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Abstract

Classical distributed computing projects generally use a specialized client/server model. Recent approaches, such as BOINC, favor instead the development of distributed computing platforms, relying on a generic client/server model. We propose a fully decentralized computing model, considering all participant as peers that can submit personalized computing tasks to any number of other peers currently offering their services, listed in a peer directory. Our model is built upon Chord, a particular Distributed Hash Table. Chord allows load balancing of the number of keys per node, but offers no way to balance the bandwidth load of a frequently accessed key, such as a peer directory. Our model extends Chord with load-balancing of those access-intensive keys. We present a modelization of the bandwidth and storage costs of our model and experimental performance results using a variable number of peers, tasks, tasks time, and a variable ratio of contributors and sollicitors roles among peers.