Use of Default in the 'DFZ'

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<http://archive.psg.com/090827.apnic-default.pdf>

We Study *Visibility*

- What is the real routing graph of the Internet?
- What is the AS topology of BGP routing?
- How do we debug our network?
  - Are ping and traceroute the best we can do?
- How biased is our methodology?

Bogon Diagnosis Work

- R&D for ARIN to enable them to diagnose what ASs were filtering newly allocated address space. See preso from APRICOT 2007.
- Though ARIN never deployed, we continued to measure to see how long it takes to get filters removed.
- Bored, we turned the tool to other use

An Example, a /25

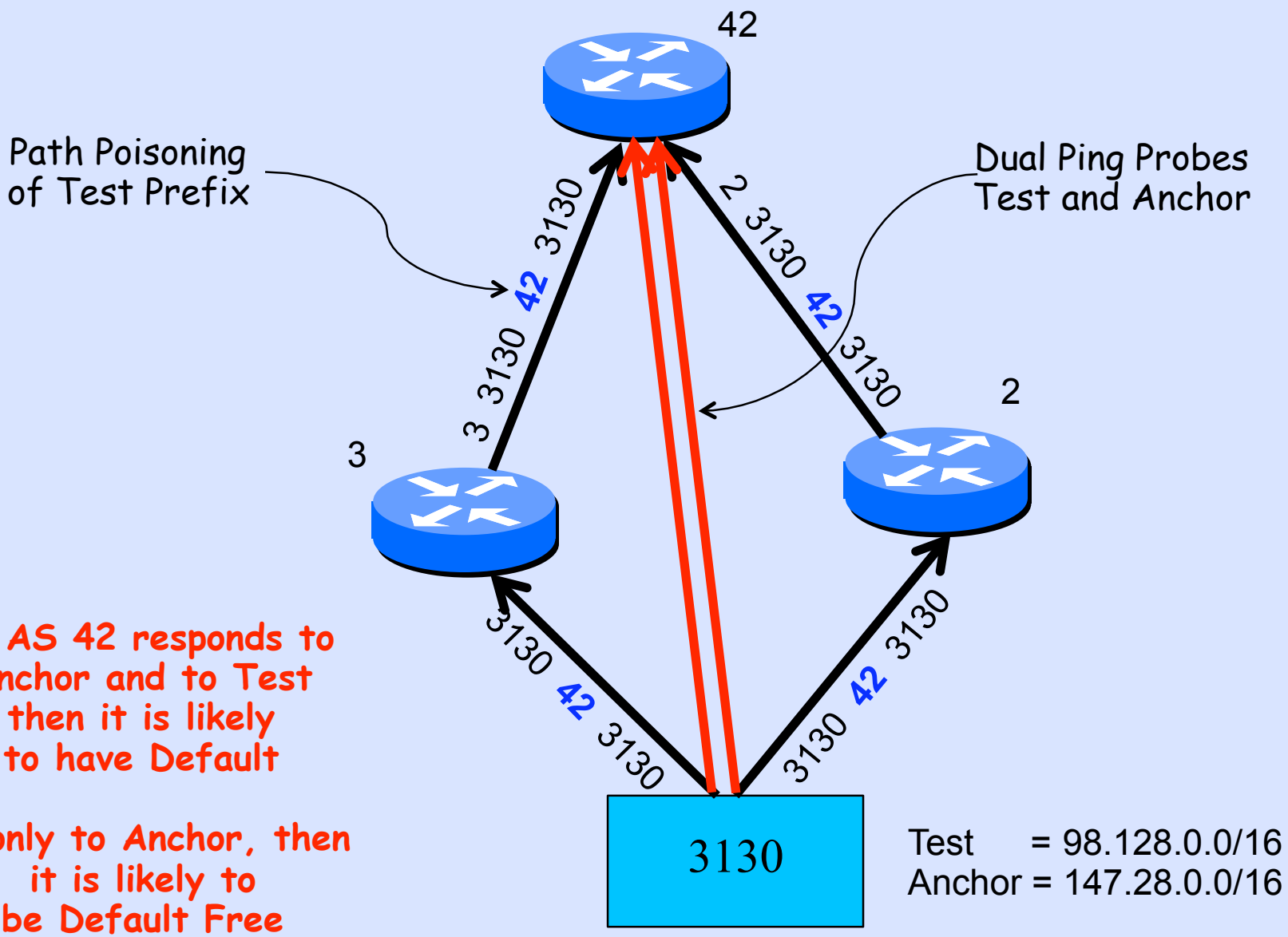
- We announced a /25 to NTT
- They passed it only to customers
- RV/RIS/... showed 15 ASs could see it

