Incorporating P2P Networks in Service Provider Infrastructure

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P2P networks bring the potential benefits of scalability, reliability, performance, scalability and low operating cost to a service provider infrastructure. We begin with a discussion on the possible role that P2P can play in future application oriented network provider infrastructure. In particular, we identify the innovations required to for P2P to become suitable for service provider environments. We then present our progress on one such innovation: the delivery of reliable search performance in the presence of churn. We introduce TrebleCast, a new loosely consistent structured peer-to-peer network that uses an unstructured substrate to repair and maintain a distributed hash table capable overlay. The protocol is designed to be highly resilient to churn and is effective in networks with very heterogeneous nodes.   We present results on the search performance of the network and compare it to Chord at various levels of churn.