draft-malhotra-bess-evpn-irb-extended-mobility-01

N. Malhotra (Cisco), A. Sajassi (Cisco), A. Pattekar (Cisco)

A. Lingala (AT&T), J. Rabadan (Nokia), J. Drake (Juniper)

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Recap

Problem:

- Extend EVPN MAC mobility solution to IRB scenarios that allow MAC-IP bindings to change across host move:
    - **Scenario A:** *Fixed MAC <-> IP binding across move*
    - **Scenario B:** *Host IP moves to a different MAC binding*
    - **Scenario C:** *Host MAC moves to a different IP binding*

Solution:

- Sequence number is ONLY assigned and managed on local MAC route
- Local MAC-IP route simply uses corresponding MAC route's sequence number
- Some simple rules need to be followed to assign local MAC route sequence number on Local MAC-IP learning:
    - Rule 1 - MUST be higher than existing remote MAC route, as per RFC 7432.
    - Rule 2 - If IP is associated with a different remote MAC, MUST be higher than remote MAC sequence number

Key Updates

- Collaboration - contributions from additional co-authors
- Expanded scope to include IP mobility for a Routed EVPN Overlay (based on RT-5)
    - Section 8 extends RFC7432 MAC mobility to RT-5 / IP routes
- Duplicate Host Detection (section 9) re-written
    - to include Routed EVPN overlays
    - Addresses duplicate MAC and duplicate IP detection across various IRB mobility scenarios
    - Duplicate Host Recovery (section 9.4) expanded to specify behavior for each IRB mobility scenario
    - Duplicate Host Detection content reconciled with draft-ietf-bess-evpn-proxy-arp-nd-02
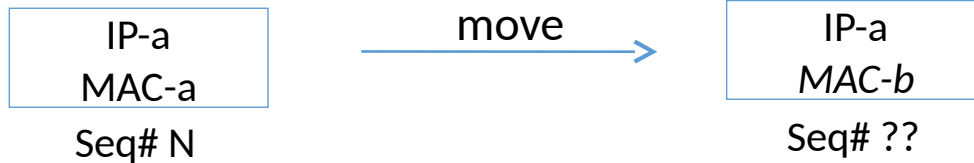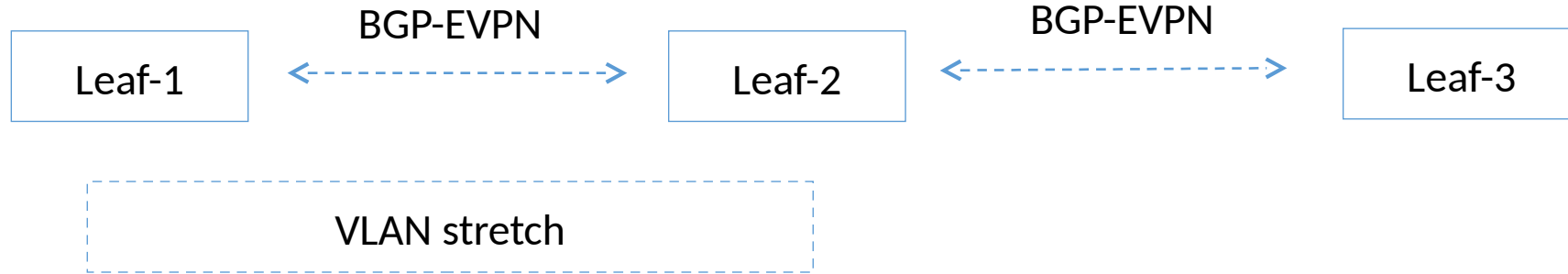
Extended Mobility Procedures for EVPN-IRB
(draft-malhotra-bess-evpn-irb-extended-mobility-01)

Thank You

Neeraj Malhotra, Ali Sajassi, Aparna Pattekar (Cisco)
Avinash Lingala (AT&T), J. Rabadan (Nokia), J. Drake (Juniper)

Backup

Problem - Allow MAC-IP binding to change across move in EVPN-IRB

BGP-EVPN

BGP-EVPN

| Leaf-1 | <----> | Leaf-2 | <----> | Leaf-3 |

VLAN stretch

Scenario B: *Host IP moves to a different MAC binding*

| IP-a
MAC-a | → move → | IP-a
MAC-b |

Seq# N · · · · · · · · · · · · · · · Seq# ??

