

Deploying MDA Traceroute on RIPE Atlas Probes

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Summary

- Multipath Detection Algorithm (MDA) and its limits
- Towards a better MDA:
 - **Survey on load balancers**
 - ~~Provide heuristics based on data~~
 - Results

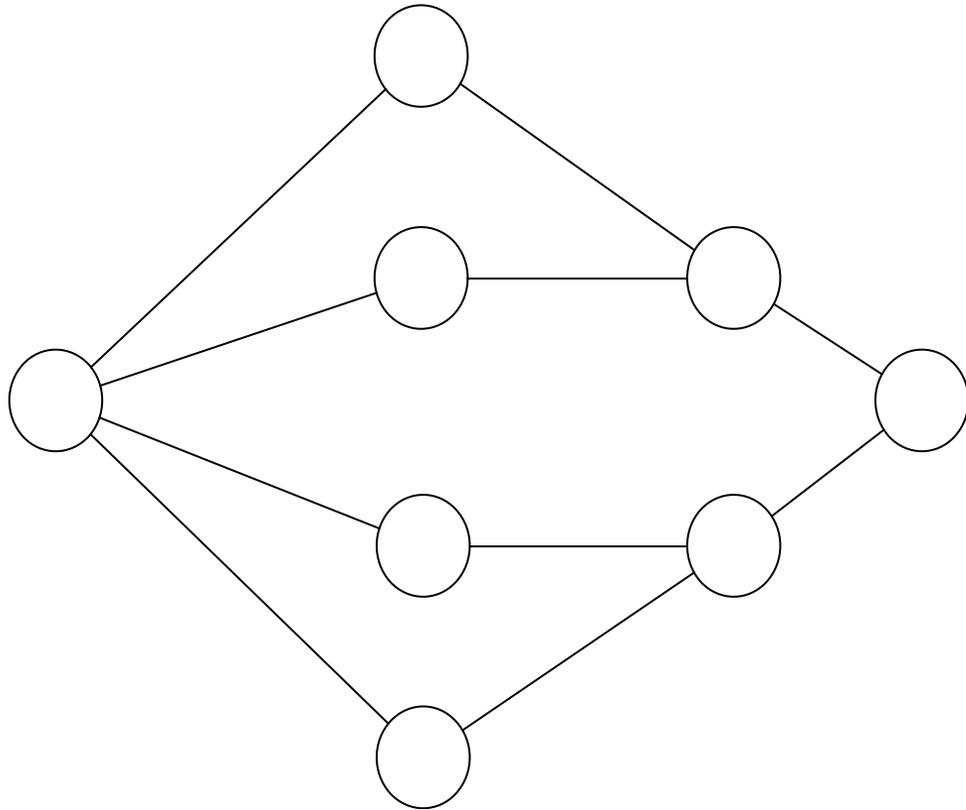
Multipath Detection Algorithm: Definition

- Allows to discover all the paths between a source and a destination, based on paris-traceroute
- Statistical guarantees on the discovered topology
- Potentially sends tens of thousands of packets to discover all the topology
- Makes the worst case hypothesis that every discovered interface could be part of a load balancer

Survey (work in progress)

- 350,000 traceroutes towards destinations from IMPACT IP Hitlist
 - Work divided among 35 PlanetLab nodes as sources
- ~112,000 traceroutes computed at the moment (computing still in progress)
- ~33% of the traceroutes contained at least one diamond

