Measuring Multi-CDNs

(they look like jelly fish)
Traffic Engineering: BGP vs DNS

• BGP
  - Network operators control/influence

• DNS
  - Content network controls hostname → IP mapping

https://labs.ripe.net/Members/emileaben/how-ripe-atlas-helped-wikipedia-users
CDN vs Multi-CDN

• Content Delivery Network (CDN): puts your content close to users

• By using multiple CDNs you can leverage strengths of each single one

• Big deployments: operating system updates
  - Apple: iOS, Mac OS X
  - Microsoft: Windows

• Do you know where the next big OS update is going to cause traffic spikes?
Can we measure this?

• Yes! With RIPE Atlas

• Input: “steering” hostname (e.g. swcdn.apple.com)

  - Periodically resolve this to IP on RIPE Atlas probes
  - Map IP to ASN
  - Result: pairs of source and destination ASNs
Apple mCDN (around iOS8)

Source (blue) - destination (orange) ASN pairs for Apple multiCDN. ASNs can be both (green).
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Microsoft mCDN IPv4 (Windows 10)

Source (blue) - destination (orange) ASN pairs for Microsoft multiCDN use. ASNs can be both (green).
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Microsoft mCDN IPv6 (Windows 10)

- Yes! IPv6 enabled multi-CDN

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Your Input Please!

• How can we make this most useful to you?
• Awareness?

```
e1000$ ./multicdn 3265 apple 2015-11-15 2015-11-16
AS6185 85.46% (APPLE-AUSTIN - Apple Inc.,US)
AS286 13.35% (KPN KPN International / KPN Eurorings,NL)
AS3356 1.19% (LEVEL3 - Level 3 Communications, Inc.,US)
```

• Alerts?
• Which multiCDNs/hostnames to follow?
• <your idea here>

- Plan: Follow up on https://labs.ripe.net/
Questions
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