

**CHENNAI – PONDICHERRY**

**MINIMUM-COST CLOUD STORAGE SERVICE ACROSS MULTIPLE**

**CLOUD PROVIDERS**

**Abstract:**

Many Cloud Service Providers (CSPs) provide data storage services with datacenters distributed worldwide. These datacenters provide different Get/Put latencies and unit prices for resource utilization and reservation. Thus, when selecting different CSPs' datacenters, cloud customers of globally distributed applications (e.g., online social networks) face two challenges: (i) how to allocate data to worldwide datacenters to satisfy application SLO (service level objective) requirements including both data retrieval latency and availability, and (ii) how to allocate data and reserve resources in datacenters belonging to different CSPs to minimize the payment cost. To handle these challenges, we first model the cost minimization problem under SLO constraints using integer programming. Due to its NP-hardness, we then introduce our heuristic solution, including a dominant-cost based data allocation algorithm and an optimal resource reservation algorithm. We finally introduce an infrastructure to enable the conduction of the algorithms. Our trace-driven experiments on a supercomputing cluster and on real clouds (i.e., Amazon S3, Windows Azure Storage and Google Cloud Storage) show the effectiveness of our algorithms for SLO guaranteed services and customer cost minimization.