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Distributed Storage in Heterogeneous Environments

The full text is currently only available in the Deutsch version. A translation will follow.

Archived. This content is no longer updated. It remains available for reference.

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Cross-device, distributed storage is primarily established as a cloud-based service. Common alternatives to these often server-centric architectures typically allow either uniform distribution of data among all participants or simple replication within a device cluster.

During this project, concepts were developed that take into account the storage heterogeneity of client nodes in a distributed data storage setting. The result of this work is a storage-agnostic evolution of the Kademlia protocol. This protocol bridges the gap between homogeneously distributing data among participants, as traditional distributed hash tables (DHTs) do and pure cloud storage services. The developed protocol is compatible with current security mechanisms (relevant especially in the peer-to-peer context). The use of cache replacement strategies in the context of distributed network storage was also discussed as a way to augment the devised protocol.