- *How do we assign sequence number for new MAC-IP route [IP-a, MAC-b]?*
- *New sequence number 0 results in **IP-a** move not taking effect*
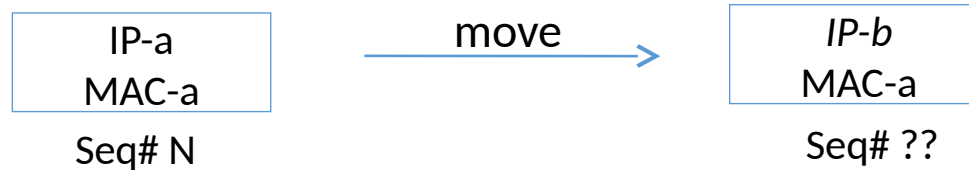
Scenario C: *Host MAC moves to a different IP binding*

| IP-a
MAC-a | → move → | *IP-b*
MAC-a |

Seq# N · · · · · · · · · · · · · · · Seq# ??

- *How do we assign sequence number for new MAC-IP route [IP-b, MAC-a]?*
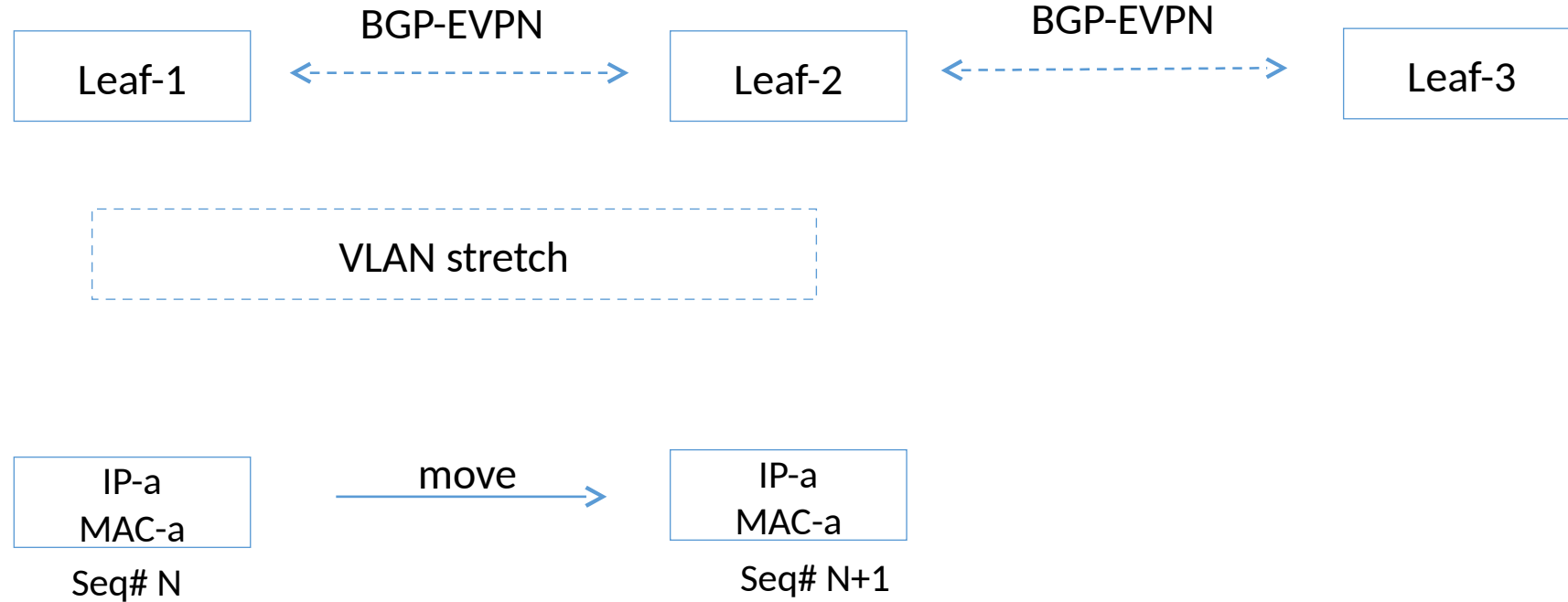- *New sequence number 0 results in **MAC-a** move not taking effect*

