Target Generation for IPv6 Hitlists

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Georg Carle, Oliver Gasser

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Chair of Network Architectures and Services
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Technical University of Munich

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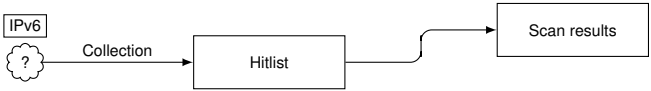

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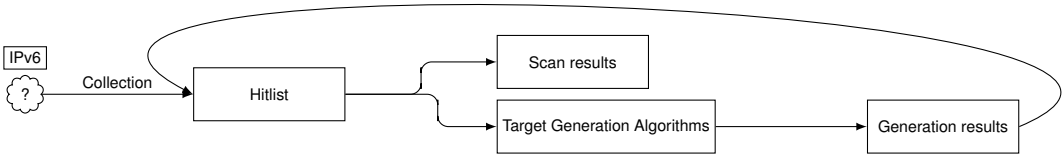

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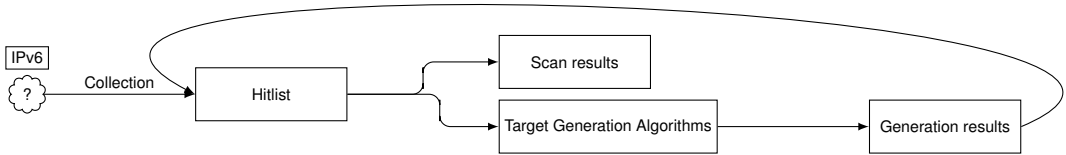

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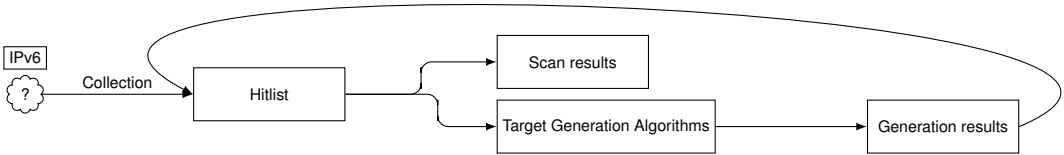

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- What output do they produce and how do we evaluate it?

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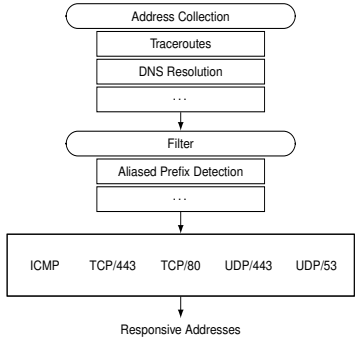

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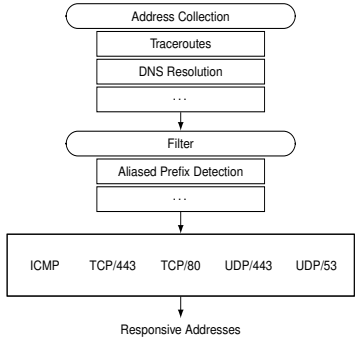

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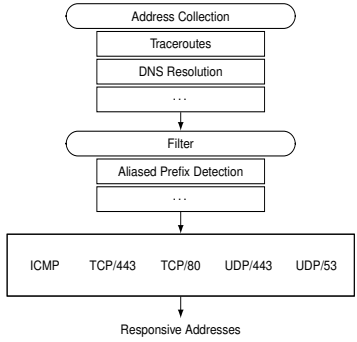

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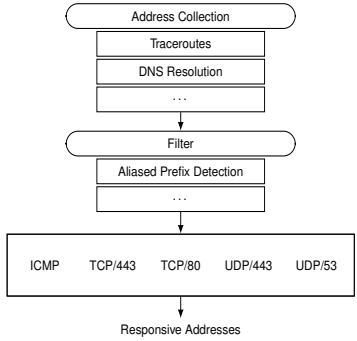

