Paxos based directory updates for geo-replicated cloud storage

Modern geo-distributed cloud data stores require and rely upon significant amounts of data movement to optimize access latencies for their objects. This flexible, revisable scheme for placement of data with varying levels of consistency promotes the need for a system that can manage the migration process for data items in a consistent fashion. This system must also keep track of meta-data detailing each object’s current deployment and associated information in a strictly correct manner as this now serves as a directory/lookup table to track the location of the object to be read or written to. In this work, we present an open sourced implementation of such a system built around an open sourced implementation of the Paxos protocol. Our system entertains requests for migration of data elements through a CRUD-like API and guarantees correctness along the process of completion of the migration request across a cluster. We also present our studies and results of the instrumentation and behavior of the Paxos protocol in simulated WAN environments.