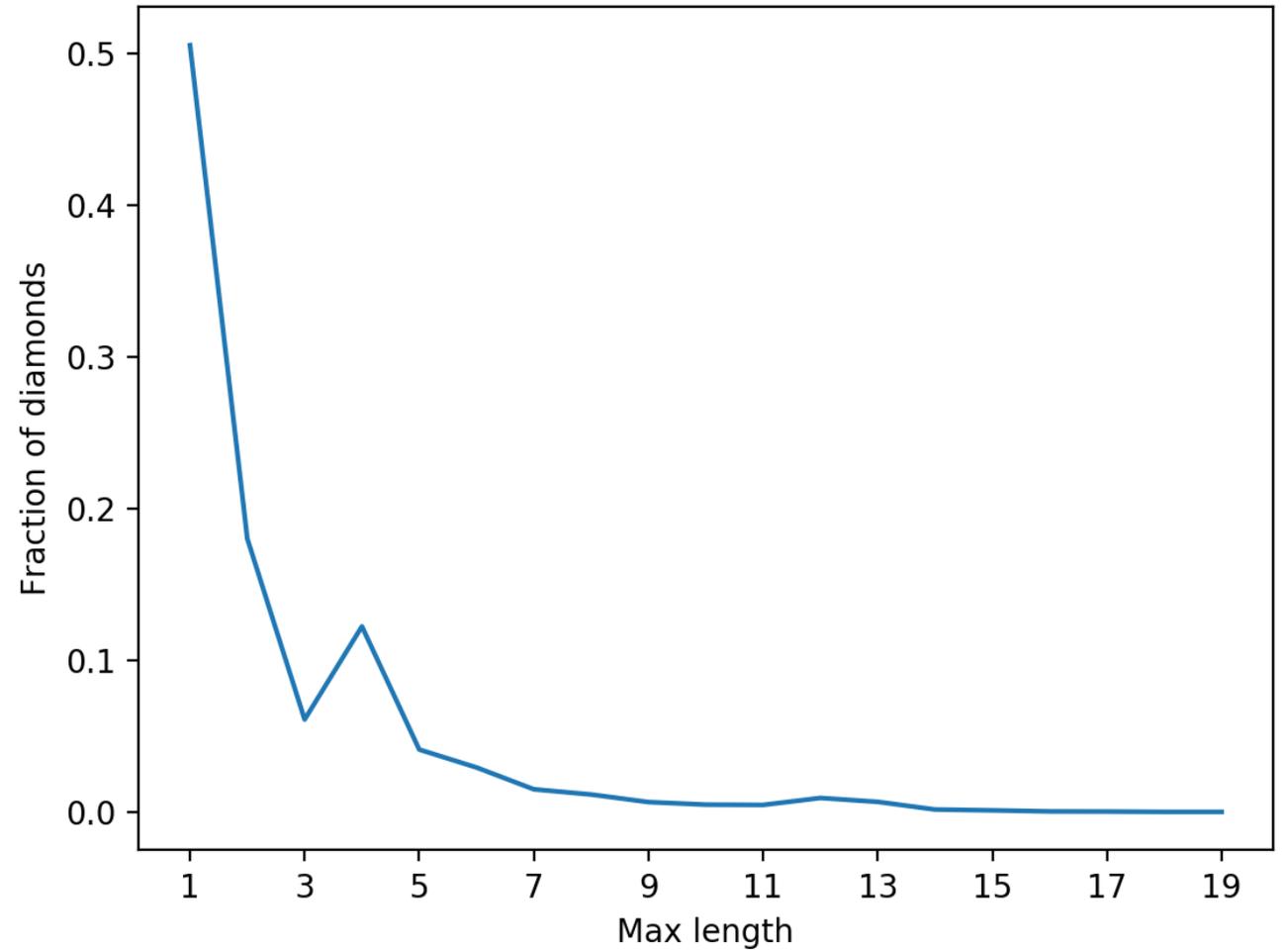
Survey: diamond lengths