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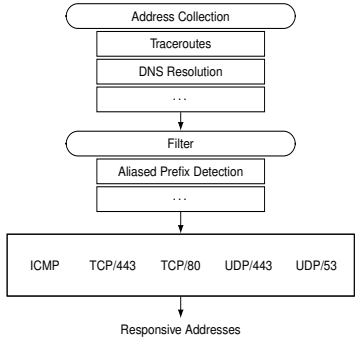

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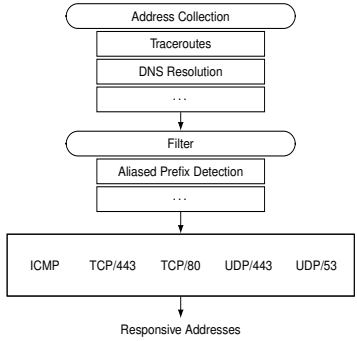
- More TGAs and inputs were evaluated in 2023.[3]



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  - Community-maintained database.
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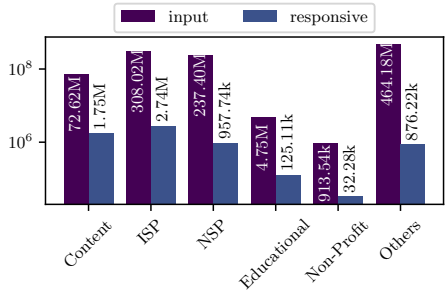
- Category representation in Hitlist is not uniform.
- Most frequent categories are ISP, CDN and NSP.



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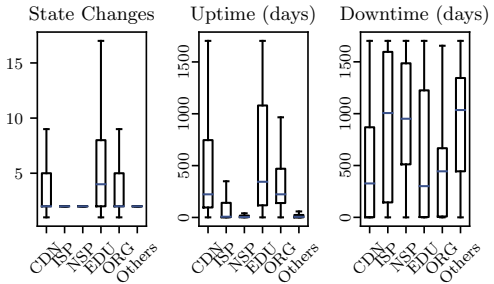

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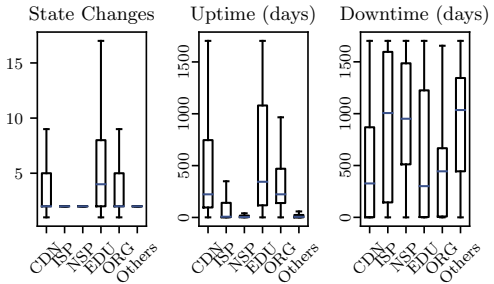

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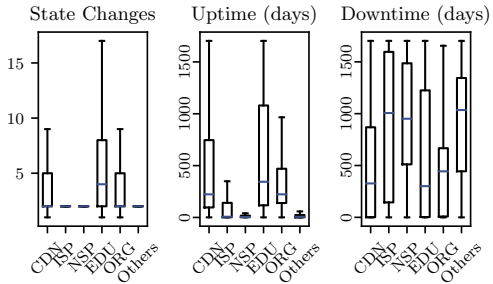

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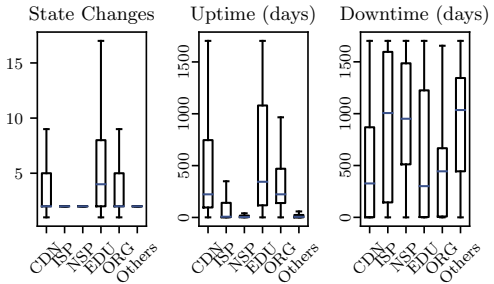

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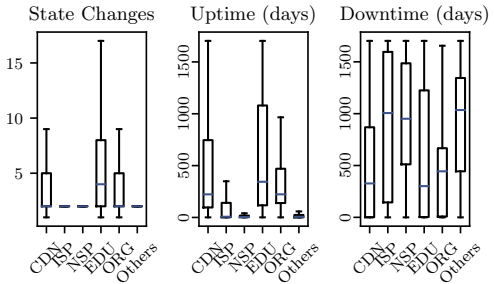

