Anycast, anyone?

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What is the anycast, anyway?

• Unicast
  • One IP address, one location
• Anycast
  • One IP address, many locations
Unicast
Unicast: short path
Unicast: long path
Anycast: paths are shorter
Anycast: a faulty node?
Anycast: automagical restoration
What is good about the anycast?

• Easy deployment
• You get load balancing and fault restoration automatically
Theory and practice

Theory:

• RFC7094: “UDP is the "lingua franca" for anycast today.”

• Anycast BOF, IETF: “the use of global anycast addresses was not expected to scale and hence was expected to be limited to a small number of key uses”

(...Still true?)
Theory and practice

Practice:

• DNS servers
• Content Delivery Networks (CDNs)
• Anti-DDoS Services
Where you should be careful

Performance

• Fewer hops not always means the lower latency
• Planning of the locations for anycast nodes could be tricky
• You have to pay great attention to the BGP protocol tuning (BGP communities etc), or the performance could become even worse than before.
Where you should be careful

Your business model

- You have to get your autonomous system, your prefix and to hire network engineers
- You will pay more for the IP Transit
  - Different uplinks in different locations
  - No volume discounts
  - Load balancing will not be ideal, so you have to have the proper margin of safety for each uplink
Where you should be careful

Security

• It is much harder to reveal prefix hijacking for the anycast case than in unicast one.

• It is hard to disclose the malicious any cast node installed by some rogue without special monitoring measures.
To sum up...

• It is easy to make quick-and-dirty anycast
  ➡ And there is a chance that it will be useful
• It is tricky to make state-of-the-art anycast
  ➡ And it requires your constant attention