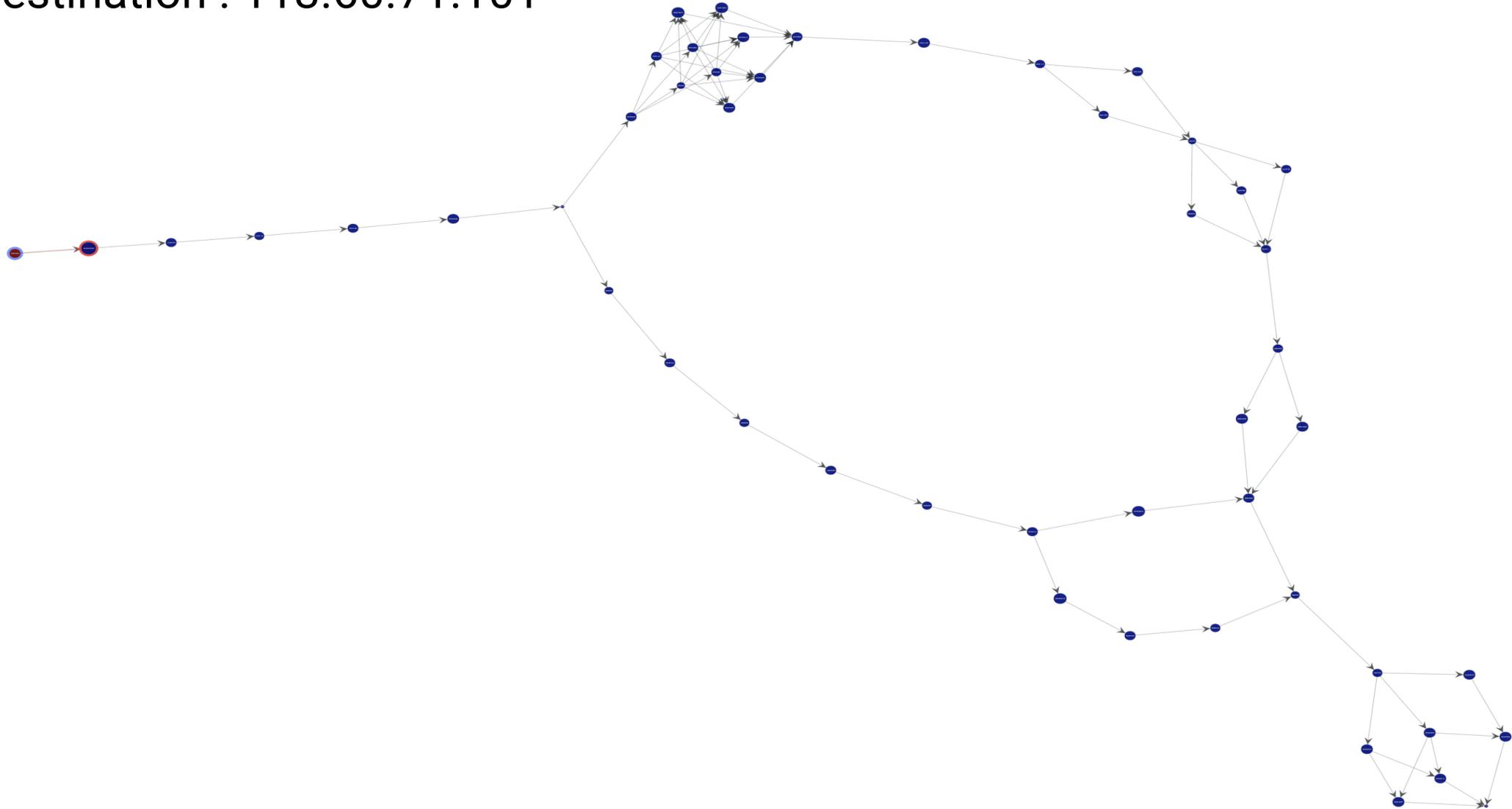
max_length = min_length = 2



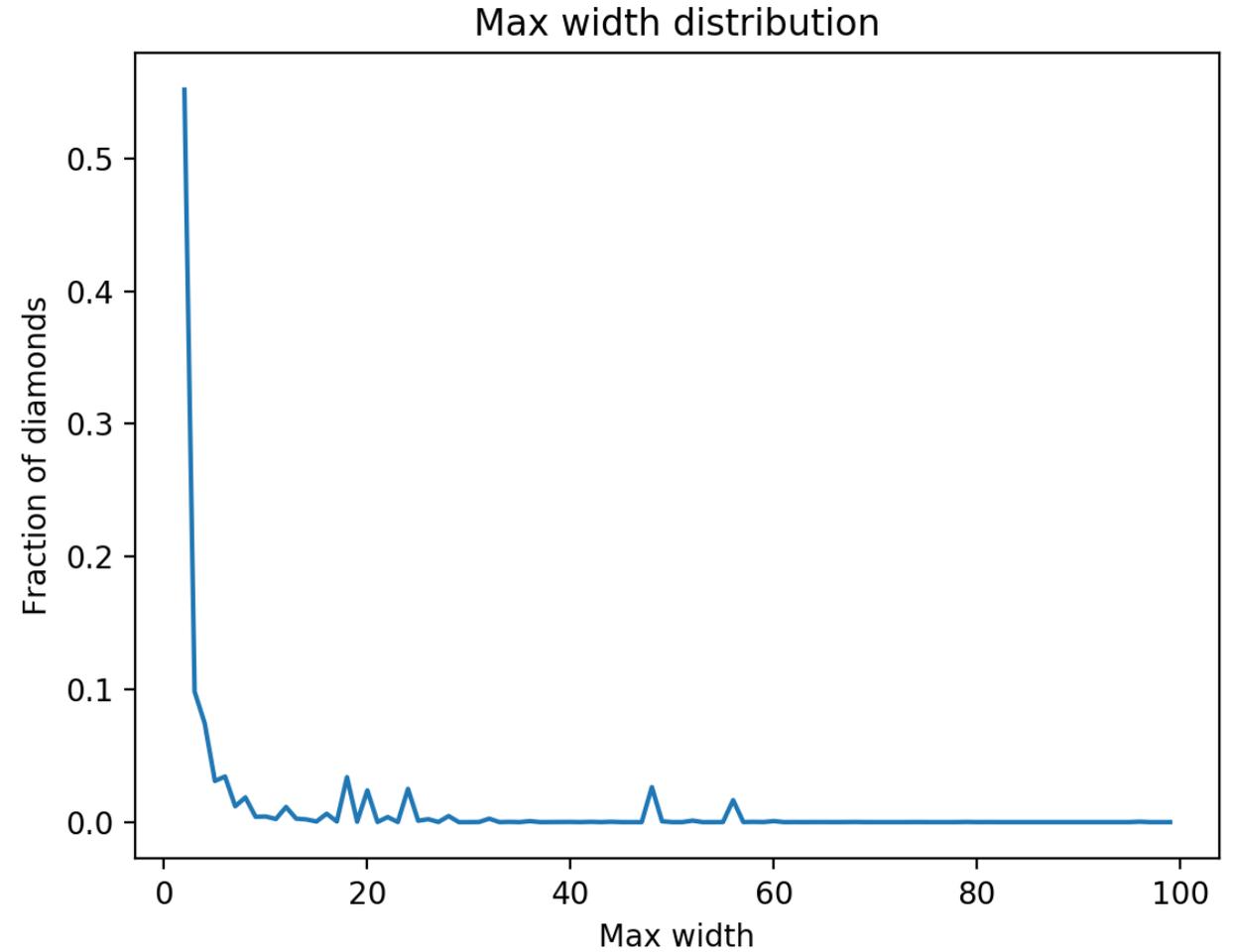