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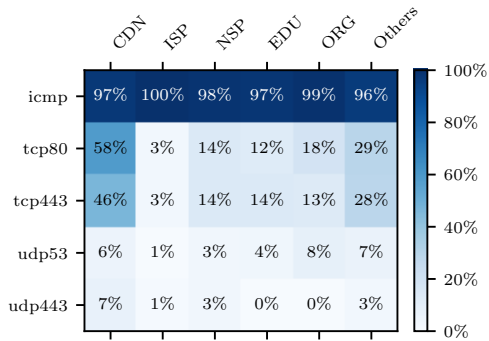

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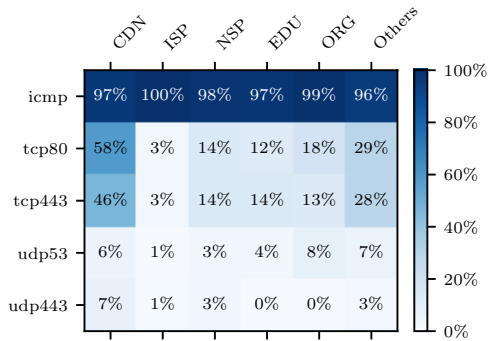

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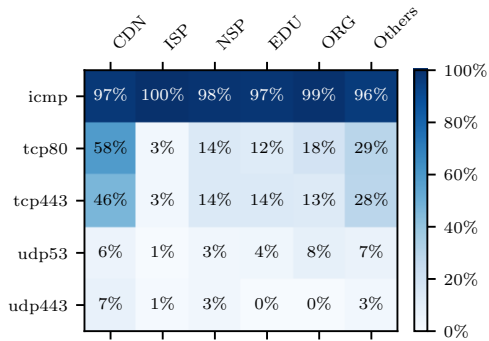

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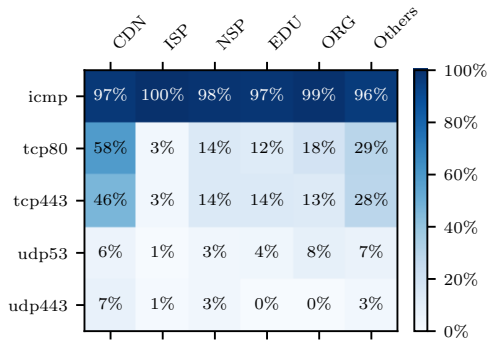

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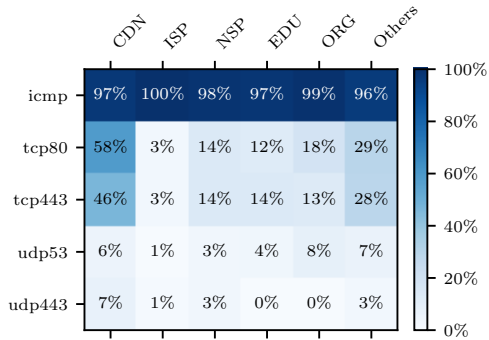
- Port responses are important depending on use case.



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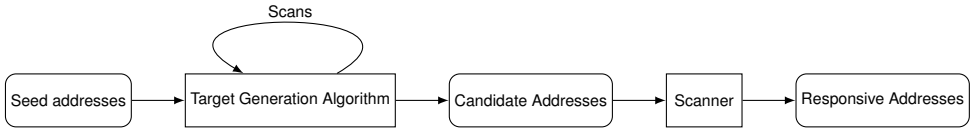

