

A connection management protocol for promoting cooperation in Peer-to-Peer networks

Karakaya, M; Korpeoglu, I; Ulusoy, O

Abstract

The existence of a high degree of free riding in Peer-to-Peer (P2P) networks is an important threat that should be addressed while designing P2P protocols. In this paper we propose a connection-based solution that will help to reduce the free riding effects on a P2P network and discourage free riding. Our solution includes a novel P2P connection type and an adaptive connection management protocol that dynamically establishes and adapts a P2P network topology considering the contributions of peers. The aim of the protocol is to bring contributing peers closer to each other on the adapted topology and to push the free riders away from the contributors. In this way contribution is promoted and free riding is discouraged. Unlike some other proposals against free riding, our solution does not require any permanent identification of peers or a security infrastructure for maintaining a global reputation system. It is shown through simulation experiments that there is a significant improvement in performance for contributing peers in a network that applies our protocol. (C) 2007 Elsevier B.V. All rights reserved.