Inter-AS Cost

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The problem

- No good inter-AS metric in BGP!

- So no easy inbound traffic engineering

  - local pref: local

  - MED: only survives one hop

  - origin: not updated in transit (or usable)

- Only the AS path length

AS path length

- Increases with every hop

    - this is what we need

- But: AS hierarchy too flat

    - prepending once can move most of your traffic to another link

Inter-AS Cost

- "IAC"

- Conceptually:

  - a metric that is increased at every AS hop

- But:

  - need to be compatible with existing implementations

Solution

- IAClocal = 16 * AS_path_length + IAC attr
- On eBGP sessions, IAC attribute may be:
  - decremented by upto 14
  - incremented by upto 112
- Net effect: increase of 4 - 256 for every AS hop
- So <u>much</u> more granular than AS path length

Result

- Now:
  - paths over ISPs A and B both 3 hops
  - prepend A: almost all traffic over B
- With IAC:
  - paths over A and B both ± 48
  - IAC - 1 on B: slightly more traffic over B

More compatibility

- Don't want routers to suddenly select completely different paths after update
  - solution: multiplier value
    - IAC attr * 0 = no effect
    - IAC attr * 1 = full effect
    - 0..1 = partial effect
- Deploy gradually in existing networks

Deployment

- Optional transitive attribute

- So survives IAC-ignorant AS hops

- Just no increment/decrement

- Existing increment/decrement resurfaces in downstream IAC-supporting ASes

    - so support in the middle isn't necessary

What do you think?