A heterogeneous storage system consists of several hosts having different storage capacities, and the assignment of data to hosts must be done in a way such that the number of data stored at a host is related to its capacity. We study the problem of maintaining a distributed heterogeneous storage system, consisting of heterogeneous nodes in a self-stabilizing manner (i.e. the network has the ability to recover out of any weakly-connected state). In this talk we will present a general model for topological self-stabilization and apply this model on the specific CONE-DHT problem. For the CONE-DHT with n nodes we will show fair load balancing, storage efficiency and further network properties like a low degree (O(log n)) and a low routing distance (O(log n) hops). We will then present a distributed self-stabilizing algorithm that transforms any weakly connected network into a CONE-DHT and show that the amount of structural changes in a stable state due to external dynamics like the joining or leaving or capacity change of a single node is bounded by O(log^2 n).