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Boltz.exchange

The what, the whys, and the hows.

Ankur and Michael, 17/05/20

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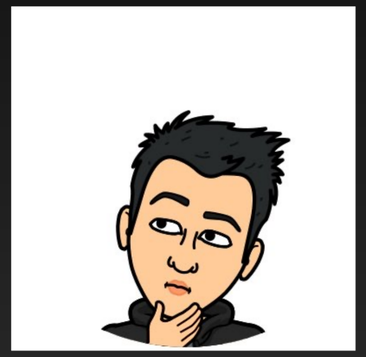
A short introduction.



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What is Boltz?

Boltz is a privacy first, account free crypto exchange which is completely open-source and natively supports lightning. Boltz also is a Lightning Service Provider for wallets and lapps.

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Problems with current digital asset exchanges

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- **Lack of Anonymity** in trading digital assets results in governments having unprecedented control over financial sovereignty of its citizens.

- **Custodial Nature** of popular digital asset exchanges makes them an attractive target for hacks. In a hack users are likely to actually loose their funds.
- **KYC/AML** verifications makes it hard for unbanked population of the world to take part in the crypto-economy.

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How are we solving these problems?

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By building a privacy first, account free crypto exchange.

PRIVACY FIRST

never loose funds

ACCOUNT FREE

No email, login, or kyc

SELF CUSTODIAL

all boltz offers are atomic

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Our Product offerings

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Exchange Services

boltz.exchange

LSP (Lightning Service Provider)

docs.boltz.exchange

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Demo

Demo of the new UI: http://testnet.boltz.exchange

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LSP (Lightning Service Provider)

- Boltz provides several LN services, like normal and reverse submarine swaps via a RESTful API.
- Breez uses Boltz as a LSP for integrating submarine swap powered withdrawal features. Integration with Exchange Union's XUD is in works.
- Boltz is also working on integration with a popular node management tool that we will talk about later.

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Boltz Architecture & Atomic Swaps

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Atomic Swaps

- Atomic Swaps are a way to exchange two different crypto currencies. Even if they are on different networks.
- In 2017, after a successful LTC/BTC swap, this method became widely known.

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Submarine Swaps

- A Submarine Swap allows for exchanging coins not only between networks but also layers (like Lightning and the Bitcoin chain).
- Submarine Swaps are the kind of atomic swaps which are used by Boltz to make its trades atomic and self-custodial.

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Normal Submarine Swaps

When user trades on-chain coins for lightning ones, Ex: (BTC -> ⚡BTC)

⚡ Boltz

- User starts the swap by pasting a ⚡ invoice.
- Boltz backend gets hash of the preimage from that invoice and generates a P2(W)SH address for the user.

- The redeem script of such a P2(W)SH address looks something like this:

```
HASH160 <hash of the preimage> EQUAL
IF <public key of Boltz>
ELSE <timeout block height> CHECKLOCKTIMEVERIFY
DROP <public key of the user> ENDIF
CHECKSIG
```

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- Next, user sends funds to this address.
- Boltz pays the invoice the user pasted in the first step and get the preimage.
- With preimage now available, Boltz can claim the on-chain coins sent by the user and normal submarine swap is completed.

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Reverse Submarine Swaps

When user trades lightning coins for on-chain ones, Ex: (⚡BTC -> BTC)

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- In reverse subamarine swap, Boltz backend and the users switch roles - from the one they had during normal submarine swap flow.
- User generates a random preimage and sends its hash to Boltz, which then generates a hodl invoice with that hash.

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- When the user pays the invoice, Boltz locks up on-chain coins that can be claimed by the user using the preimage.
- Boltz gets the preimage from the claim transaction and settles the invoice.
- Boltz automatically refunds the on-chain coin and sends them back to its wallet if something goes awry.

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Fun fact 🎉

Breez uses reverse submarine swap service from Boltz
to power on-chain BTC withdrawal from their wallet. Also, we were first to bring a production release of reverse submarine swap to the market.

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One more thing...