Whoops!

- We used ping from the /25 to 'all' ASs
- 1024 ASs could get packets back to the /25 source!
- So Route-Views and RIS were off by a FACTOR OF 60!
- And one was as good/bad as another, adding more views did not help.

How Much of This was Due to Default as Opposed to Poor BGP Visibility?

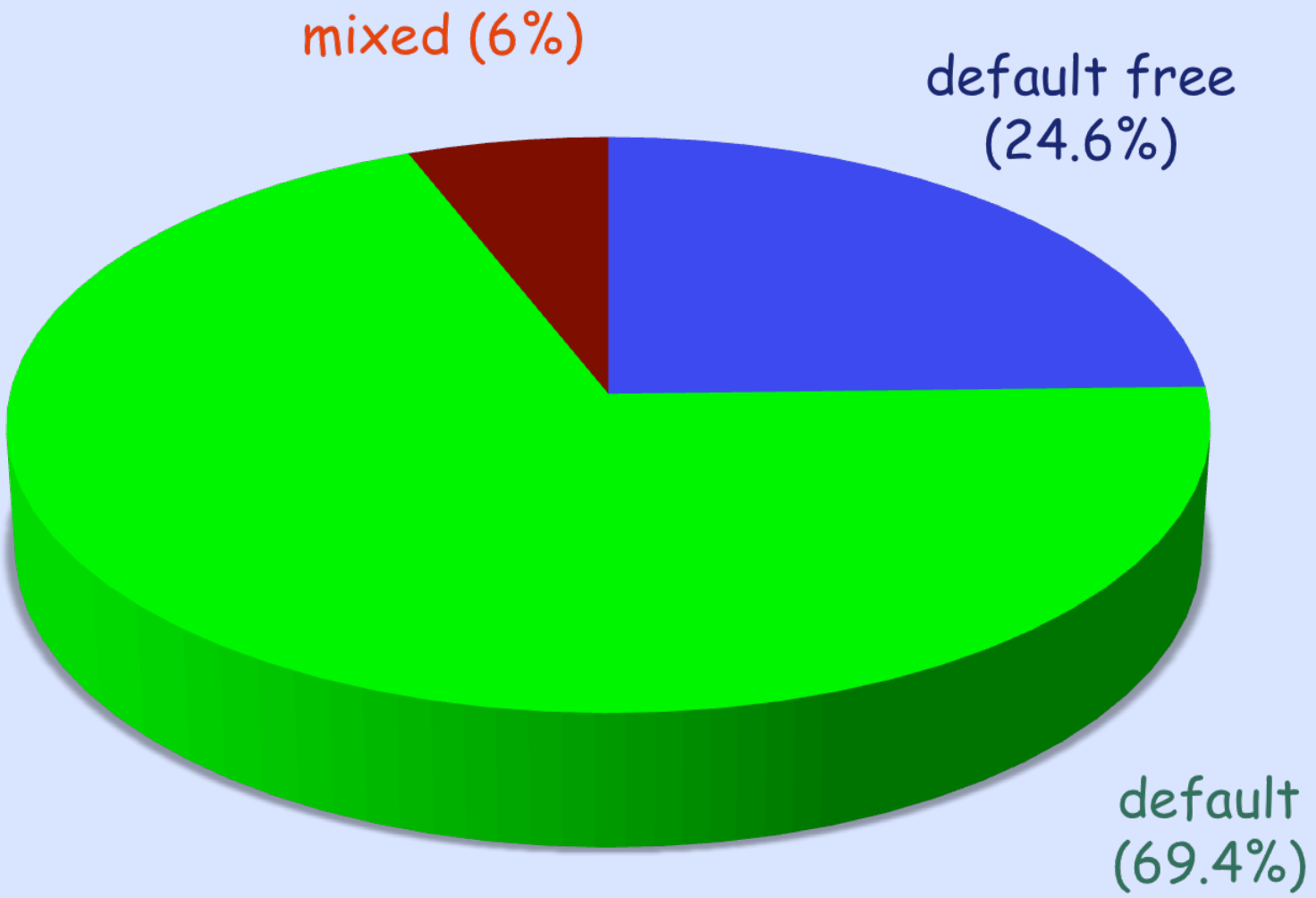
Default Detection



If AS 42 responds to Anchor and to Test then it is likely to have Default

If only to Anchor, then it is likely to be Default Free

Use of Default

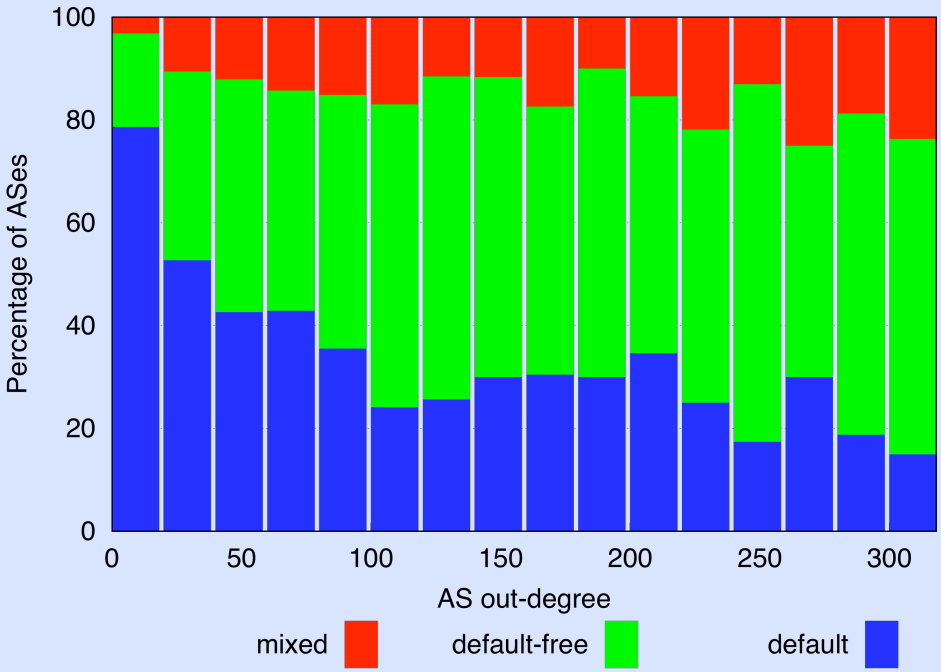


Default Free Zone?

Not Really.

