



**RIPE
NCC**

RIPE Atlas and IXPs “Stitchin’ it up”

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- What happens if you combine:
 - IXPs
 - RIPE Atlas
 - OpenIPMap (crowdsourced infrastructure geolocation)

- Use cases:
 - Keeping Local Traffic Local
 - Predicting latency via an IXP

<https://atlas.ripe.net>

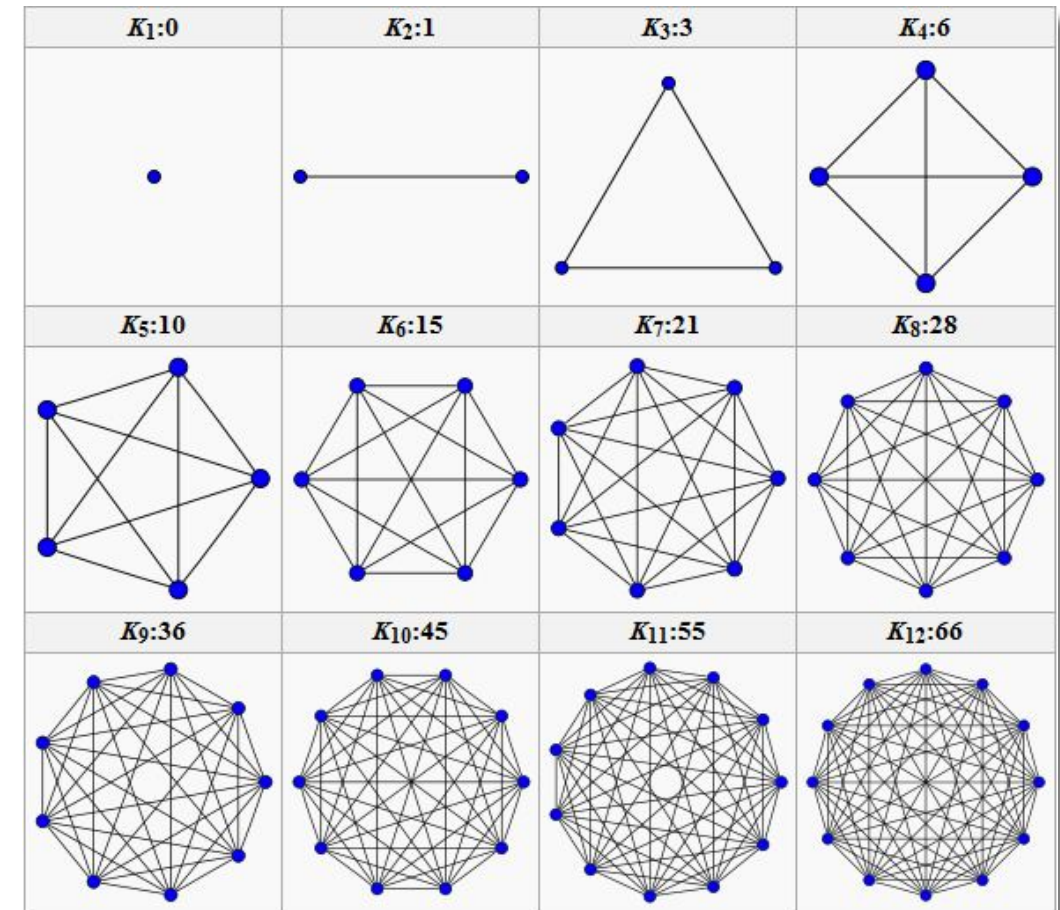


EURO-IX - October 2014

- 80 active RIPE Atlas Anchors
- 9 at IXPs
 - Not at peering-LAN
 - Subject to routing as seen by host network
 - Assumption: Peered with most/all of members



