

Lightning Network

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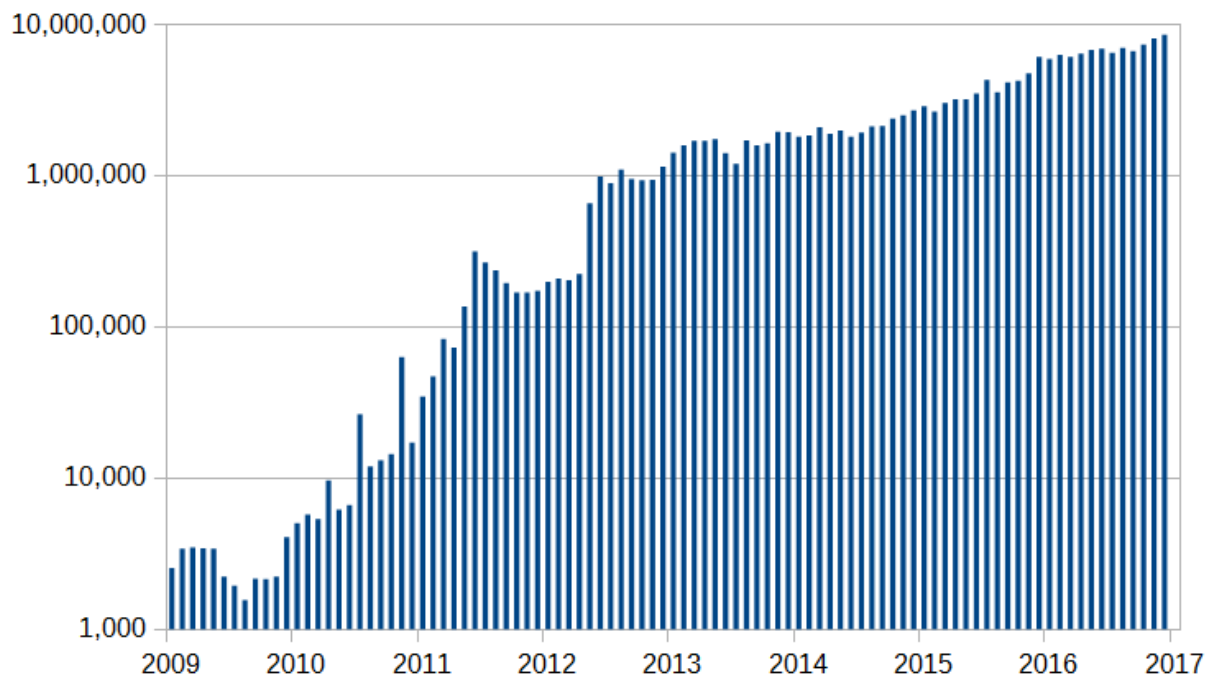
Agenda

- ① Bitcoin
- ② Scalability problem
- ③ Lightning Network
- ④ Payment channels
- ⑤ Network of payment channels
- ⑥ Conclusion

- 2008.
- Satoshi Nakamoto.
- Peer to peer network.
- Digital ledger.
- Proof of work.
- Transactions.