Default Routing

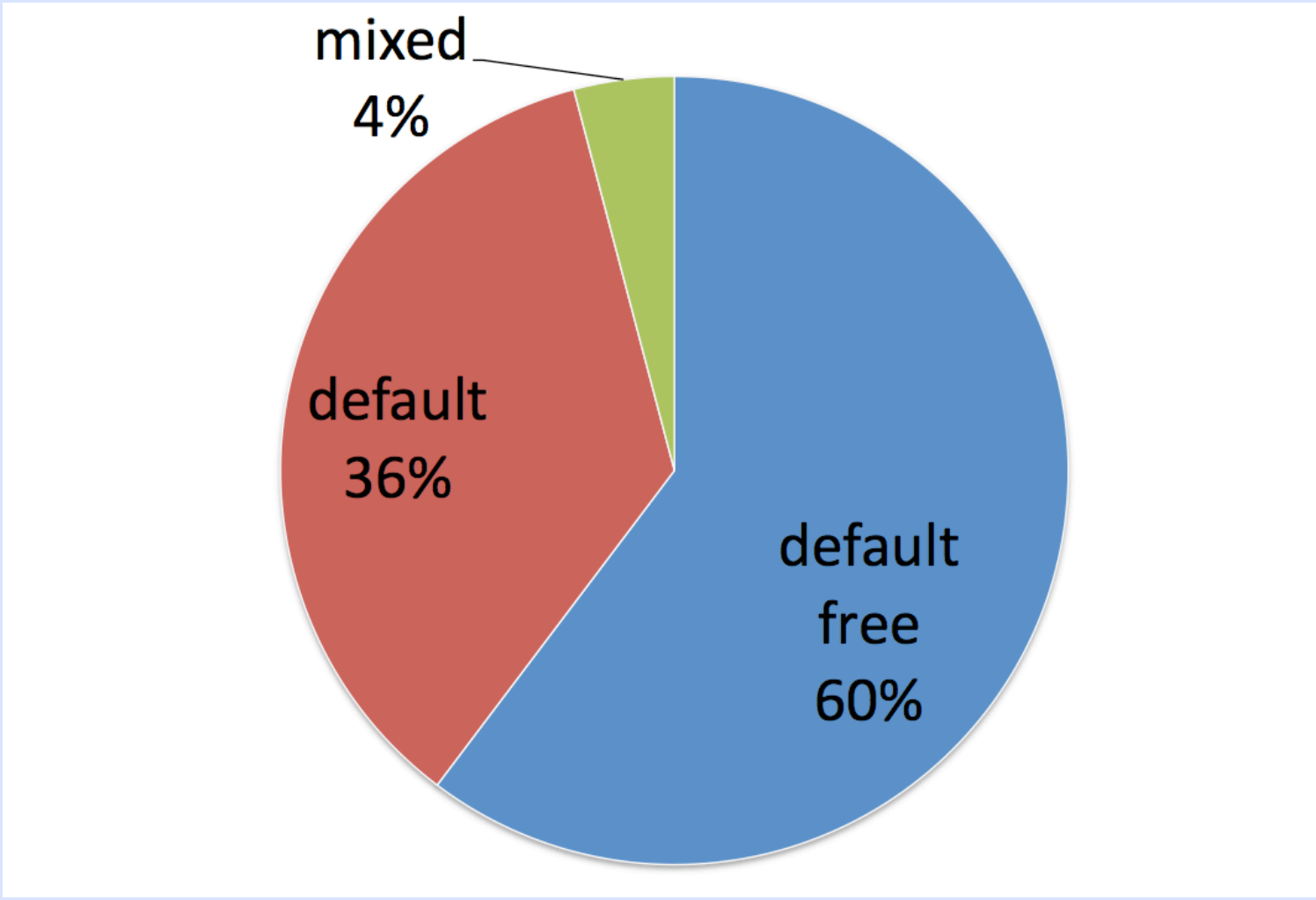
	tested/total	default	default-free	mixed
stub	24,224/31,517	77.1%	19.3%	3.6%
small ISP	1,307/1,361	44.5%	42.2%	13.3%
large ISP	246/255	17.1%	60.6%	22.3%



Breakdown of default routing use as a function of AS out-degree

ASes with out-degree ≥ 300 are combined in the last value.

Japan is Different



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Our Glasses are Broken

- Looking in RV/RIS/... does not tell you if they can reach you
- Looking just in RV or RIS is as good (well bad) as hundreds of BGP feeds
- Researchers should be very wary of using RV/RIS data for many classes of analysis, e.g. AS topology, traffic
- Are Renesys-style presos bogus?

Please Validate!

http://psg.com/default/