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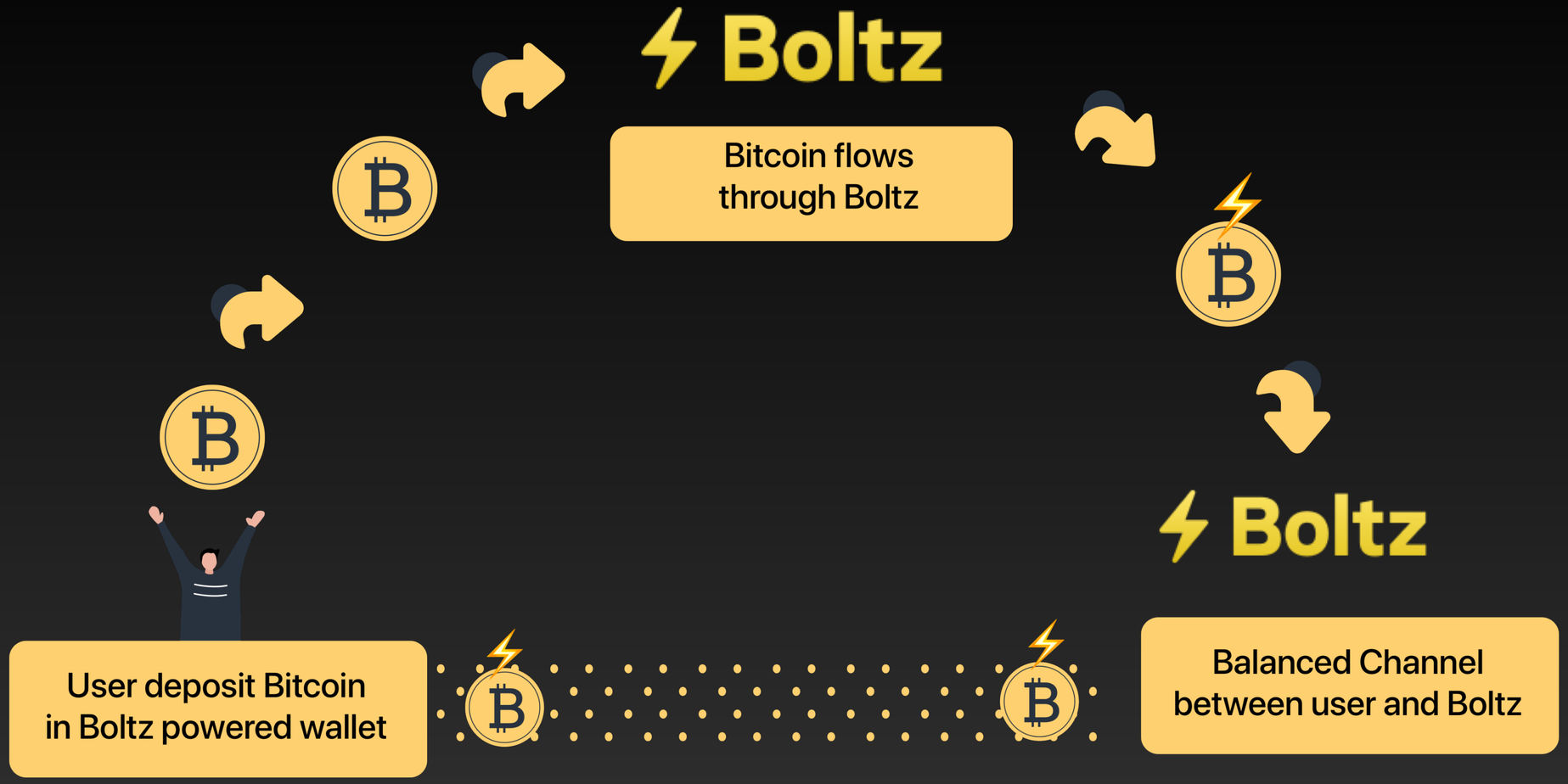
Channel Creation Swaps

World's first trust minimised channel creation swaps



Depicted: Channel Creation Swap Flow

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- We are working a Bitrefill-eque channel on demand service, but with one important catch - it is self custodial and trust minimised.
- Channel-creation swaps are similar to the normal submarine swap, however, with the help of hodl invoices, we were able to build a channel creation service that works on the fly.

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- Channel creation swaps helps with on-boarding new users to the lightning economy.
- Boltz is the first to deploy and release a production grade implementation of self-custodial channel creation swaps.

- From end user perspective, channel creation swap flow goes like this -> user funds a Boltz powered wallet with on-chain Bitcoin, which gets circled through Boltz and results in a balanced channel between user and Boltz.