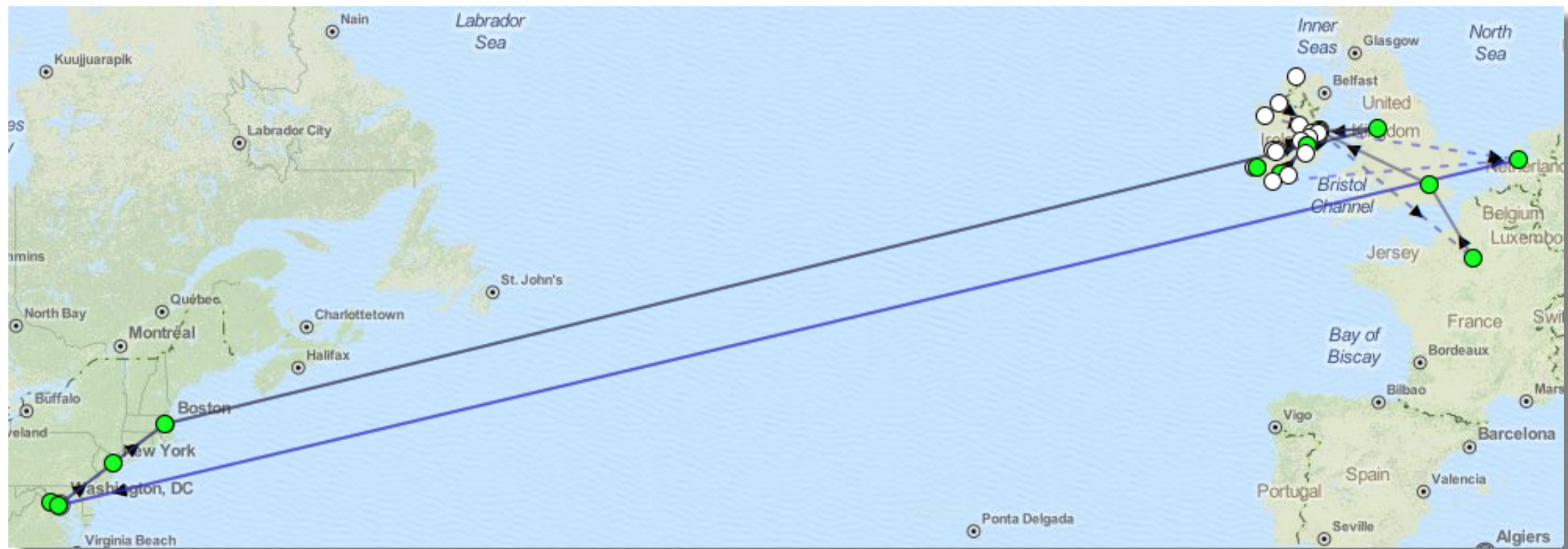
- IPv4 and IPv6 traceroutes between a set of probes
- Country Mesh
 - All probes in a country
- “Ad Hoc” Mesh
 - Define set of probes yourself



<http://2.bp.blogspot.com/-oyHn0YMV k/TTpSnEh1vqI/AAAAAAAAAEM/jXUSbhDy63o/s1600/complete%2Bgraphs.JPG>

- 132 RIPE Atlas probes in Ireland
 - 26 ASNs with an ‘up’ probe
 - 136 ASNs visible in routing currently
- Example “Ad Hoc” Mesh:
 - Max. 2 Atlas probes per ASN
 - If >2: take closest and furthest from point-of-interest
 - Here: Dublin,IE
- This mesh was used for the remainder of this talk

- Geolocating Internet infrastructure IPs by crowdsourcing
- Prototype with 20k+ infrastructure IPs mapped:
 - <https://marmot.ripe.net/openipmap/>



