IETF81
BGP Add-Paths Best Practices
draft-ietf-idr-add-paths-guidelines-01

J. Uttaro	uttaro@att.com
P. Francois	pierre.francois@uclouvain.be
V. Van den Schrieck	virginie.vandenschrieck@uclouvain.be
A. Simpson	adam.simpson@alcatel-lucent.com
R. Fragassi	roberto.fragassi@alcatel-lucent.com
P. Mohapatra	pmohapat@cisco.com

Status

- Since draft-uttaro-idr-add-paths-guidelines-03 (IETF79)…
  - WG adoption
  - Changed status to Standards Track
  - Restricted focus to IBGP (EBGP later…)
  - Added deployment section describing a method of introducing Add-Paths into an existing network (more on this in the next slides)
  - Minor editorial changes

Network Migration to Add-Paths

- Frequently-asked questions:
  - On which routers should I enable Add-Paths and in what sequence?
  - Do (router A) and (router B) need to run the same path selection mode, with the same parameters?
  - Does Add-Paths replace Best-external?
- New section in the draft will attempt to address these topics
  - draft-01 proposes an Add-Paths migration strategy for a network that may already use Best-external for path diversity

Example Migration Strategy

RR-a

RR-y

Best-External

Client-1

1. Enable Add-Paths between RRs.
Send=on (Add-N, N=2)/receive=on.

2. Enable Add-Paths receive-only capability on clients.

RR-b

RR-z

Client-2

Best-External

3. Enable Add-Paths send capability on clients (Add=N, N=2) and disable best-external.

RR Cluster 1

RR Cluster 2
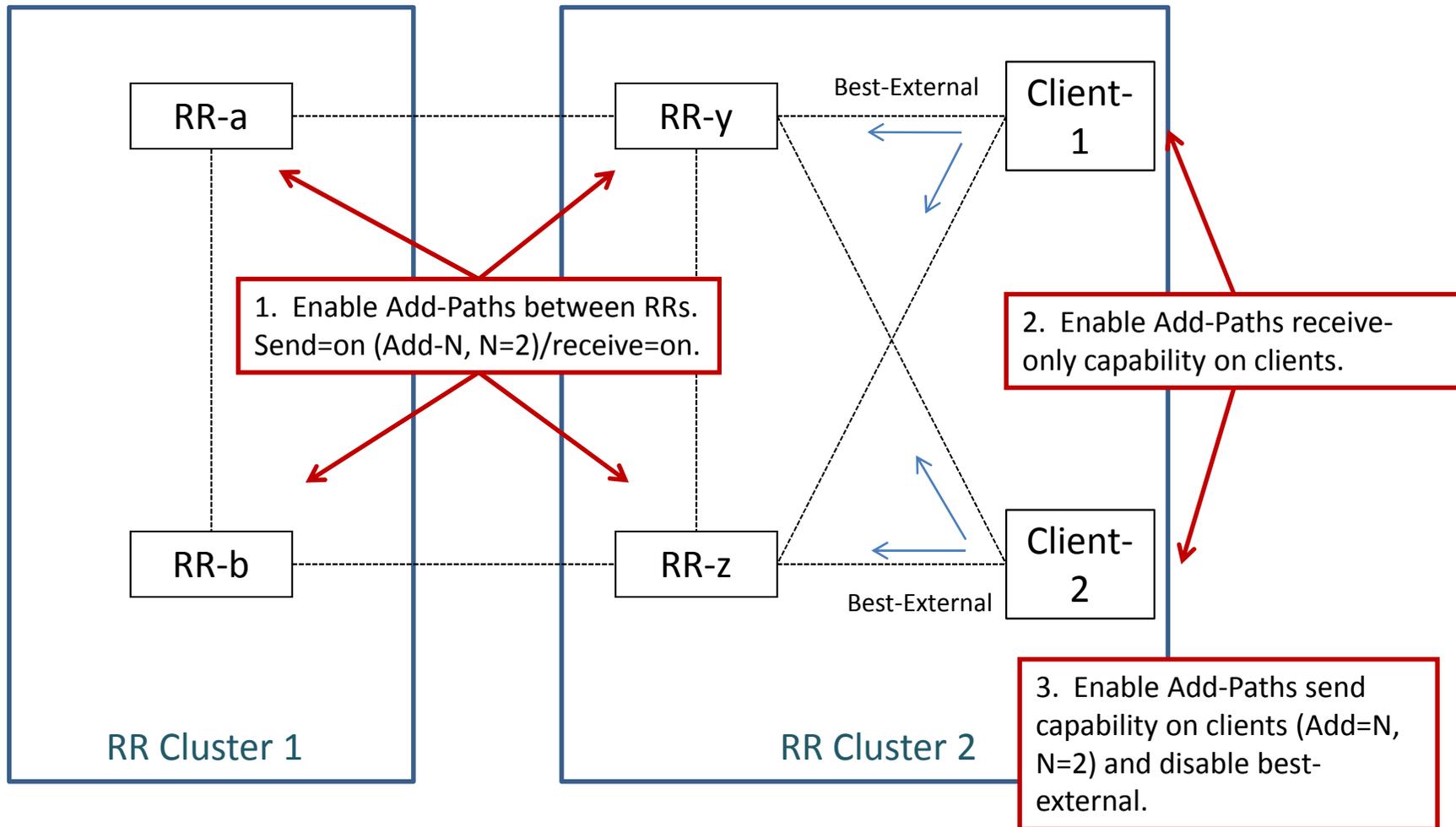
New Path Selection Modes?

- Too many path selection modes will complicate operations & interoperability

- But some newly considered modes may be useful…

  - Advertise N best external

    - When the best overall path is internal, remove from consideration all internal paths (e.g. from the same member-AS or cluster), and advertise the best N remaining paths

    - Use cases seem better addressed with Add-N

  - Advertise N best with community value

    - Select the N best routes with a particular community value

    - Community could imply 'uncongested', advertising POP ID, special content, or service/customer

    - May be a very useful OPTIONAL mode. More analysis needed

Limiting the Number of Rx Paths

- How can a BGP speaker limit the number of paths it receives from a peer?

- Inbound filtering can cause routing inconsistencies and loops

- Signaling N to the sending peer so it can use Add-N path selection mode would be ideal…

  - **Option A (most logical):** Modify the currently-defined ADD-PATH capability to include a request for max paths

  - Option B: Create a new capability (proposed in some drafts)

  - Option C: New BGP message type. Avoids capability re-renegotiation with Option A/B, but may allow too frequent changes to N which could overload the sending peer.