

SUI x Lightning

Decentralized Bridge Solution For Bitcoin
Lightning Network and SUI Blockchain

Prepared and Presented By
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Team Introduction



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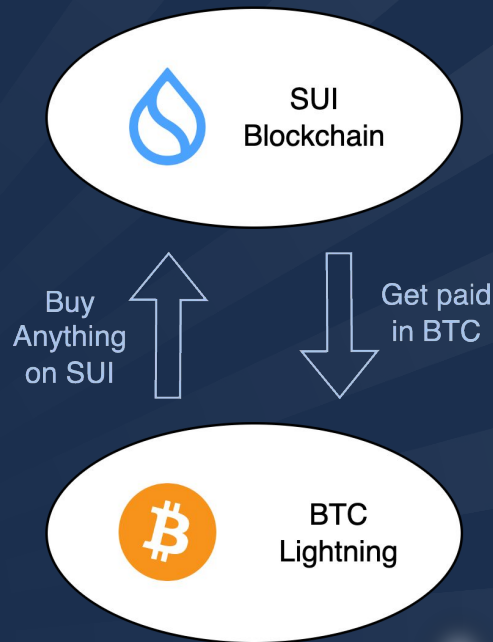
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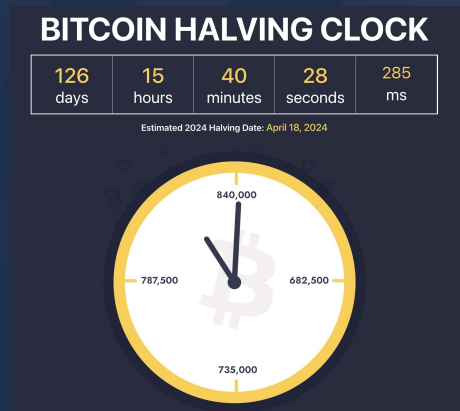
What is the idea?

- **We are developing a decentralized bridging solution that enables liquid assets on the BTC Lightning Network to be used for purchasing various items, coins, and NFTs on the SUI blockchain.**
- Buyers only need a lightning wallet and sats on the Lightning Network. They can utilize this bridge to buy anything listed on our marketplace.
- Sellers can sell their owned items on the SUI blockchain and receive payment in BTC on the Lightning Network.
- Transactions are nearly free, with very low gas fees on the SUI blockchain and no transaction fees on the Lightning Network.
- Swapping transactions can be settled and confirmed within seconds.



Why this idea (1)











1. **Bitcoin and its ecosystem will be the rising-star in 2024.**
 - There will be a BTC halving and a highly likely Bitcoin ETF proposal to be passed in the US, both happening in 2024.
 - The market will heavily focus on bitcoin when these events occur, especially when the BTC price spikes.
 - The Lightning Network is becoming increasingly useful and established, making it easier than ever to access bitcoin assets.



Why this idea (2)

2. Sui Blockchain will need more funding to increase liquidity

- Sui specializes in speed, trading, and NFTs. It also offers a diverse portfolio of good DeFi dApps on the Sui Blockchain.
- Chain TVL (Total Value Locked) is a crucial factor in today's blockchain competition. In terms of market cap, Sui still needs to catch up with the some larger blockchain.
- Having a user-friendly and secure decentralized bridge is always advantageous for attracting more inbound assets.

Rank	Name	Market Cap
1	 Gold GOLD	\$13.388 T
2	 Apple AAPL	\$3.028 T
3	 Microsoft MSFT	\$2.782 T
4	 Saudi Aramco 2222.SR	\$2.117 T
5	 Alphabet (Google) GOOG	\$1.665 T
6	 Amazon AMZN	\$1.524 T
7	 Silver SILVER	\$1.291 T
8	 NVIDIA NVDA	\$1.177 T
9	 Meta Platforms (Facebook) META	\$858.89 B
10	 Bitcoin BTC	\$806.26 B

Why this idea (3)

3. Ultra-fast, Object-Oriented, Gasless.. Sui have all we need

- Onboarding a new user from an external blockchain and compensating them for the gas cost incurred during the bridging transaction is always a challenge.
- Sui Blockchain provides sponsored transactions, which enable the possibility of a third party paying for such gas costs. This significantly lowers the barrier for new users.
- Everything is an object on Sui. With our setup, we can sell everything, including Sui coins, making it an asset bridge.
- Sui is also fast and cost-effective in terms of transaction time and gas cost, comparable to the Lightning Network. It's the perfect mix!