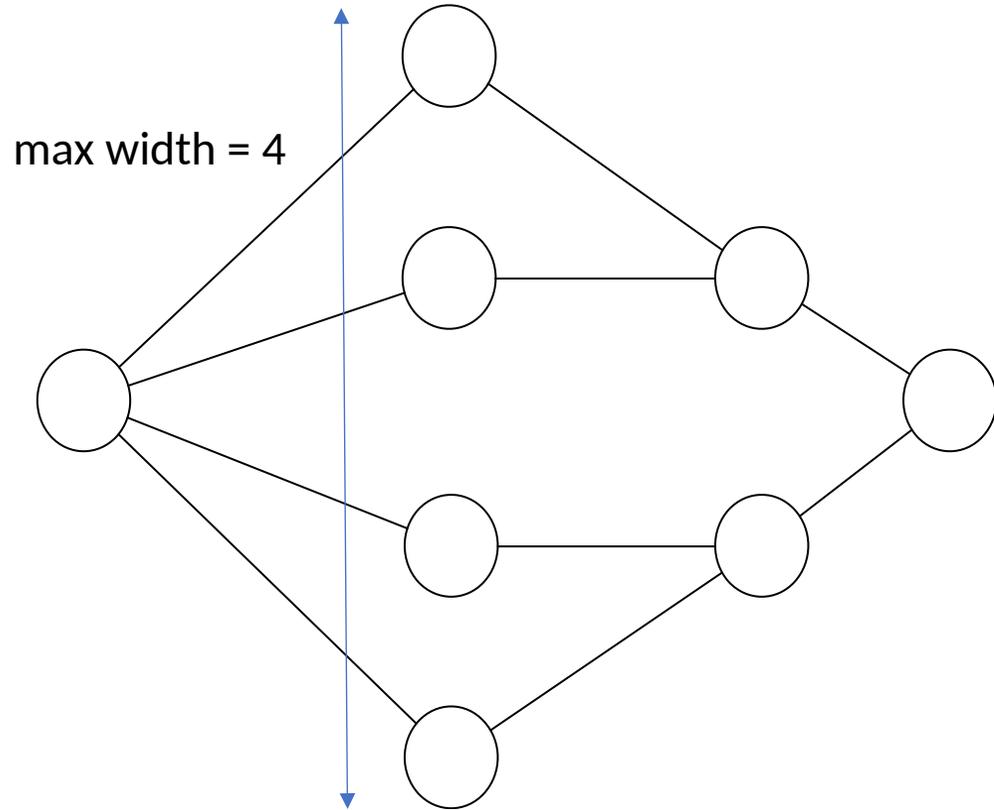
Max length distribution



