RIPE Atlas to the rescue!

Or: debug routing without looking glasses

RIPE Atlas

Celebrating
10 years of
**measuring
the Internet.**

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i3D.net – A Ubisoft Company

A brief history: i3D.net and gaming

A scene from Battlefield V: Devastation of Rotterdam
i3D.net's original office was ~200m beyond the church

- Founded in 2002, headquartered in Rotterdam, The Netherlands
- Focused on online videogaming since our inception, with small beginnings
- Acquired by Ubisoft in November 2018, but we remain independent and neutral
- We operate our own longhaul network
- Due to our "exotic locations", we've had to become experts in debugging the Internet routing table; keep traffic local!
- ..gamers are not always patient when you repeatedly request traceroutes

Source: https://www.flickr.com/photos/berduu/44014472480/

Technical info: online videogaming

- Not compatible with caching, online videogames are realtime applications:
  - The content is too unpredictable
  - Communities cross borders & ISPs
  - ..and every millisecond counts!
    - In-flight bullets in shooters
    - Football dribbles or penalties
- Videogames use central server clusters to synchronize events between players
- Group playerbase in the wider region, so that matches are always available

Trouble: my latency is high, why?

- PoP in Tokyo, you have a direct (green) path towards $ISP in India
- But the round-trip latency is huge, bumps up at return path – why?
- Run a RIPE Atlas measurement from this ASN against your test IP
- Indian ISP backhauls an EU transit from Marseille (blue), hands off to AP transit, which then routes to Tokyo via North America (red)
- Now we know which AS-path is to be avoided, can we fix this?

Source: http://www.gpsvisualizer.com/draw/

BGP Communities: instructions

- Traffic engineering without completely removing paths via your local transit
- Provides the ability to influence some BGP behaviour selectively, such as:
  – Request an artificial increase of your AS path length to "nudge" inbound traffic over another link
  – Request a router to stop sending your route to an adjacent network
  – Request a non-standard route preference in a remote network
- Example: send 65421:nnn to NTT to prepend once to peer nnn in Europe

Validation: did my prepend work?

- Now that the AS-path via Europe is longer, an alternative path via Hong Kong is selected by the Indian ISP – much better latency!
- We always try to use the least invasive form of traffic engineering, so being able to repeat the test multiple times really helps a lot!
- All this can be done without end user interaction, instant feedback
- Service desk can also validate things continue to work properly
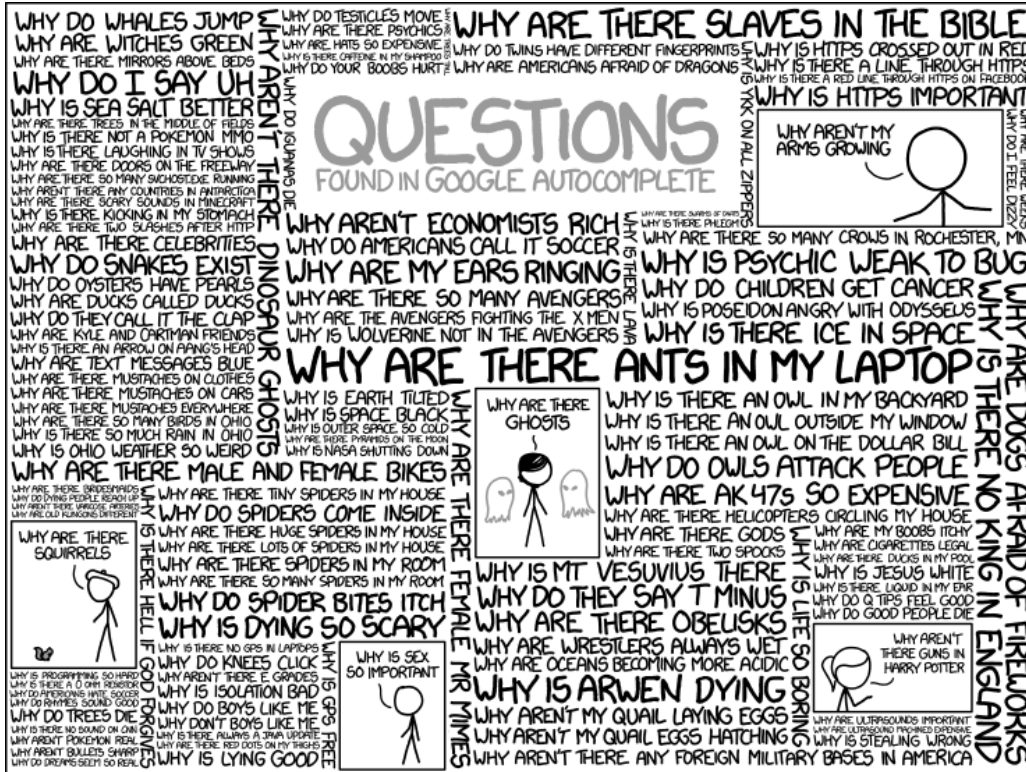
Remaining wishes for RIPE Atlas?

- It would be wonderful to access the source IP of a probe more easily
- MTR-based reports of >30 iterations to supplement traceroute snapshots
- Filter for more specific geographic features in large countries like Russia (federal districts) or the USA (states)
- Combined geographic and ASN search
- Download CSV dumps, not just JSON

RIPE Atlas to the rescue – Questions?

Source: https://xkcd.com/1256/

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