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Decentralisation of Centralised Services

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 This content is no longer updated.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.

Source https://technology2.a-sit.at/en/publications/decentralisation-of-centralised-services/

The project demonstrates how standard services relying on centralised infrastructure might employ decentralised paradigms. A proof-of-concept demonstrator to decentralise e-mail has been developed.

In recent years, the way users utilize their personal devices changed drastically due to the increasing popularity of smartphones and other mobile devices. A modern-day user typically owns multiple devices running a wide variety of different services which (ideally) should be available anywhere at all times. Service operators cater to these needs. From a software-architectural point of view, this is oftentimes achieved by relying on traditional client-server architectures. Central instances still play a major role when it comes to delivering internet-based services to end users. In essence, existing systems have often been extended and adapted to meet today's user requirements. Their underlying structure, however, remained unchanged in many cases.

This project explores ways to decentralise existing services and transfer these to end-user devices, essentially transforming client-server setups into distributed applications. As part of this project a prototype was developed which implements a decentralised e-mail service. Integral aspects of this approach are secure storage of user data, transparent, on-demand decryption of requested data and compatibility with legacy client applications and existing outside infrastructures. In addition, this project showed that the transformation of traditional client-server setups into a decentralised set of connected devices can lead to increased network security. Yet some unanswered questions remain at this early state of development.