Survey : diamond lengths , max length = 17
Source : mars.planetlab.haw-hamburg.de
Destination : 113.60.71.101



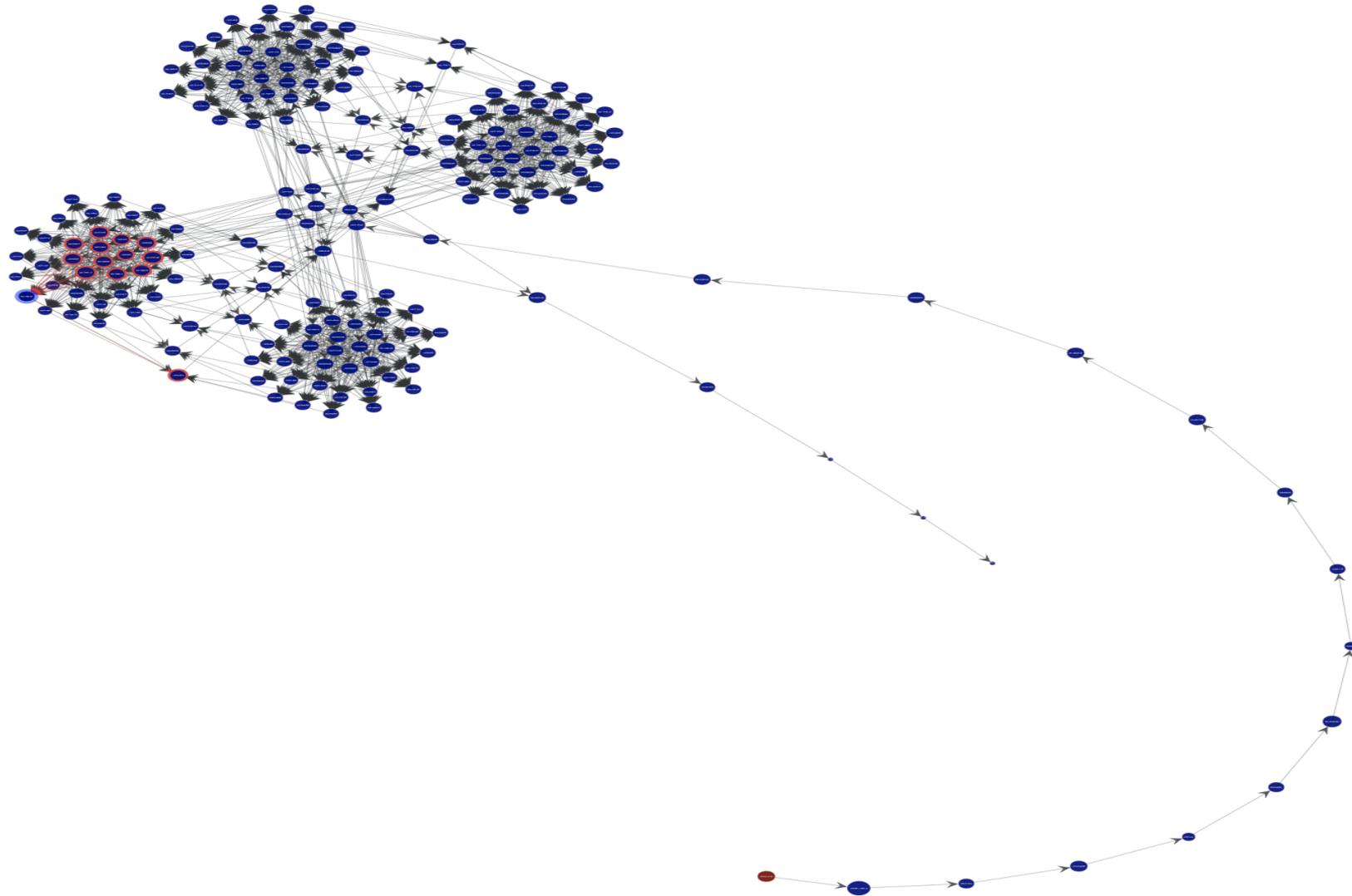