MAC-IP sequence number assignment procedure needs to be defined further

Scenario A: Fixed MAC – IP Binding

- *Rule 1 applies* – *Local MAC-a sequence number must be higher than existing Remote MAC-a sequence number "N"*
- *Local [IP-a, MAC-a] simply inherits Local MAC-x sequence number "N+1"*
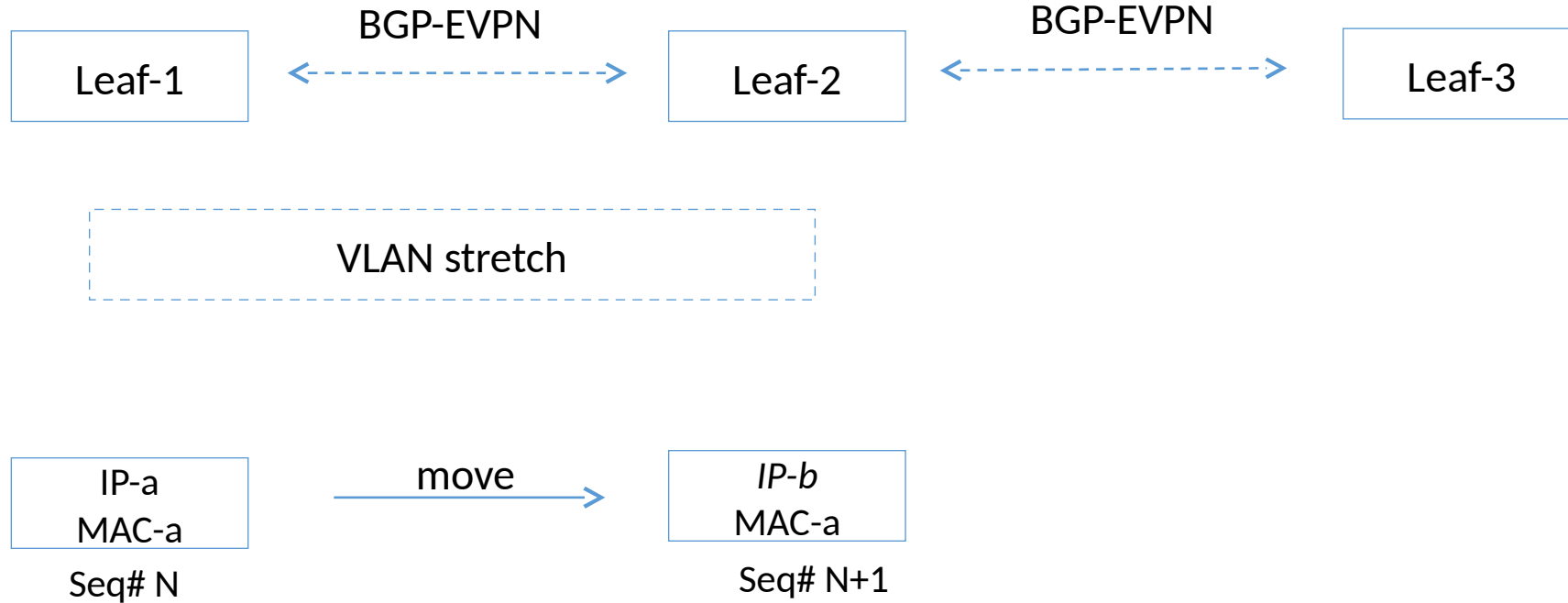- *[IP-a, MAC-a] can be probed out on Leaf-1*