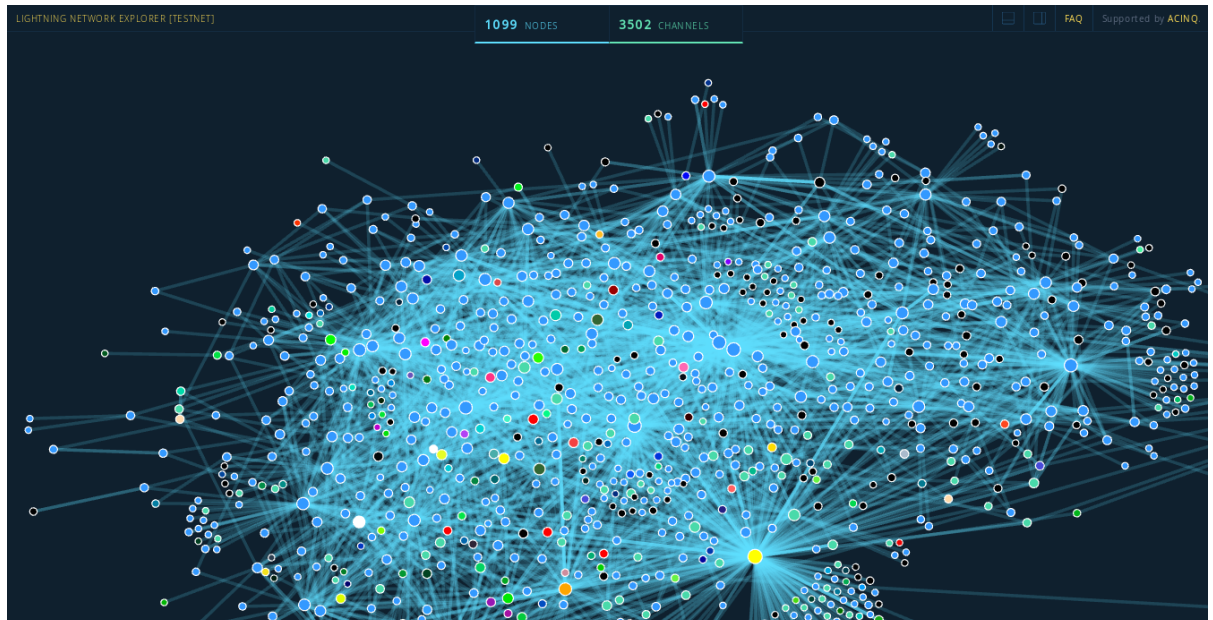
Scalability problem

- Higher fees and slower transactions.
- Competing with Visa.
- Various proposed solutions.