Survey: diamond widths



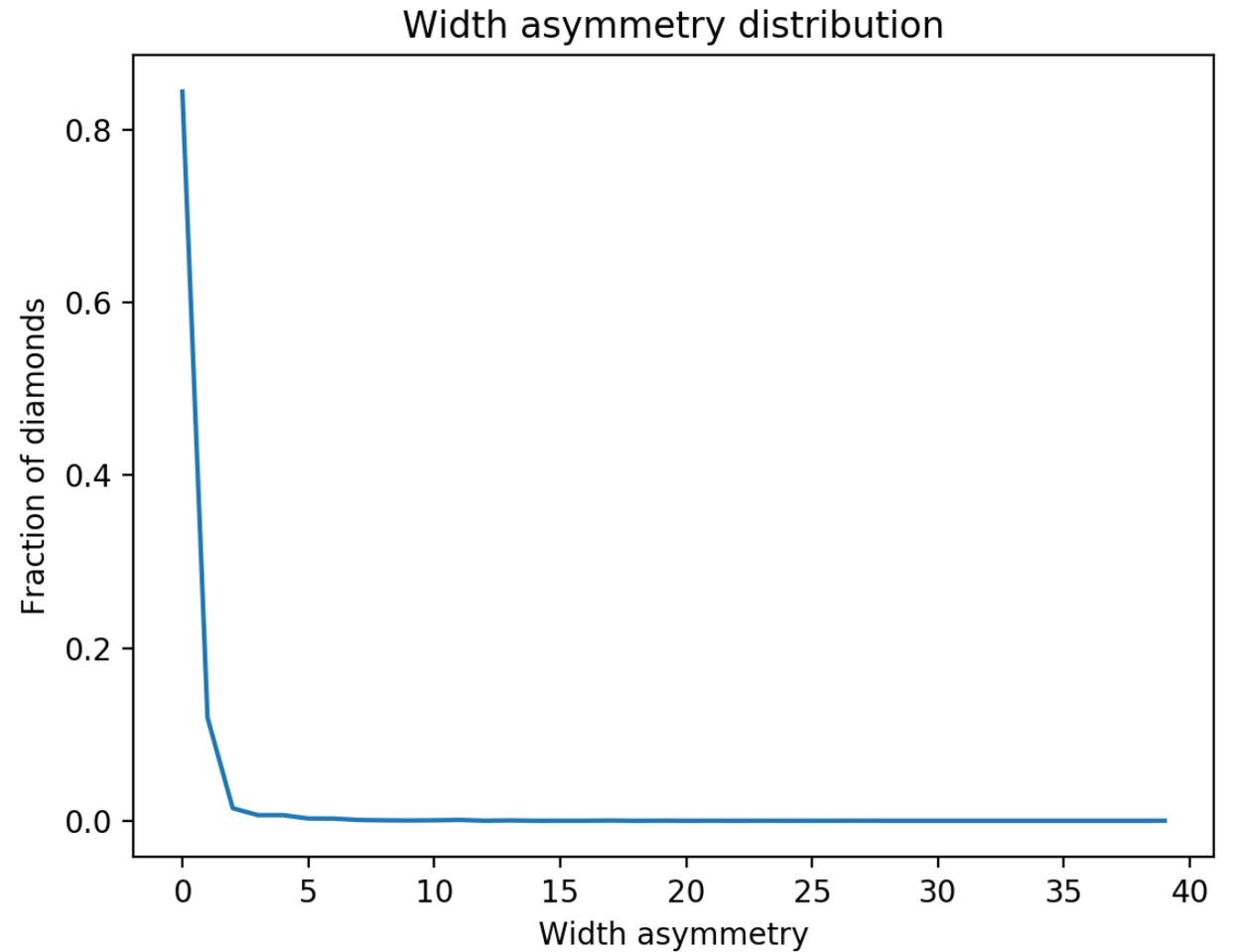
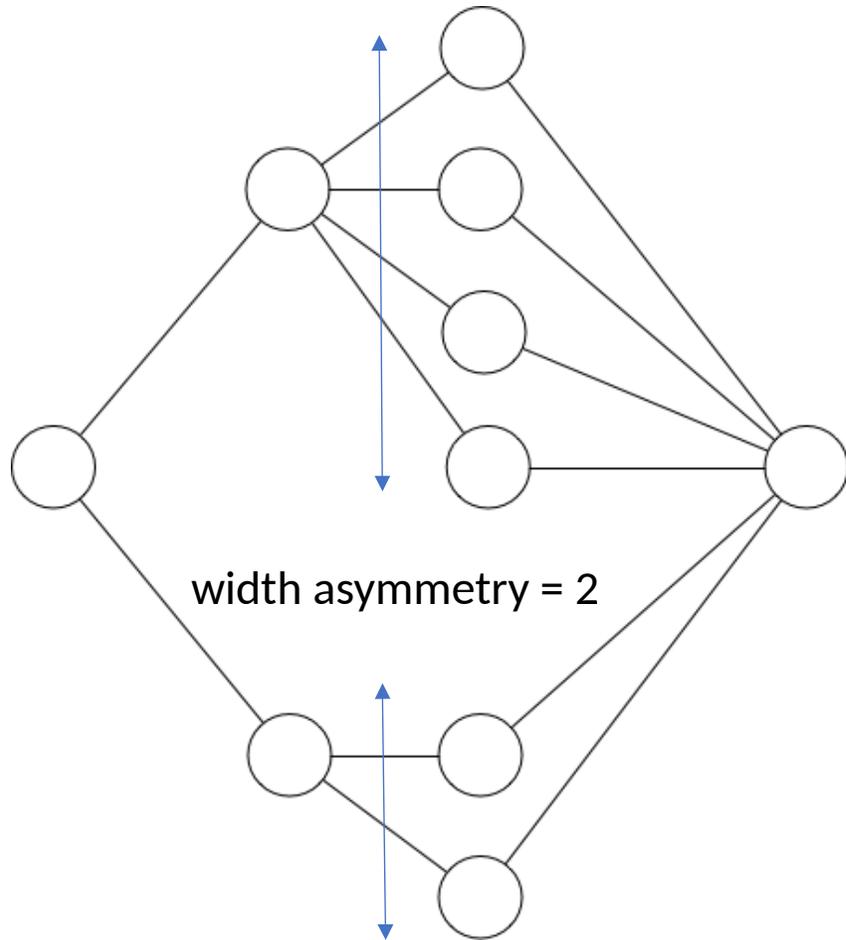
Survey : diamond width, max width = 96