Scenario B: Host IP moves to a different MAC binding
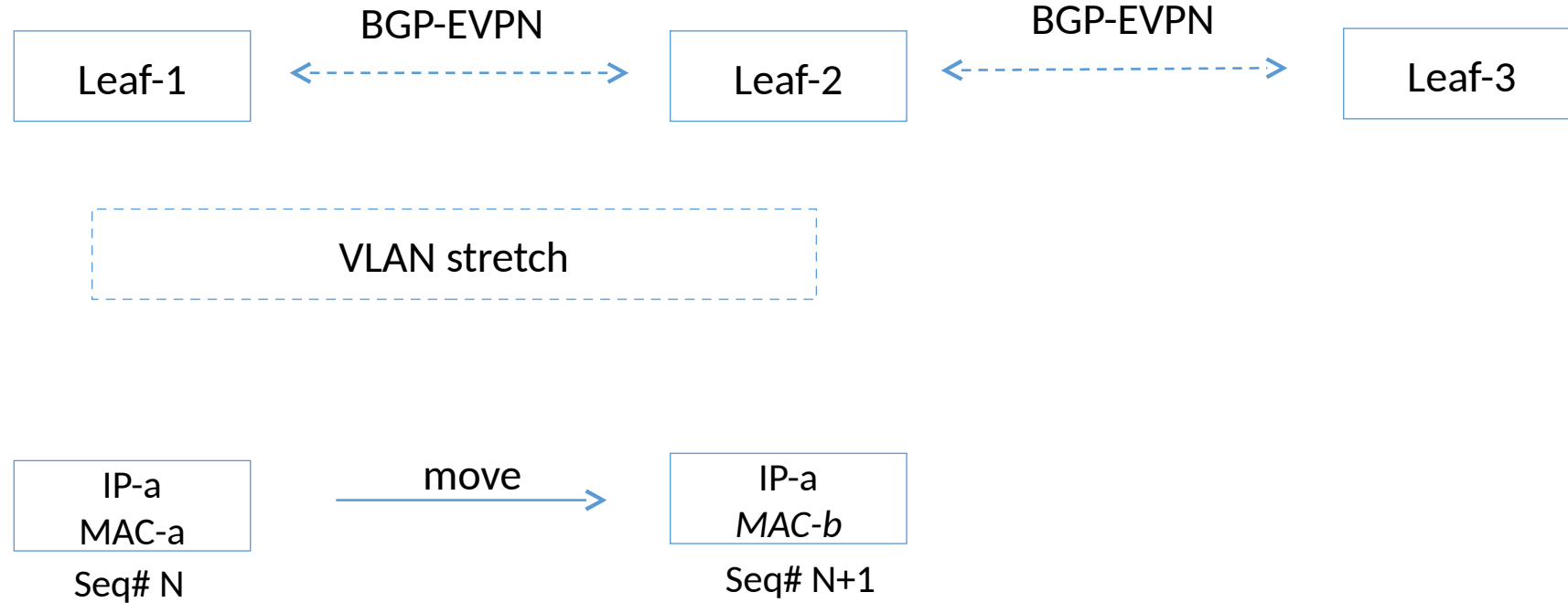
- *Rule 2 applies* – *if IP-a is associated with a different remote MAC-a, MAC-b sequence number MUST be higher than remote MAC-a sequence number*
- *Local [IP-a, MAC-b] simply inherits Local MAC-b sequence number "N+1"*
- *[IP-a, MAC-a] can be probed out on Leaf-1*

Scenario C: Host MAC moves to a different IP binding

Leaf-1	BGP-EVPN <--------------------->	Leaf-2	BGP-EVPN <--------------------->	Leaf-3

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        VLAN stretch
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IP-a MAC-a	move ---------------->	*IP-b* MAC-a
Seq# N		Seq# N+1

- **_Rule 1 applies_** – *Local MAC-x sequence number must be higher than existing Remote MAC-a sequence number "N"*
- *Local [IP-b, MAC-a] simply inherits Local MAC-a sequence number "N+1"*
- *[IP-a, MAC-a] can be probed out on Leaf-1*

Additional Topics Covered in draft-malhotra-bess-evpn-irb-extended-mobility-00

- MAC Sharing – Multiple IPs with the same MAC binding
- Duplicate IP detection – duplicate IPs provisioned with different MACs
- Sequence number synchronization across redundant PEs