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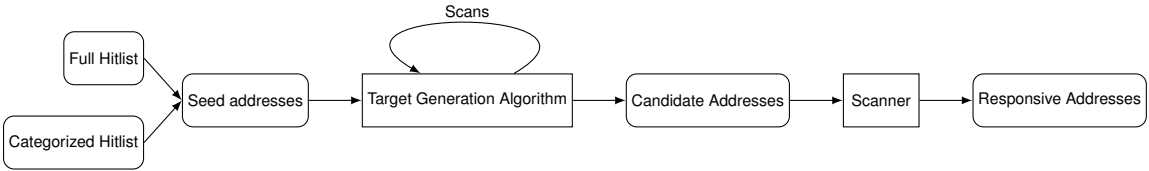

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Target Generation Algorithms

- So far we evaluated 10 open source algorithms from peer-reviewed publications.

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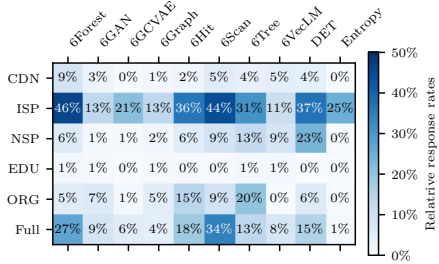

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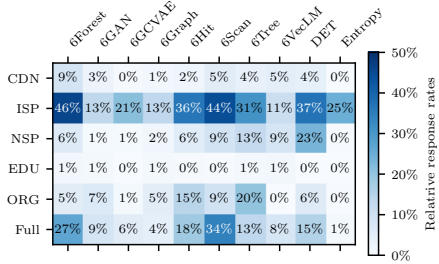

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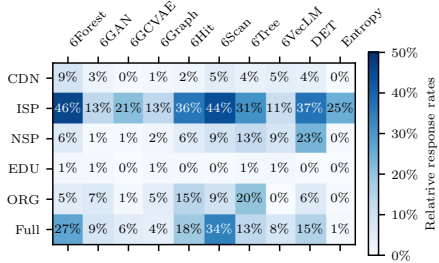

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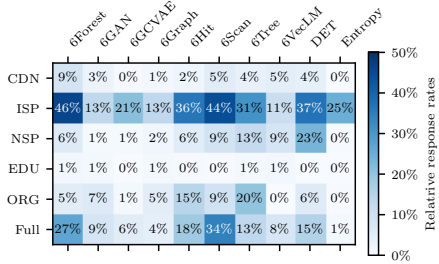

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Future Work: More Target Generation Algorithms

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Target Generation

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- More seed datasets to be included.

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https://ipv6hitlist.github.io

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  - Response rates vary depending on input.
    → **Filtering input can avoid biased candidate addresses**.

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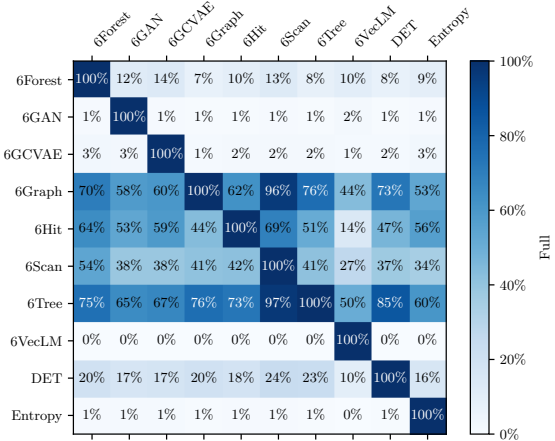
Backup

Cross-algorihm responsiveness



Backup

Generation results

	6Graph		6Scan		6VecLM		...
	cand.	resp.	cand.	resp.	cand.	resp.	...
ISP	25M	3M	8M	4M	18k	2k	...
EDU	2M	22k	10M	38k	84k	1k	...
Non-Profit	296k	15k	10M	946k	0	0	...
...	...	...	...	...	...	...	...
Full	106M	5M	6M	2M	49k	4k	...

- Size of candidates (cand.) varies greatly from 18 k (or zero for 6VecLM) to 106 M.
- Size of candidate set depends on algorithm as well as input.

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