Source : ple2.cesnet.cz

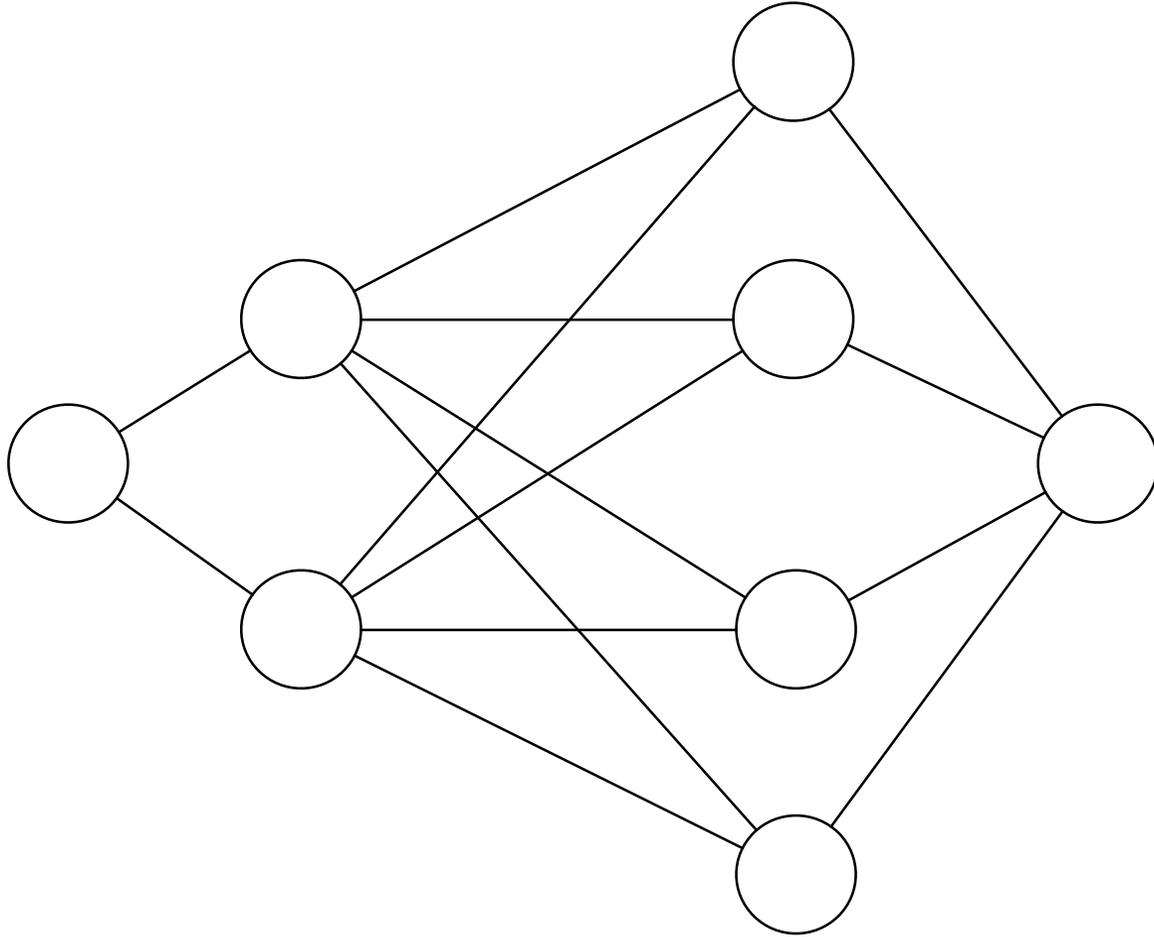
Destination : 61.82.71.40



Survey: width asymmetry



Survey: meshed diamonds

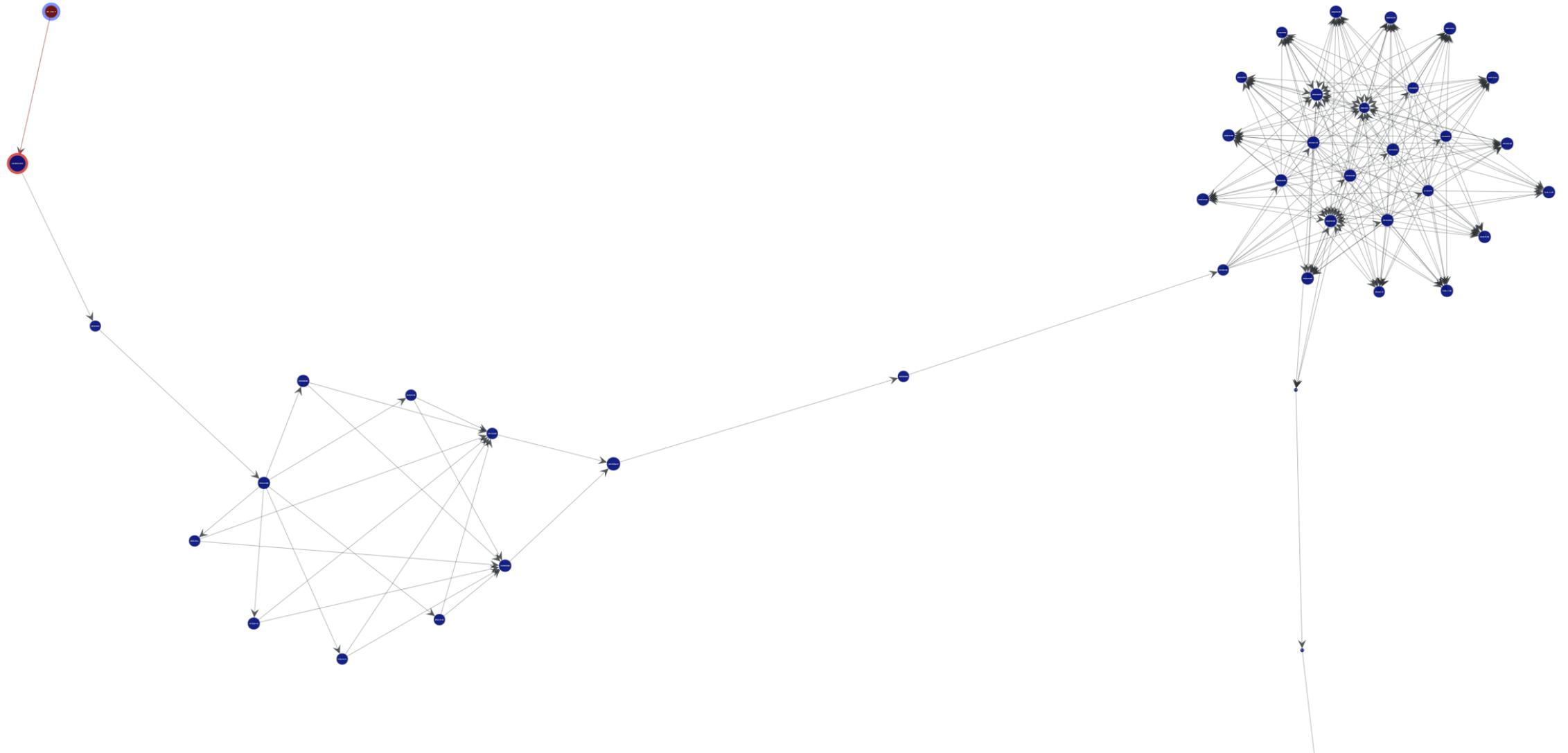


- 15.3 % are meshed diamond
- More meshing metrics are being defined in our ongoing work

