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

TUM

Thesis B.Sc.

Thesis M.Sc.

IDP

Detecting IPv6-IPv4 Sibling Pairs Based on few Data Points

Motivation

Determining whether an IPv6 and IPv4 address run on the same machine is an interesting question from many angles. Current approaches as well as previous work by our chair typically leverage rather long active measurements to fingerprint clock skew.

This thesis sets out to explore if it is possible to determine this Sibling relationship based on very few data points. Also, the exploration of sibling classification based on purely passive measurements is a very interesting research goal and should be further explored in this thesis. Scope and focus can be adjusted depending on type (BA/MA/IDP) of thesis and student interest.

Your Task

- Familiarize with previous work [1,3]
- Evaluate how few data points are sufficient for active evaluation (based on existing data)
- Based on findings, change current actiev measurement approach to be more scarce
- Evaluate passive means of Sibling detection

Methods and Tools

- Data Analysis in Python
- Modification of Active Measurement Toolkit (Python, potentially re-implement in different language)
- Implementation of Passive Evaluation, for example in Lua based on libmoon

[1] *R. Beverly and A. Berger*: Server Siblings: Identifying Shared IPv4/IPv6 Infrastructure Via Active Fingerprinting, *Passive and Active Measurement, Springer, 2015*

[2] *A. Berger et al.*, Internet Nameserver IPv4 and IPv6 Address Relationships, *IMC'13*

[3] *Scheitle et al.*, Large-Scale Classification of IPv6-IPv4 Siblings with Variable Clock Skew, *arXiv*, https://arxiv.org/abs/1610.07251, *v2*

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