

Master's Thesis

Replica Discovery and Selection in Distributed Fog Platforms with Mobile Clients

Problem & Approach

Fog computing distributes resources over wide areas and to the network edge instead of centralizing them in the cloud. This can reduce latency and bandwidth usage for clients who can then access data and services in their proximity. To leverage these benefits, clients need to be able to always connect to a replica that is both logically closest to them and available. The trivial approach of global probing is infeasible as it cannot scale, and static information can quickly become outdated in a dynamically changing Fog environment with mobile clients.

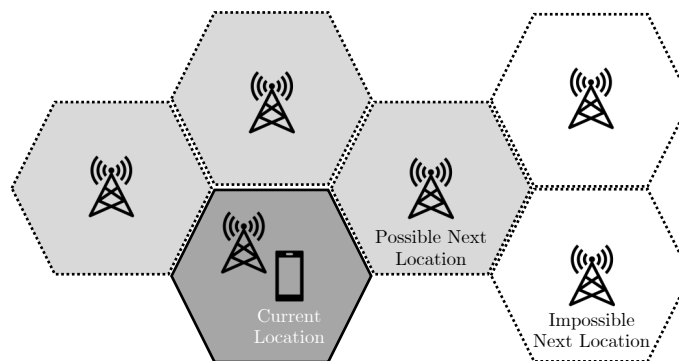


Fig. 1: Application client moving between different access points of a Fog network.

Goal of the Thesis

In this thesis, the student shall research existing approaches to replica discovery and selection from fields such as P2P networks, the Web, distributed databases, and others and evaluate them for their feasibility in Fog environments through simulation.

Required Skills:

- Knowledge of Fog computing, distributed systems (required), and Internet and networking technologies (or willingness to learn)
- Advanced knowledge in a programming language that can be used to develop a simulation tool (e.g., Python, JavaScript, Go, Java, Kotlin)

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