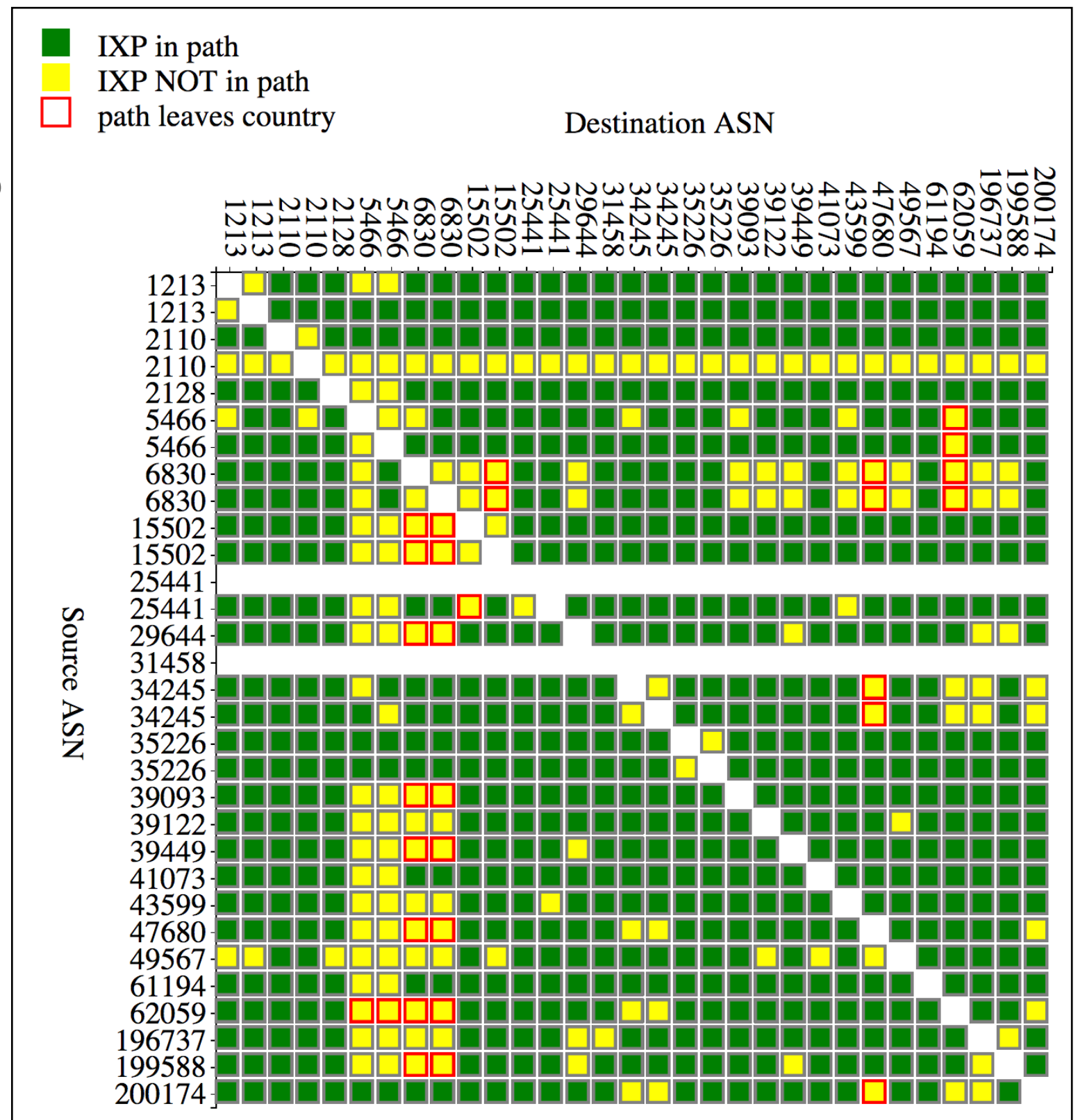


Keeping Local Traffic Local

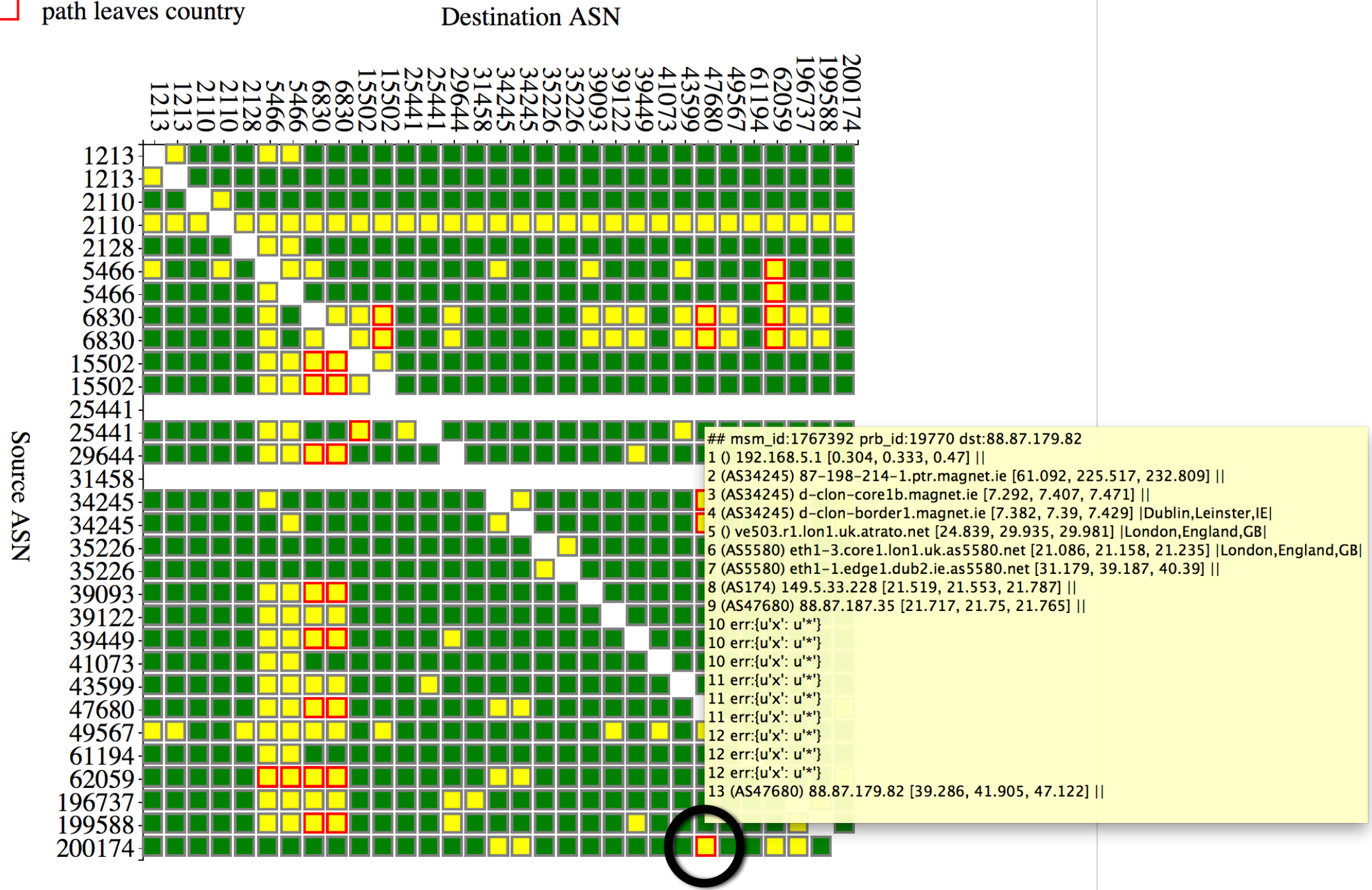


- Apply OpenIPMap data on Ireland probe-mesh data
- What happens in Ireland stays in Ireland?
 - Mostly!
 - 96% in-country paths in IPv4
 - 73% in-country paths in IPv6 (No HE tunnelhead in IE)
 - Subject to accuracy/completeness of OpenIPMap and bias of RIPE Atlas probe placement
 - Basis for a Keeping-Local-Traffic-Local Index?
- Do IXPs help?

- Do intra-national paths cross an IXP?
- Here: IXP=INEX
- Caveat: based on traceroute data
- In this case: IXP paths (green) stay local



