Transparency in the Digital Advertising Supply Chain Using Blockchain

Abstract

The digital advertising supply chain is initiated by an ad impression which enables sharing of user data directly or access to user data between seller, buyer and multiple intermediaries. The user knows the seller of data (usually the publisher) and the advertiser, but may have less knowledge of intermediaries involved in the transaction.

We are exploring the blockchain method as a transparent, persistent and immutable record of all intermediaries in a transaction. This will enable greater understanding of which intermediaries have what data (pricing, transaction history, etc) and could increase transparency in the digital advertising supply chain.

What is blockchain?

Blockchain refers to a type of data structure that enables identifying and tracking transactions digitally and sharing this information across a distributed network of computers, creating in a sense a distributed trust network. The distributed ledger technology offered by blockchain provides a transparent and secure means for tracking the ownership and transfer of assets.

Bitcoin is built on top of blockchain and the technology rose to prevalence during the Silk Road investigation. That incident brought two important truths to light:

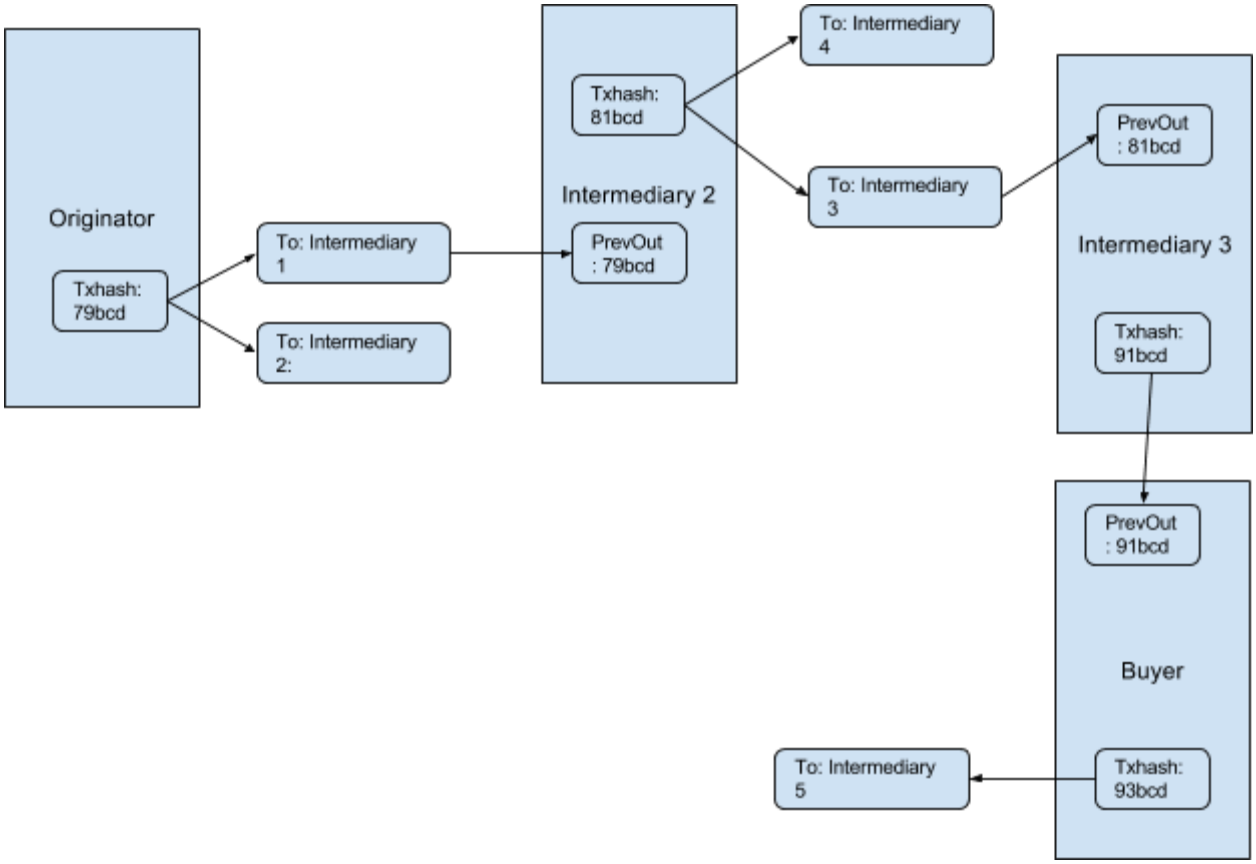
1. Bitcoin and blockchain were capable of powering a large transaction heavy business.
2. The transparency of the blockchain was proven with the dissection of the Silk Road transactions.

Two types of transactions will be required to support blockchain-based advertising protocols: 1) a genesis transaction to create the original impression by the seller, and 2) a transfer transaction to shift the impression to an intermediary. In the end, the impression will end up with the buyer that will be the termination of the intermediary chain. This way all intermediaries that have transacted on an impression will be part of the blockchain. Documents can be associated

with transactions to further capture the details of data shared in encrypted form for future reference.

This blockchain can be used by the seller or privacy controls provider to enable controls for the consumer by informing them where there data is shared and how they can exercise control.

An example of how the blockchain representation of entities and transaction will work is as follows:



In this example, we can track all the intermediaries who had access to the data, as well as all the intermediaries who propagated the impression or sold the impression onwards to the next intermediary until it reaches the final buyer of that impression.

1. Originator creates a ‘genesis transaction’ and transfers to Intermediary 1 and Intermediary 2
2. Intermediary 2 is a seller and transfers it further to Intermediary 3 and Intermediary 4

3. Intermediary 1 is an ad tech or data provider who looks at the impression and captures the user identification and provides more data
4. Similarly Intermediary 4 is another data provider who captures the data on behalf of Intermediary 2
5. Intermediary 3 transfers the transaction to final Buyer who uses Intermediary 5 which is also a tech provider

The above example represents a typical transaction chain and all parties who will have access to some user data and enhance the user data for their providers. By putting all the transactions in a block chain, we can understand where the user data is propagated and which entities may hold user data.

This blockchain also allows for the inclusion of a document hash to define what data is transferred and added throughout this transaction. This can be private and encrypted and available only to participants who have the private-public keys.

Since every impression will create a unique txhash and address, every transaction will be available to review and all entities involved will be known. The greater level of transparency enabled by the blockchain could also contribute to a decrease in fraud.

Our presentation will cover details of the blockchain transaction and how we can transparently monitor data in the advertising industry.