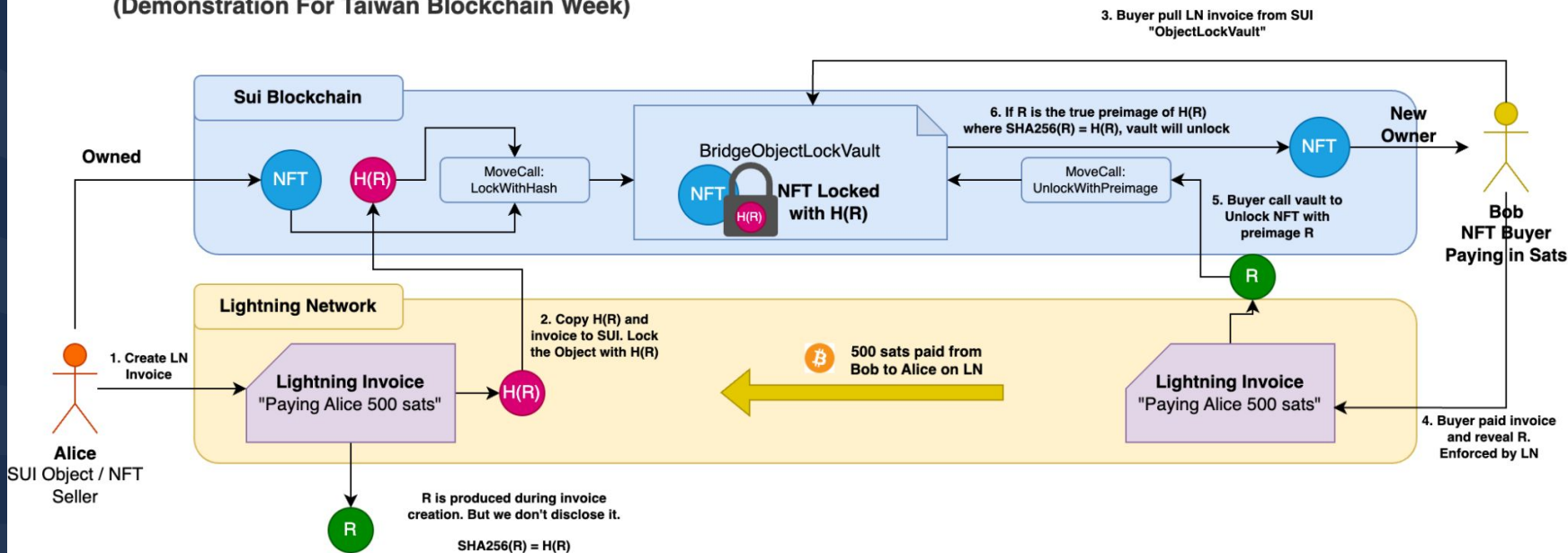


Technical Implementation

SUI x Lightning General Workflow

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(Demonstration For Taiwan Blockchain Week)



Technical Implementation

1. Alice is a NFT seller on SUI. Bob is a buyer who is willing to pay in sats on Lightning Network
2. Alice creates an invoice on LN. During this procedure, Alice generate a randomness R , which is kept privately. The SHA-256 Hash of R is called the "Payment Hash", this is public on lightning network. We call it $H(R)$
 - a. Anyone paid an invoice with $H(R)$ can reveal R . This is atomic and it's enforced by Lightning Network
 - b. It's not possible to reveal R , without a full payment to the invoice. Alice has no privilege NOT to reveal R if he receive full payment. This ensure the security of the whole process.
3. Alice lock his to-be-sold NFT with $H(R)$ and list on the marketplace. Anyone knows R , can unlock the NFT and take the ownership.

Technical Implementation

4. By looking at the ObjectLockVault object, Bob can find out all listed NFT, along with their $H(R)$ and payment invoice
5. Bob wants to buy an NFT. He paid the invoice and Lightning Network will reveal R for him
6. Bob unlock the NFT with R , and transfer the NFT to himself.
7. Everything is settled now. Alice received sats in Lightning Network with happy, Bob took the NFT he needs.

Highlights and Potentials!

- **Fast! Fast! Very Fast!**

The two-step transaction can be done in just few seconds. This is the fastest bridge on the market!

- **We are entirely decentralized.**

There is NO backend code at all. All logics, are running on SUI or Lightning Network
Having a decentralized setup is way more better than a centralized one, in terms of security and scalability

- **We can utilize the sponsored transaction to allow the second leg of claiming NFT on Sui to be gasless**

This yet to be implemented but should be easy to do

- **This marketplace can be an asset bridge for SUI ↔ BTC as well**

Since everything (including tokens and coins) is object on SUI.

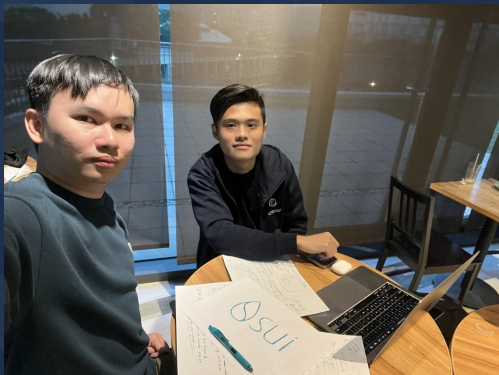
(A reverse direction flow from SUI to LN can be implement with a trustless custodian. Not implemented in this demo, but also possible to do)

Demonstration

- YouTube Video Link: <https://youtu.be/lqWyco8feNc>
- Github Repo: <https://github.com/sui-lightning/sui-lightning>
- Live Demo Deployment ⇒ <https://sui-lightning.github.io/sui-lightning/>
- **Please ensure you have installed the following extensions**
 - “Alby Wallet” (<https://getalby.com/>)
 - “Sui Wallet”
([https://chromewebstore.google.com/detail/sui-wallet/opcgpfmipidbgpenhmai
oajpbobppdil](https://chromewebstore.google.com/detail/sui-wallet/opcgpfmipidbgpenhmai
oajpbobppdil))
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Stories about the hackathon

- We are hacking this project within only two days
 - Our team members arrived in Taipei on Dec 11 and this hackathon project was finished on Dec 13
- Some photos we are working on it!



Thanks!



Contact our Team

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