ATLAAS-P2P: A Two-Layers Architecture for Approximated Search in P2P

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ABSTRACT

ATLAAS-P2P is a two-layered P2P architecture for developing systems providing resource aggregation and approximated discovery in P2P networks. Such systems allow users to search the desired resources by specifying their requirements in a flexible and easy way. From the point of view of resource providers, this system makes available an effective solution supporting providers in being reached by resource requests.

1. SYSTEM DESCRIPTION

The process of discovery useful resources in a P2P network is highly conditioned to the query formulation mechanism. Users should be enabled to easily express their needs and an efficient query resolution mechanism should be able both to efficiently find significant resources and to limit the number of messages exchanged. Common techniques for searching resources in P2P systems are based on range queries over a set of different attributes [3]. However, the amount of resources in a P2P network could be very large and heterogeneous, and users knowledge about the available resources could be not enough accurate to allow them to properly formulate their queries. Actually, a user is more likely able to define an “ideal” resource that satisfies her needs and ask to the search system to find resources close to such entity. Indeed, she would avoid the need to specify precise ranges on all the attributes. She would simply provide an example of what better suits her requirements.

This mechanism would simplify the work for users and would lead to a more efficient exploitation of the search system. Moreover, from the point of view of resource providers, which aim is to be found by users, it would provide an effective infrastructure for resource advertising.

ATLAAS-P2P consists in a P2P system that provides to the user a flexible way to express her requirements and an effective solution for letting resource providers be reached by users requests. It is based on a two-layer architecture, where peers in the network represent the resources of providers. The lower layer is an unstructured, gossip-based, P2P network [1, 2, 4] allowing peers to efficiently gather in logical groups of nodes representing similar resources. The role of this layer is to automatically capture the affinities existing between resources belonging to different providers and put them in common communities. Those communities distribu-
same goal but based on semantic overlay networks.

2. REFERENCES


