New Update format to support N-best
(and other uses)

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Summary of this draft

• Need to disambiguate multiple announcements for the same prefixes between peers
• Need to support sequence-tagging of prefixes
• Backwards compatible via capabilities negotiation
• Locally configurable depth (value of N)
Impact Summary

- Requires additional memory usage for in-rib
- Orthogonal to semantics on how to interpret the values
- Two or more capabilities need to be negotiated:
  - Use of new wire format
  - What new semantics are to be applied, e.g. N-best, ECMP, or even both at the same time
Using Ordinal sequences
Detail per prefix: received per peer

Peer Sends

- best
- 2nd-best
- ...
- nth-best

IN-RIB

- best
- 2nd-best
- ...
- nth-best
ECMP Using Path ID values
Detail per prefix: received per peer

Peer Sends ECMP
- Path A
- Path B
- Path N

IN-RIB ECMP
- Path A
- Path B
- Path N
ECMP & Ordinal sequences
Detail per prefix: received per peer

Peer Sends

2nd-best B
2nd-best A

... 
nth-best

IN-RIB

best
2nd-best A

best
2nd-best A

2nd-best B

... 
nth-best

ECMP Path Pair, selected as 2nd-best path(s)
Comparison with draft-walton-*

- draft-walton-add-paths only adds Path ID
- this add-paths version is more inclusive and flexible
- suggest merger of add-paths drafts
Summary

• Incremental to current BGP standard
• Extra memory needed
  - Sensible implementations likely to minimize the impact of additional paths/attributes
• No direct impact on FIB usage (modulo things that use the additional paths)
• Next steps?
Thank you

- Presentation on IETF 72 site
- Draft updates forthcoming (including some presented here and sent to IDR list)
- Current status: working on implementation via quagga, nearly complete
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