- IXP in path
- IXP NOT in path
- path leaves country

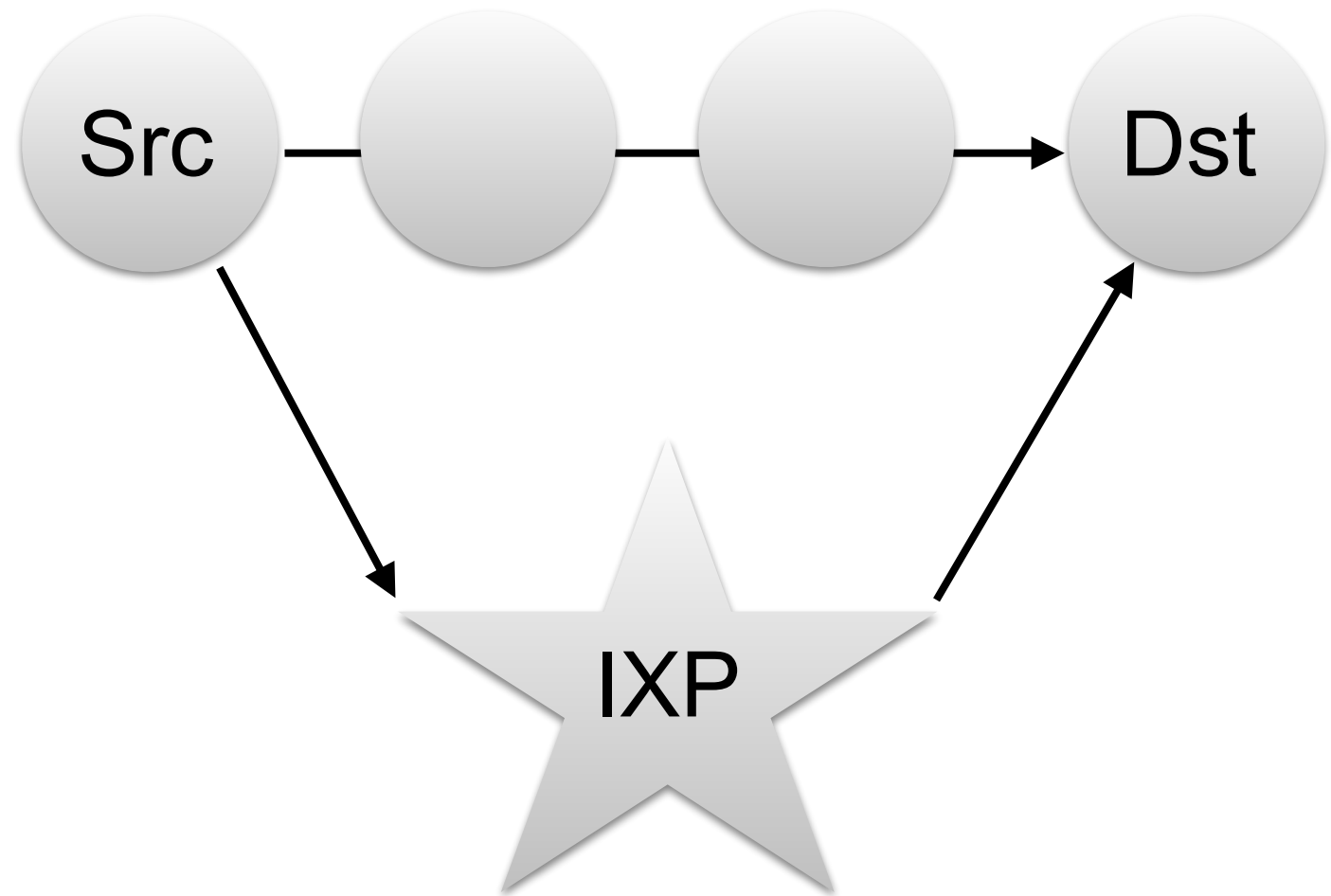




Predicting Latency via the IXP

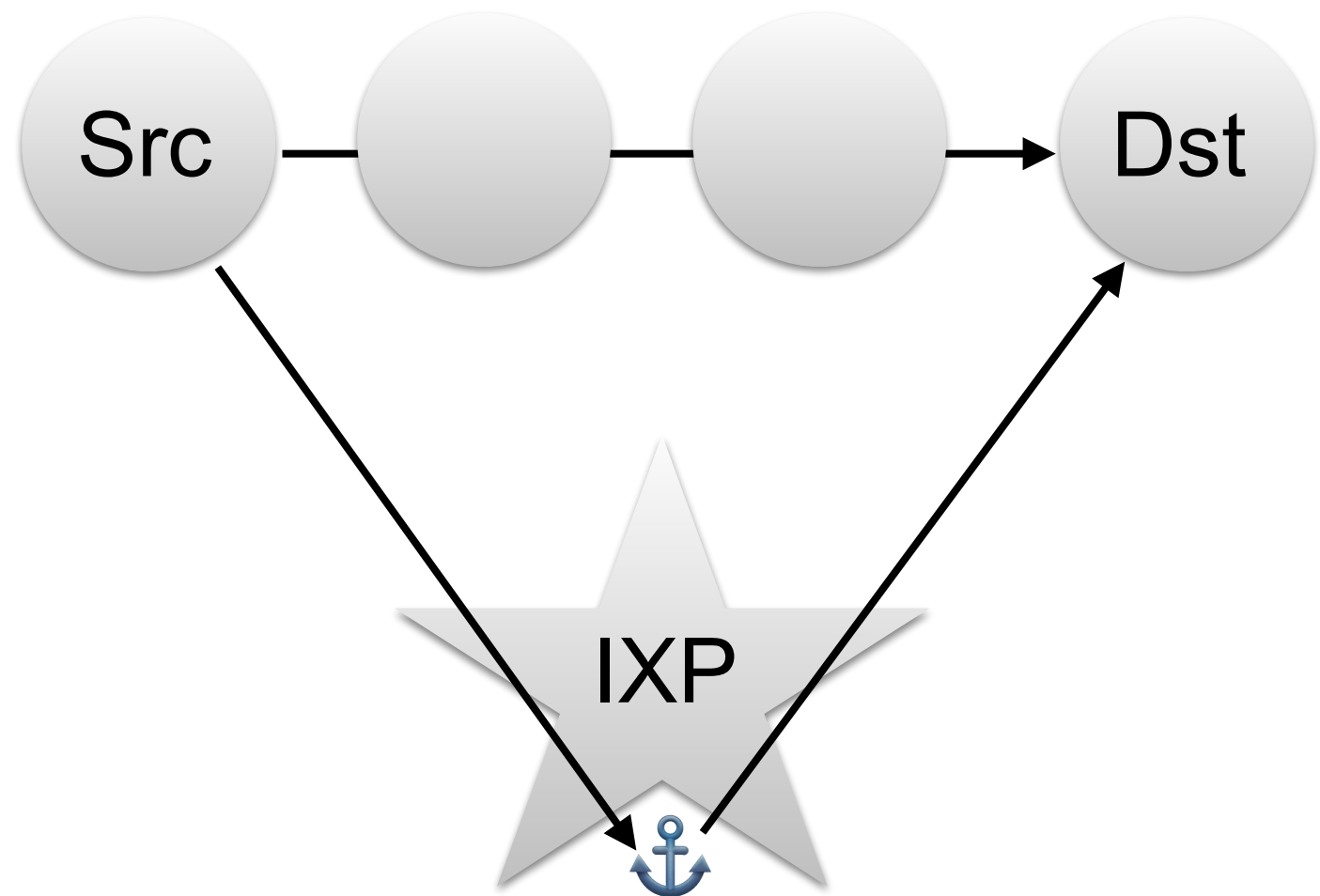


- Mesh measures latencies between Src and Dst
- What if non-IXP path between Src and Dst was (symmetrically) routed via IXP?
- **Can we guess via-IXP path latency?**

