Experiences with LISP Multicast deployments

(draft-vgovindan-lisp-multicast-deploy)

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Revision History

- Comments received from Dino, Thanks
- Terminology correction
  - Ingress Replication -> Headend Replication
  - Uberlay related
- Excluded Signal free from scope
- Added references to PIM Light (RFC9739)
- Clarified about co-existence of Unicast and Multicast underlays
- Added separate section for LISP Uberlay deployments and referenced the ID.moreno-lisp-uberlay

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Scope and Industry segments

- This document covers the following aspects:
  - Deployments based on the procedures of [RFC6831] and [draft-ietf-lisp-rfc6831bis]
  - When using a multicast-based underlay, LISP sites can provide support to forward
    - Layer-2 Broadcast, Unknown Unicast and Multicast packets.
    - Layer-3 routed multicast services (ASM, SSM and BiDir) are provided by such LISP sites.
  - Both IPv4 and IPv6 overlays are covered by this document.
  - Similarly, both IPv4 and IPv6 underlays are covered.

Deployments covering

- Educational Institutions (e.g. Universities with multiple campuses, school districts)
- Public Utilities like Airports, Stadiums and Ports
- Hospitals and Healthcare providers
- Enterprises including Financial institutions spread across continents and large geographical regions
- Technology vendors and factories
- Events like Expos, Tradeshows, Sporting events

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Not in Scope

- This document does not cover the following aspects:
  - L3 routed Unicast forwarding or L2 forwarding between LISP sites.
  - This document does not address services implemented using underlays such as BIER.
  - Procedures and considerations required for migrating non-LISP based networks to LISP based networks are not covered here.
  - Extranet Multicast (Route Leaking) is not covered in this document

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Advantages and Cost of using "PIM-over-PIM"

- Encapsulating the PIM protocol packet into a Unicast LISP packet and unicast it towards the xTR that is the Upstream Multicast NH.
- PIM Join Attributes for LISP is very useful [RFC8059].
- PIM neighborship not fully established as PIM hellos were considered chatty.
- A simple but powerful optimization: use SSM in the underlay for supporting overlay Layer-3 multicast routing.
- PIM is well understood

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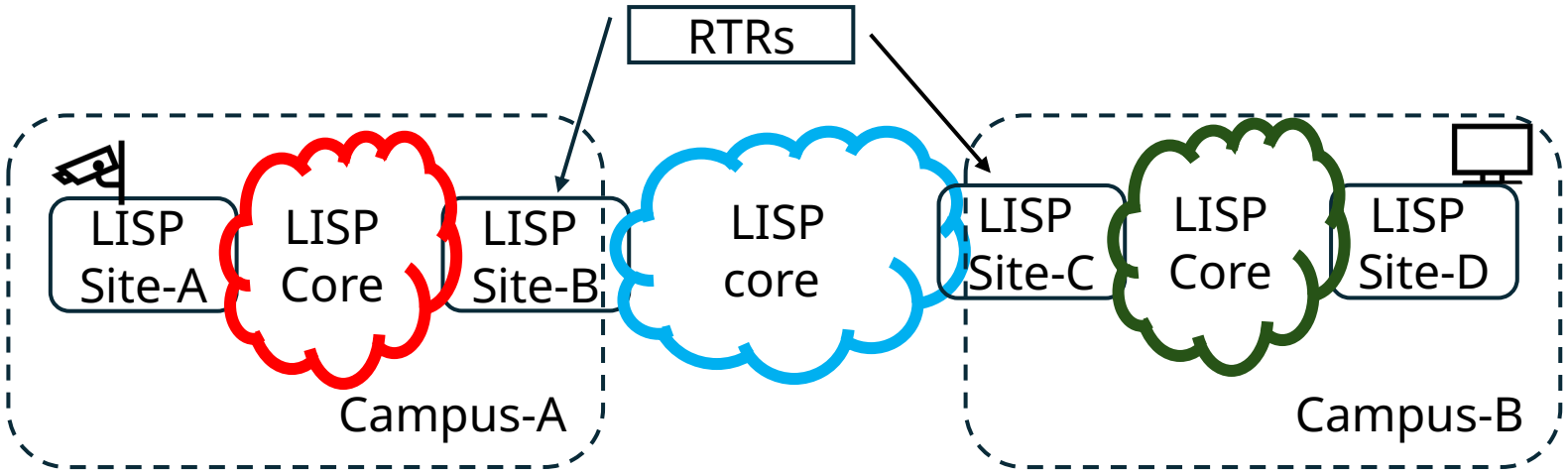
Uberlay deployments

- Multiple LISP campuses connected with IP underlay using a LISP overlay



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New references in -01

15.2. Informative References

[I-D.ietf-lisp-group-mapping]
Govindan, V. P., Farinacci, D., Kuppusami, A., and S. Venaas, "LISP Multicast Overlay Group to Underlay RLOC Mappings", Work in Progress, Internet-Draft, draft-ietf-lisp-group-mapping-01, 11 November 2024, <https://datatracker.ietf.org/doc/html/draft-ietf-lisp-group-mapping-01>.

[I-D.ietf-lisp-vpn]
Moreno, V. and D. Farinacci, "LISP Virtual Private Networks (VPNs)", Work in Progress, Internet-Draft, draft-ietf-lisp-vpn-12, 19 September 2023, <https://datatracker.ietf.org/doc/html/draft-ietf-lisp-vpn-12>.

[I-D.moreno-lisp-uberlay]
Moreno, V., Farinacci, D., Rodriguez-Natal, A., Portoles-Comeras, M., Maino, F., and S. Hooda, "Uberlay Interconnection of Multiple LISP overlays", Work in Progress, Internet-Draft, draft-moreno-lisp-uberlay-06, 28 September 2022, <https://datatracker.ietf.org/doc/html/draft-moreno-lisp-uberlay-06>.

[RFC9739] Bidgoli, H., Ed., Venaas, S., Mishra, M., Zhang, Z., and M. McBride, "Protocol Independent Multicast Light (PIM Light)", RFC 9739, DOI 10.17487/RFC9739, March 2025, <https://www.rfc-editor.org/info/rfc9739>.

15.2. Informative References

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Next Steps

- Welcome more comments
- WG adoption?

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