LISP Multicast Deployments

(Observations related to draft-vgovindan-lisp-multicast-deploy)

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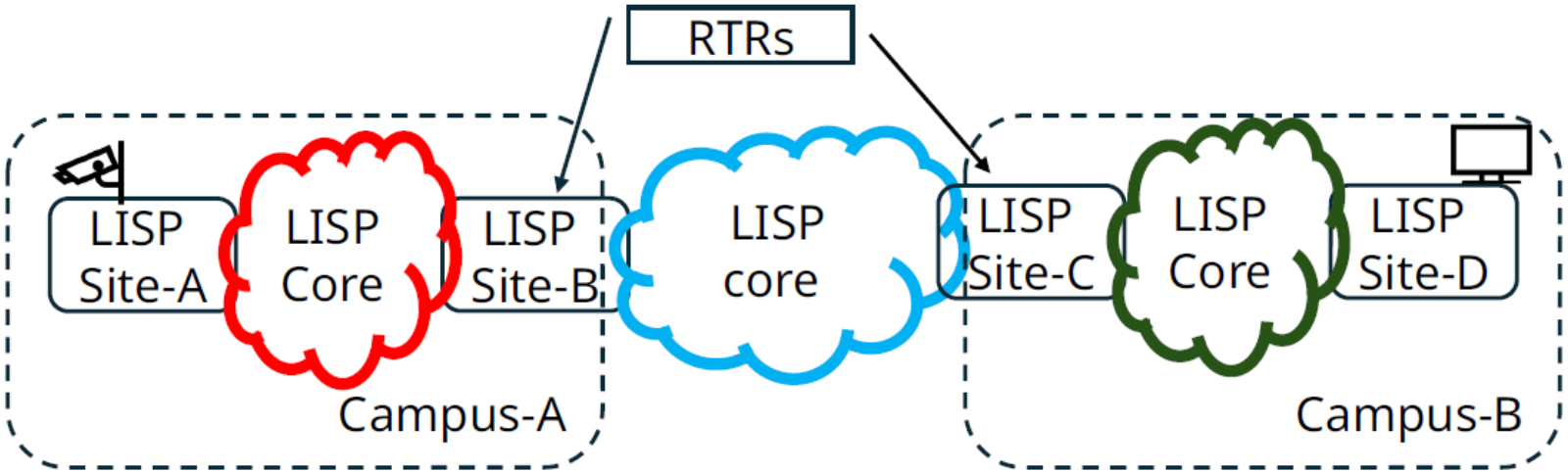
Deployment Context

- Multiple LISP campuses connected with IP underlay using a LISP overlay
- Both L2 BUM forwarding and L3 routed multicast (ASM + SSM) in active use
- Native multicast underlay (no Head-End Replication)



What Worked Well

- PIM encapsulated in a unicast LISP packet toward the Upstream Multicast Hop (simple, and reliable in practice)
- PIM Join Attributes (an effective way for the receiver ETR to signal underlay transport info to the ITR)
- Collapsing the underlay to SSM-only for overlay L3 multicast (reduced control-plane complexity)
- Static RP + Anycast RP + MSDP (a stable, well-understood combination over years of operation)
- Pushing underlay and overlay configuration through orchestration tool (reduce human errors)

Two Design Choices

- n = 1 underlay group mapping for BUM Traffic
  - Many LISP L2 instances mapped to a single underlay multicast group (m >> n, n = 1)
  - simpler to run, less traffic separation
- Overlay ↔ underlay group mapping across sites
  - Required to prevent multicast loops when traffic crosses LISP sites
  - The mapping must stay consistent across every device in the LISP domain

Operational Complexity & Issue

- Troubleshooting spans two layers
  - overlay and underlay multicast state
  - dramatically raising the bar, since only a handful of engineers can reason about both at once
  - this also makes the deployment heavily dependent on automation
- In push-to-talk scenarios that allocate a new multicast group per call, the join sometimes hadn‘t converged before the source started sending, receivers missed the call entirely