A Highly Scalable Transactional Query Engine for Cloud Computing

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MAP-i Thesis Proposal

1 Context

One of the main challenges associated with cloud technologies and the next generation of Platforms as a Service (PaaS)is the question of how to provide ease of programming, consistency and scalability at the same time. What is envisaged is an execution platform that can be installed like a service that consists of modular and stackable software components that are as easy to program and provide the same consistency levels as current service oriented platforms, and that at the same time is able to provide Internet-scale services.

Current PaaS initiatives sacrifice interface expressiveness and data consistency for the sake of scalability. Thus, data abstraction and consistency becomes responsibility of the application developers. As a result, many applications cannot be easily ported to cloud environments and lose their data coherence resulting in poor quality of service which quickly becomes visible to end users.

2 Objectives

The main goal of this work is to devise a transactional query engine, ideally providing full SQL support, to serve as the main entry point for data persistent services in cloud computing environments. Such support should address the high scalability demand of these environments while at the same time ensure current levels of data consistency found in traditional relational database systems. While the focus of the proposal is generically the query engine itself, the work will have to consider the whole system in a holistic way, from the offered client interface to the underlying data storage system.