Chair of Network Architectures and Services
Department of Informatics
Technical University of Munich

Thesis
B.Sc.

IDP

Implementing and Evaluating IPv6 Target Generation Algorithms

Motivation

The ability to scan the Internet is crucial for our understanding of its structure and developments. For the IPv4 Internet, it is feasible to scan through its address space in a reasonable amount of time. For IPv6, however, the address space is way too large for exhaustive scanning, which is why so called **Target Generation Algorithms** (TGAs) exist. These algorithm analyze a set of known active addresses and generate new, potentially active addresses (called *candidate addresses*) from them. These addresses can then be used as an input for IPv6 scans in other research. There is a multitude of TGAs employing a variety of methods including machine learning, NLP, and graph theory approaches.
We already evaluated some of them in our 2023 paper [2], another paper evaluated different a different set [3], however, many new ones were created since then. Your task is to chose one algorithm and either implement it or evaluate the provided code.

Your Task

- Look at the papers listed in [1] and choose one which is not taken.
- Familiarize yourself with the paper and implement the proposed algorithm or set up the provided code.
- Evaluate the algorithm with through online scans together with your advisors.

References

[1] https://net.in.tum.de/members/stegerl/tgas.html
[2] Steger et al., 2023
[3] Williams et al., 2024

Requirements

Basic understanding of IPv6 and the methods of your chosen paper. **Read and summarize your chosen paper before contacting us! Append the summary to your application, otherwise we will not respond! Don't use LLMs for your summary, that's not helpful.**

Contact

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