An Efficient Peer-to-Peer Bitcoin Protocol with Probabilistic Flooding

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Abstract

The main aim of this dissertation is to adjust the flooding protocol that is currently being implemented within the bitcoin network in order to reduce the number of redundant messages that each peer in the network receives. The flooding protocol is adjusted to take a probabilistic approach in which a node will send their transactions or blocks to their neighbours based on a calculated probability.

The probabilistic flooding approach was implemented within a bitcoin simulation. The simulation results showed that the number of redundant messages exchanged within the network and duplicated messages received by nodes had been reduced without any negative impact on the number of transactions or blocks committed.