

Research in the area of load balancing in distributed systems has not yet come with an optimal load balancing technique. Existing approaches work primarily with replication and sharding. This thesis overviews existing knowledge in this area with focus on sharding, and provides an experiment comparing a state-of-the-art load balancing technique called *Weighed-Move* with a random baseline and an existing domain-specific balancing implementation. As a significant part of the project, we engineered a generic and scalable load balancer that may be used in any distributed system and deployed it into an existing ad system called *Sklik*. The major challenges appeared to be tackling various problems related to data consistency, performance and synchronization, together with solving compatibility issues with the rest of the still-evolving ad system. Our experiment shows that the domain-specific load balancing implementation produces data distribution that enables better performance, but *Weighed-Move* proved to have a great potential and its results are expected to be enhanced by further work on our implementation.