Softwire Mesh Multicast

draft-xu-softwire-mesh-multicast-01

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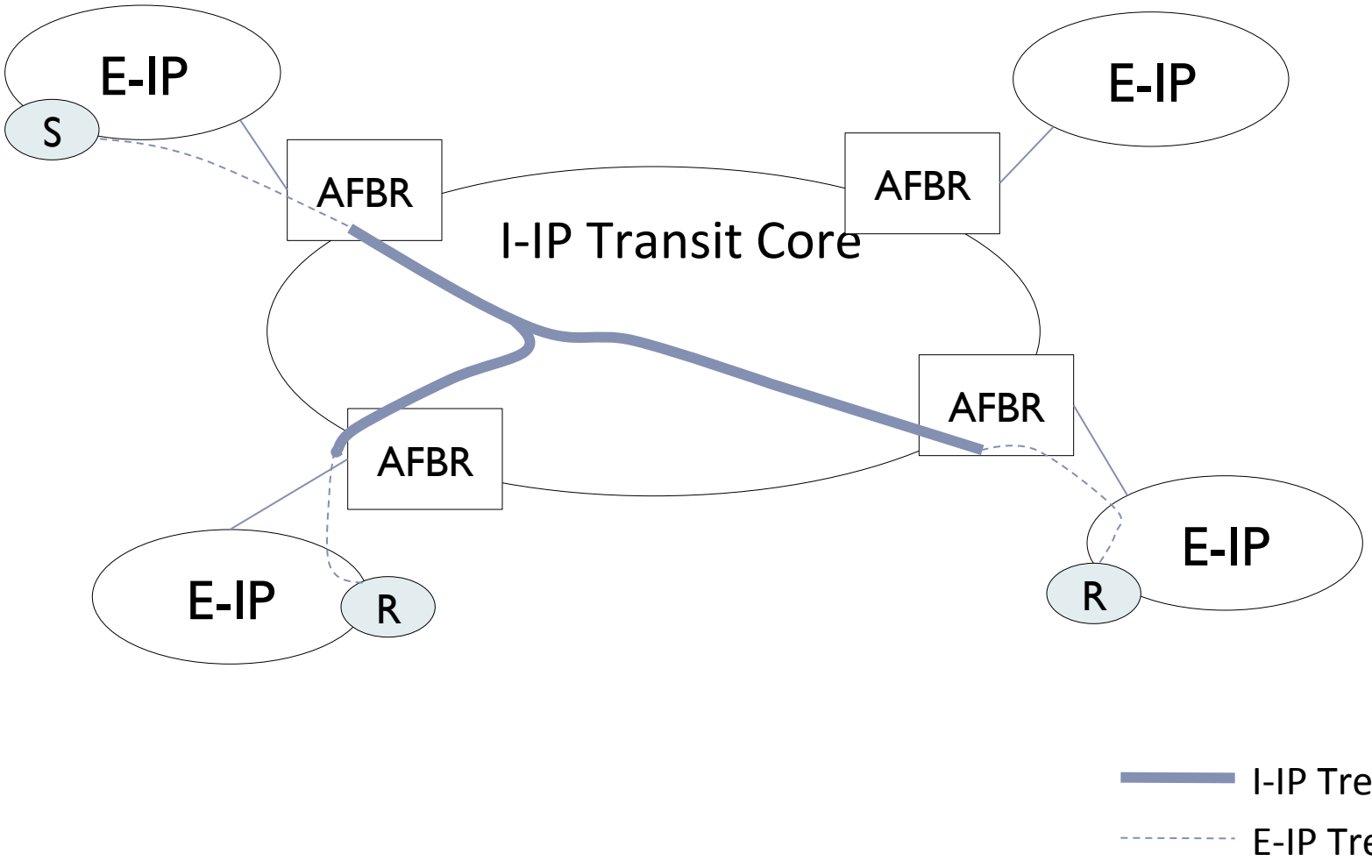
Background

- Softwires Charter and RFC4925 state multicast is a requirement
- Softwire Mesh Unicast methods have been defined. Where is the Multicast?
- MVPN-like schemes can achieve "many-to-one" mapping
- "One-to-one" mapping (Internet-style multicast) is needed