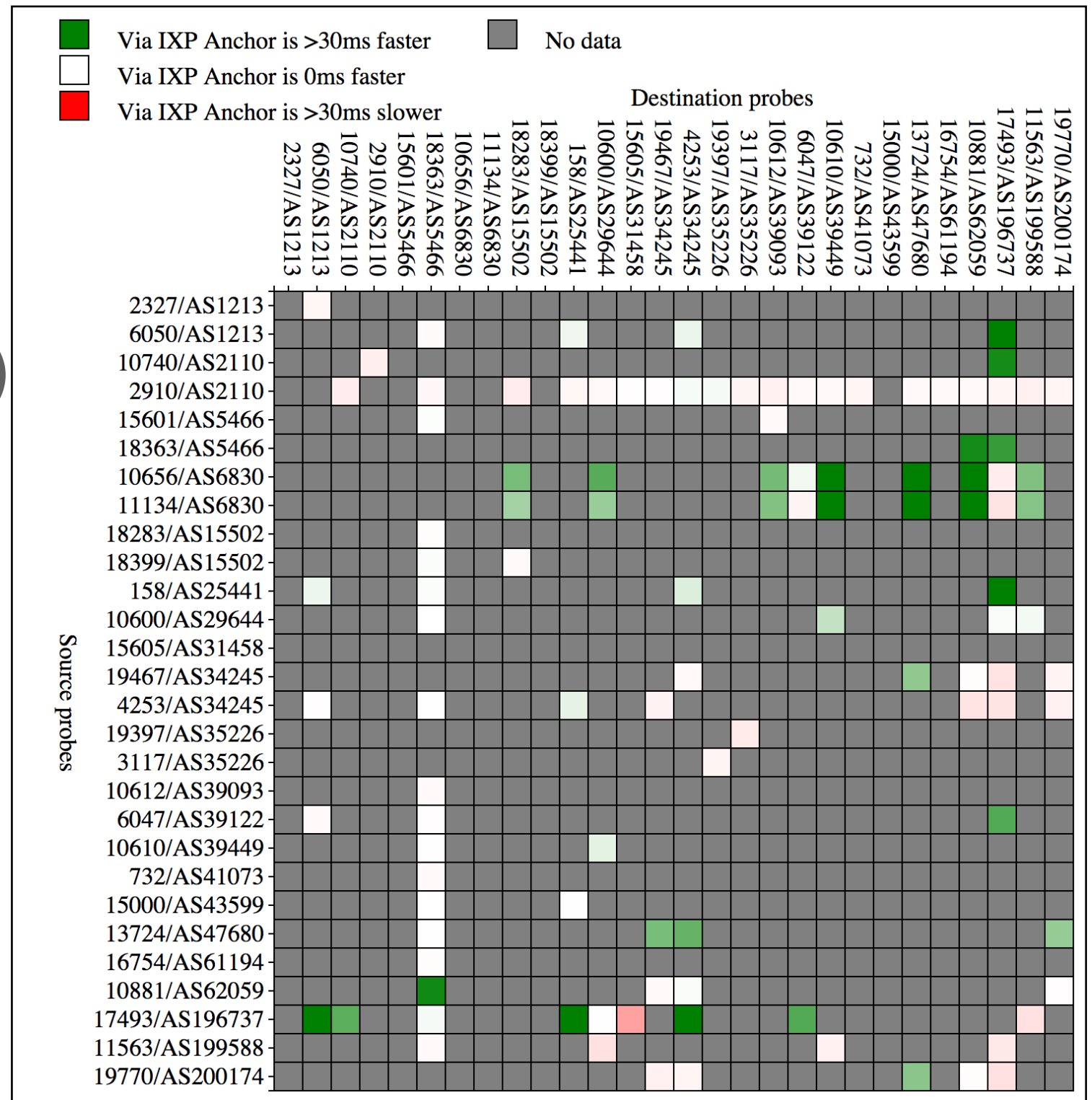


- Use a RIPE Atlas Anchor (⚓)
- If $RTT(\text{Src}, \text{Dst}) > RTT(\text{Src}, \text{⚓}) + RTT(\text{⚓}, \text{Dst})$:
 - Route via the IXP is faster

- Caveats:
 - Subject to local routing policies at ⚓
 - ⚓ adds latency



- Helps IXP to find cases where peering via the IXP could reduce latency (green)
- No data:
 - Path already via IXP
 - No latency data



- RIPE Atlas has access networks bias
 - Big content is harder to get into
- Future:
 - Automatically find resources in content networks that can be measured to?
 - Have local community define important targets?
 - Opportunity for IXP to build community

- Examples of how RIPE Atlas can help improve peering at IXP
- More probes & anchors = More coverage = More better data
 - Specifically looking for:
 - ASNs that are not covered yet
 - Locations that are not covered yet
- Interested to hear your thoughts
 - How can RIPE Atlas serve IXPs best?

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