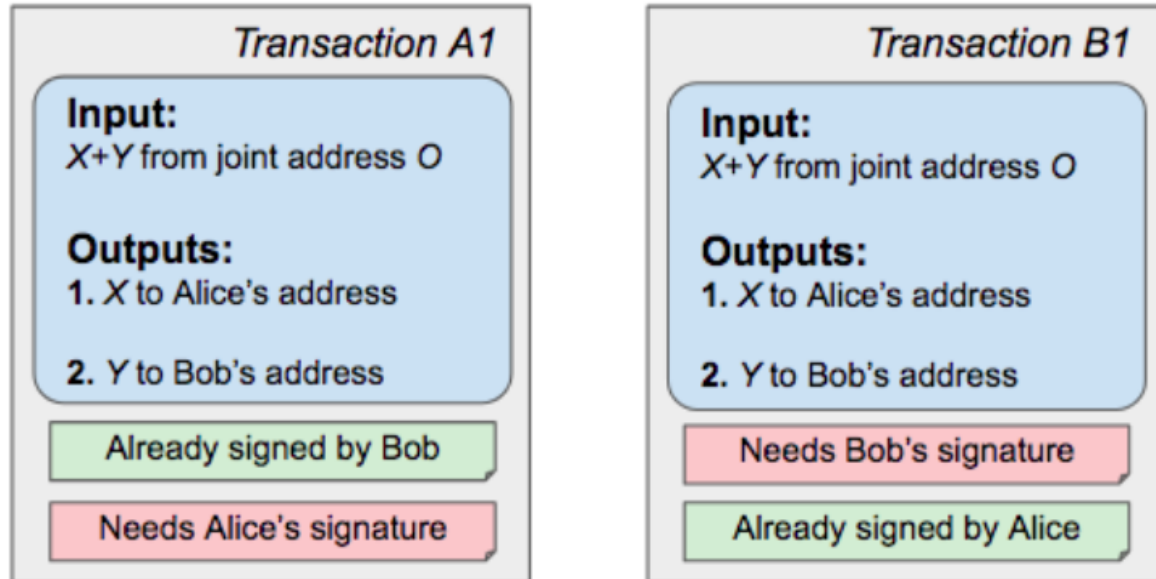


Lightning Network

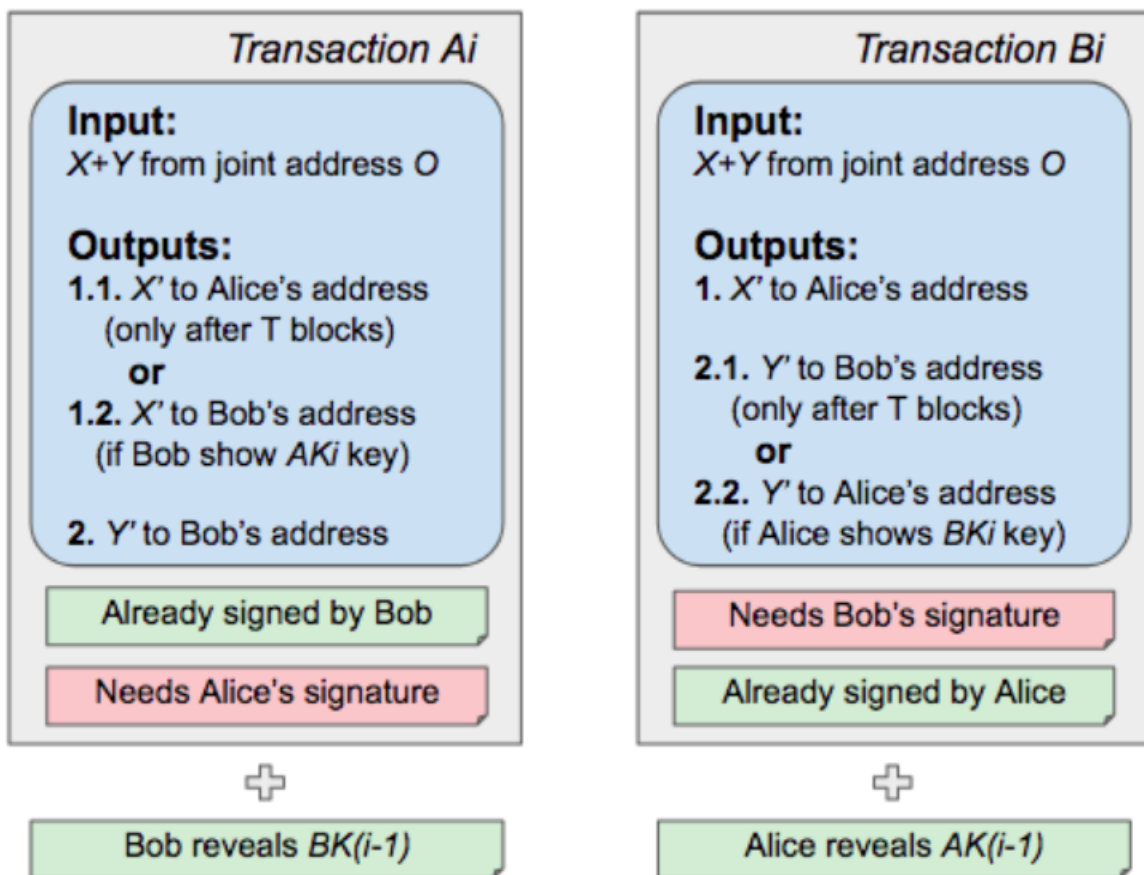
- 2015.
- Joseph Poon and Thaddeus Dryja.
- The main idea.
- Off chain solution.
- Payment channels.



Payment channels



Payment channels



Network of payment channels

- Payment channel with intermediary.
- Sending funds over the network.
- Routing and optimal paths.
- Cost of each path is determined by dynamic factors:
 - network topology.
 - channels throughput.
 - availability of nodes.
 - intermediaries fees.

Conclusion

- Early stage of development.
- Negative sides.
- Improved anonymity.
- 5 500 Nodes, 23 000 channels filled up with more then 620 bitcoins.

- Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System, www.bitcoin.org. (2008)
- Bitcoin developer guide, <https://bitcoin.org/en/developer-guide>
- Giovanni Di Stasi, Stefano Avallone, Roberto Canonico, Giorgio Ventre, Routing payments on the Lightning Network, University Federico II of Napoli (Italy)
- Joseph Poon, Thaddeus Dryja, The Bitcoin Lightning Network: Scalable Off-Chain Instant Payments

Questions

