**Thesis B.Sc.**

Thesis M.Sc.

IDP

Nameserver Rate Limits - Dynamic Adjustment of Scan Behavior

Motivation

A major reason for DNS is to translate human readable domains into globally routable addresses. Missing replies negatively impact a user, not willing to remember required addresses. While missing replies can have multiple reasons, network reliability and loss rate has been often analyzed in research. In contrast, name server rate limits have not been examined yet. Rate limits can depend on the number of all incoming requests, on incoming request for a specific source or for a specific reply. An analysis has to be able to differentiate between packet loss during transmission and actual rate limiting of nameserver.

This thesis starts with an analysis of existing rate limit implementations. Derived knowledge has to be transferred into a dynamic adjustment of rate limits in an existing large scale DNS scanner. Based on active, supervised scans, the effectiveness of the implementation has to be classified. If ethically possible, rate limits in the wild could be determined to inform users and following research.
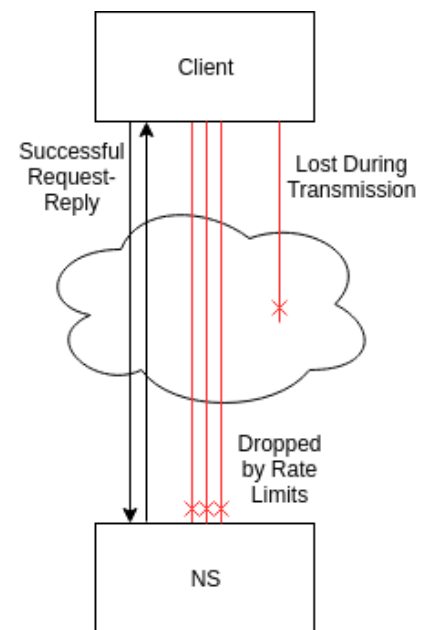
Your Task

- Analyze rate limiting in existing server implementations (e.g. bind RRL)
- Develop a dynamic adjustment of rate limits in a DNS scanner
- Analyze the effectiveness based on supervised, active scans
- Ethical rate limit measurements in the wild

Requirements

- Basic knowledge about DNS
- Basic experience in Go
- Familiarity with GIYF-Based work approaches

Contact

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