

Distributed IOweYou Credit Networks

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Abstract

IOweYou (IOU) credit networks model transitive trust (or credit) between permission-less users in a decentralized environment. They have recently seen a rapid increase of popularity due to their flexible design, robustness against intrusion, and scalability. They serve today as a backbone of real-world payment settlement networks (e.g., Ripple and Stellar) as well as several other systems such as spam-resistant communication protocols and Sybil-tolerant social networks. In payment scenarios, due to their unique capability to unite emerging crypto-currencies and user-defined currencies with the traditional fiat currency and banking systems, several existing as well as new payment enterprises are entering in this space. However, this enthusiasm in the market significantly exceeds our understanding of security, privacy, and reliability of these inherently distributed systems. Currently employed ad hoc strategies to fix apparent flaws have made those systems vulnerable to bigger problems once they become lucrative targets for malicious players.

In this talk, we first define the concept of credit networks, and describe some of the important credit network-based application systems. We then present and analyze the recent and ongoing projects to improve the credit-network security, privacy and reliability, and also discuss open problems in the field.