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Demo

Channel Creation Swap Demonstration

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A little news for LN power users 🎉

We’re currently also working on a integration of Boltz Lightning Services into RTL (Ride the lightning) that will bring all these cool Boltz features, alongside the already available Lightning Loop alternatives.

Sneak peak..

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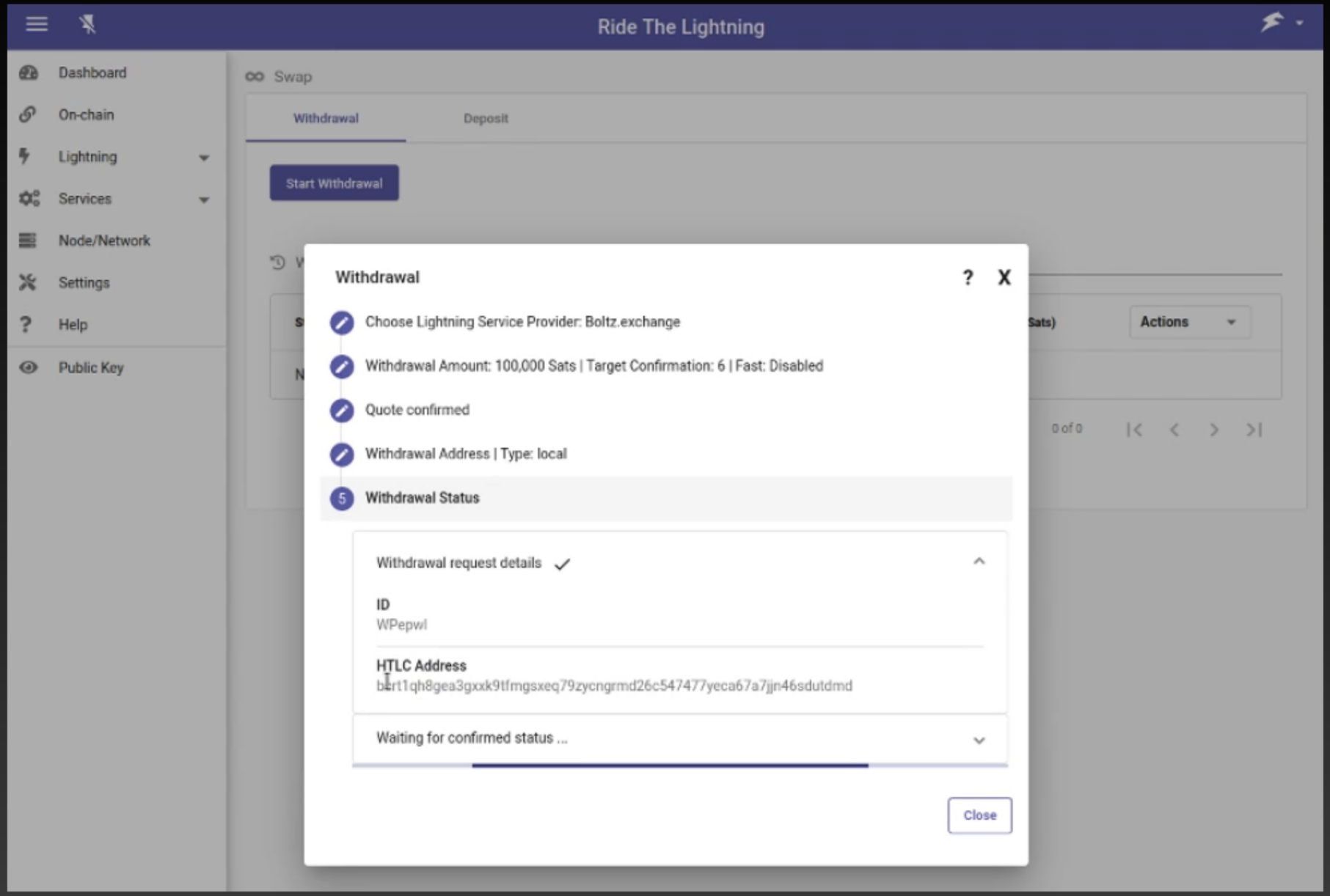

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Questions?

Thank you!