Life Cycle.

Piotr Dyraga, Developer

Piotr has held software engineering and lead roles across a range of industries and systems including banking, networking, supply chains and aviation. He loves to combine theoretical computer science with a practical experience and he’s delighted to do it at Keep.

Promethea Rachke, Developer

Promethea is a software engineer and is an autodidact functional programmer with a strong interest in secure systems, exotic technologies, and novel cryptography. She specialises in seeing the underlying patterns of systems and makes user-oriented crypto.

Jack Knutson, Community Manager

Jack comes from a background of sales and banking. He has been immersed in crypto since 2012. He has spent the last 10 years studying the economics of currency markets and policy.

Eliza Petrovska, Community Manager

Elizabeth is a blockchain enthusiast with a background in management, business, and online blogging. She has studied psychology and alternative medicine. She is also fluent in Russian.

Hope Cowan, Content Manager

Hope’s background is primarily in counselling, mental health care, and the academic study of comparative religion, and she is excited to put her knowledge into action at Keep.

Summary

Keeps are bringing private storage to the public Ethereum blockchain. The key innovation are keeps- extensions to the Ethereum blockchain that enable a new kind of dApp. Using keeps, Ethereum contracts can manipulate off-chain, private data securely, without risk from a third party. Keeps allow contracts to refer to securely store data off-chain, refer to it, and grant and revoke access. This access to private data paves the way for new blockchain use cases that can impact the world of finance, healthcare, and business among many others. Keep enables a new wave of ground-up innovation in the blockchain space, and a new generation of blockchain developers.

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