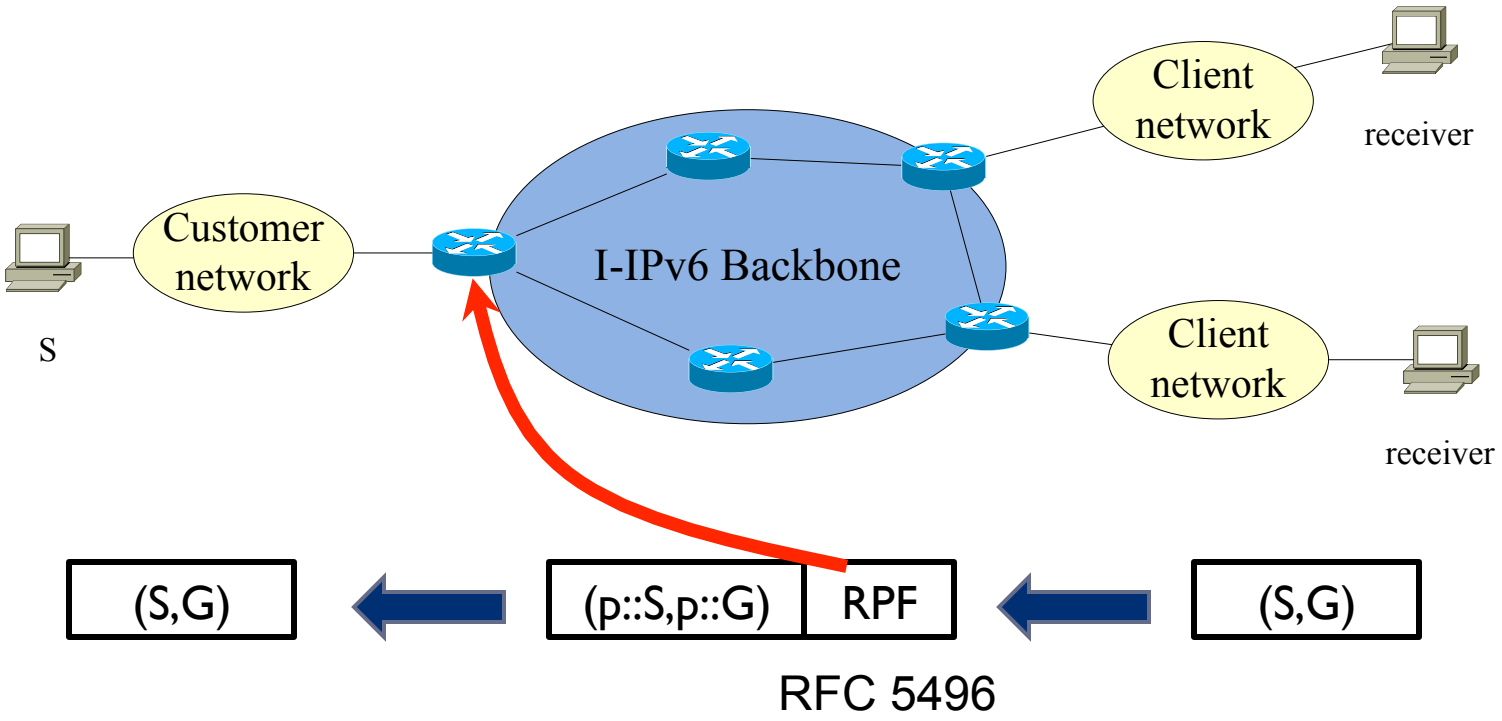
Update from last IETF

- draft-xu-softwire-mesh-multicast-00
  - Possible solutions discussion for IPv6-over-IPv4
    - Limit IPv6 address space
    - Approximate “one-to-one”
    - Inter-AFBR signaling
- draft-xu-softwire-mesh-multicast-01
  - Give two solutions for IPv6-over-IPv4
    - Limit IPv6 address space
    - Inter-AFBR signaling

Mesh multicast framework



IPv4-over-IPv6



Group address mapping

The next 10 octets are assigned by ISP

Actions performed by AFBR

- Receiving a PIM message:

- Receiving a PIM message:
  - Downstream AFBR

    If next-hop is IPv6: Perform PIM message conversion

- Else: Just forwarding
  - Upstream AFBR
  - If the prefix is ISP assigned: Translate it back

IPv6-over-IPv4 - Difficulty

Because of larger space of IPv6 address

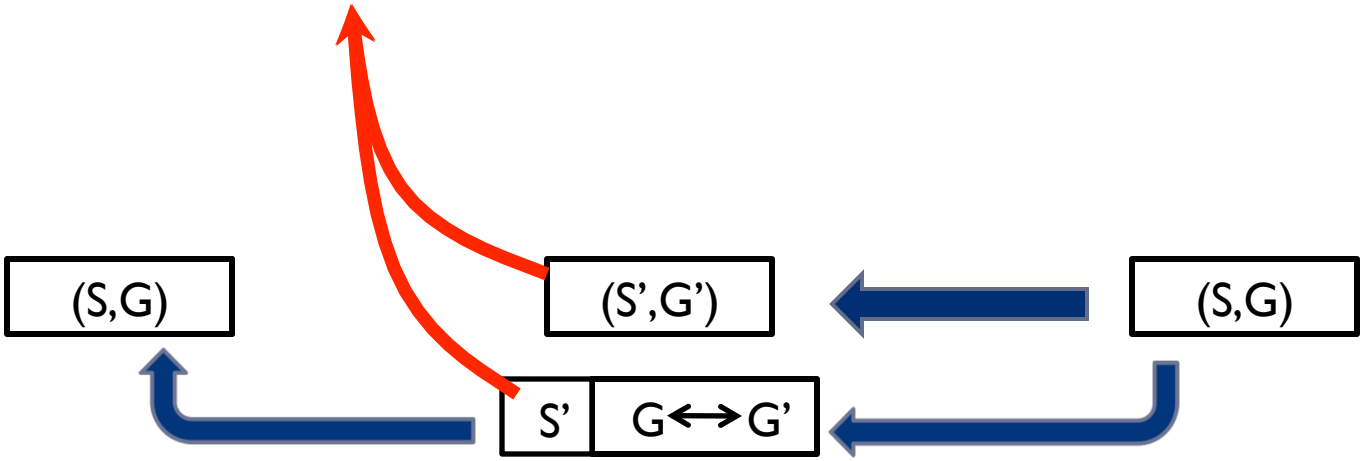
- I-IP IPv4 multicast address limitations: Not all IPv4 multicast addresses are available

- Hard to map without collision

Solution 1: Limit IPv6 address space

- Pick up a portion of IPv6 addresses
  -
- "IPv4-Embedded IPv6 Multicast Address Format" (draft-boucadair-behave-64-multicast-address-format-01) provides a guideline
- The lower bits are treated as Flow_ID

Solution 2: Inter-AFBR signaling



Upstream AFBR is given a signal for translating

Summary

- Only need changes on AFBR
- Reduce redundant traffic compared to MVPN-like schemes
- IPv4-over-IPv6 is mature, IPv6-over-IPv4 needs more details