Efficient Replica Maintenance for Distributed Storage Systems

The area of focus of the Carbonite algorithm is durably and cost-efficiently storing of immutable object in a system that aggregates the disks of many Internet nodes. Hence, Carbonite is a replication algorithm for large storage systems. More.

To ensure availability (immediate access to data) of data, replication systems responds to disk failure by creating new replicas. When availability is key, replication is immediately used regardless if the failure was a disk failure or just a transient (temporary) failure. The problem of this approach is that constantly making new replicas is costly, and do not scale to large systems. The developers of Carbonite realized that Internet users can tolerate some unavailability as long as they eventually will be able to view what they requested. This knowledge is the main motivation behind Carbonite. With main focus on durability, not availability, they could build a large scale replication system.