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Economic-based Incentive Schemes for Dynamic Data Management in Mobile P2P Computing

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Abstract

Data Management in Mobile Peer to Peer (M-P2P) systems needs dynamic data management due to mobility and fragile wireless connection connecting resource constraint devices. Traditional methods of data management and services in mobile P2P environment generally assume all peers to cooperate. Since peer activities in M-P2P are not generally monitored, users assume that they are free to use the resources anyway they like. Under this feeling of freedom, a subset of users (free riders) begins to consume much more resources available on M-P2P than they wish to contribute. In addition, due to the dynamic nature of moving hosts, topology changes very often and traditional schemes fall short in providing reasonable data availability. This becomes much more important in M-P2P where the network communication is generally multi-hop and intermediate peers have to render relay services other than data providers to improve the connectivity. Economic-based incentive schemes have been proposed which may play a better role in inciting free riders to collaborate. The data and service availability can be increased by associating a price with data items and services. In such schemes, peers can bid for better services, intermediate peers can earn incentives by providing relay services and in fact, outgoing peers can lease data items to others to still earn incentives while disconnected. New peers can become data providers by providing hosting services to earn incentives. This tutorial will explore issues involved in managing resources using Economic incentives.