Survey : diamond width, meshing = 95%

Source : ple2.cesnet.cz

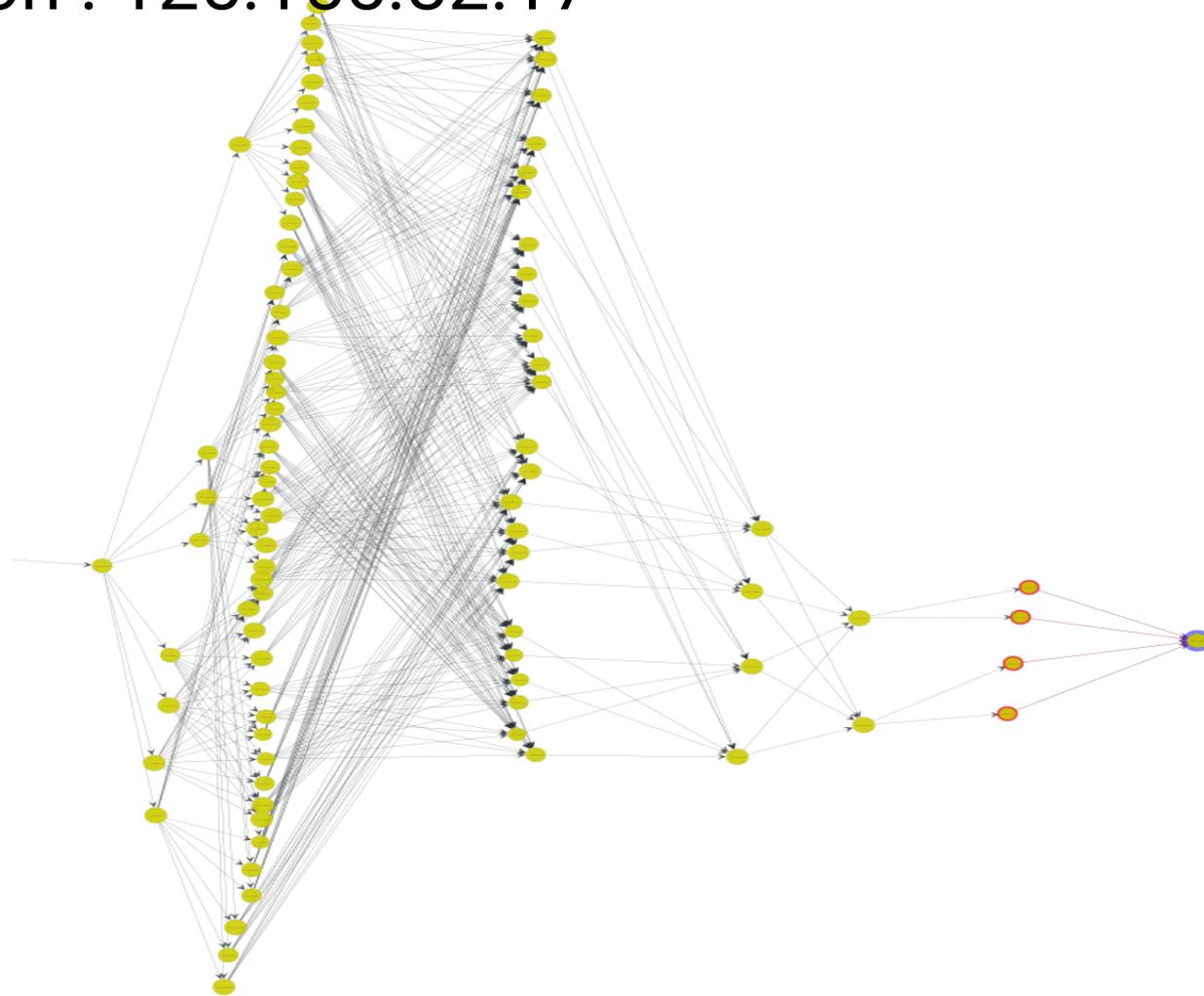
Destination : 171.117.21.69



The MDA uses 8500 packets to discover this topology!

Source : ple2.planet-lab.eu

Destination : 125.155.82.17



Questions?

References

- ¹<https://paris-traceroute.net/images/infocom2009.pdf>
- ²<https://ant.isi.edu/datasets/all.html>
- ³<http://mat.uab.cat/matmat/PDFv2014/v2014n02.pdf>