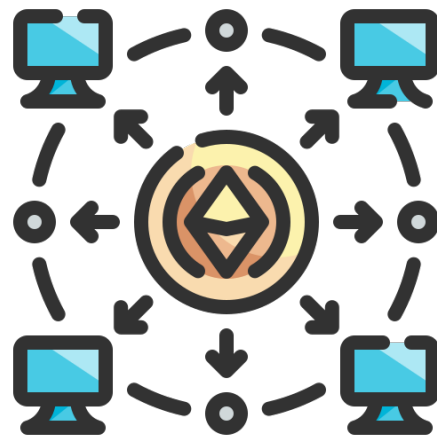




## Infrastructure Impact on Cryptocurrency Networks

One of the promises of cryptocurrencies is the decentralization of power and control via creating public ledgers (the blockchain) using distributed agreement protocols run by distributed networks of users. A challenge in creating such a system is that it is reliant on existing Internet and cloud computing infrastructures which users rely on to join these systems. Previous works have shown evidence of how a large fraction of these networks are being operated out of a few data centers (e.g. a quarter of Ethereum running out of AWS machines). This not only leaves the system vulnerable to manipulation by these few providers (e.g. deanonymizing communication, inferring topology properties, etc.), but may also fundamentally influence their normal operation as users within and between providers may have disparate access in the network.

In this thesis, we propose a study of the impact running out of a cloud provider has on the user experience in cryptocurrency networks. The primary goal is to develop a methodology to determine baseline behavior in some cryptocurrency network from within a data center and compare it to default behaviors from a home network (or from ETH Zürich). We will also explore known techniques to improve in-network connectivity (e.g., by manipulating peer selection), to see if the advantages gained by these techniques are comparable to the baseline advantages of running out of a cloud provider. Network behaviors to measure could include network propagation latency, connection latencies, and others.



**Candidate Profile:** Prior knowledge of blockchain protocols and cryptocurrencies, while helpful, is not a requirement. An ideal candidate for this project is interested in gathering and analyzing data on existing systems, including making changes to the current code base of some cryptocurrency client. *Master's* students will work on an extensive project, participating in developing the methodology of the project.

**Interested? Please contact me for more details!**

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