



IS-IS V6/MT Deployment Considerations

draft-chunduri-lsr-isis-preferred-path-routing-01

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Background

- Few folks are seeking “IPv6 only” IS-IS deployments
- This is based on talks with multiple operational folks in
 - Mobile backhaul
 - L3 DC undelays

What's the goal & What can be done

- Goal of this document is to lay out the nuances around IS-IS IPv6
- Provide various options
 - For transitioning from IPv4 to IPv6
 - For IPv6 only folks
- Seek inputs from the community if anything more can be done to simplify things here (Sure, nothing can be done w.r.t terminology now)

IPv6 in IS-IS

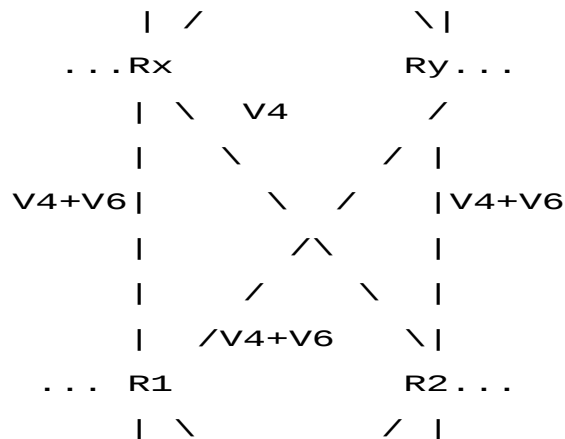
- IPv6 first introduced in IS-IS through RFC 5308
 - New Reachability TLV xx TLV236
 - It works in Single Topology Mode

- Later Multi-Topology IS-IS xx RFC 5120
 - Introduces Topology Specific Adjacencies (222), MT aware reachability TLVs (235, 237)
 - Topology specific Decision process
 - ...and defined Multi-Topology ID #2 for "Reserved for IPv6 routing topology"
 - Safe alternative to deploy IPv6 on legacy network



Network Congruency

- IPv6 with RFC 5308 is yes, simple and straight forward
- But network congruency **MUST** be maintained, I.e.,
 - Network Can be only IPv6 (all links and nodes **MUST** support) or
 - “All” Links and Nodes **MUST** support both IPv4 and IPv6
- Else one will have routing black holes like below



- Assume all links metrics are 1; Direct link from Rx to R2 is Shortest Path from Rx to R2
- V6 Traffic block hole from R2 to Rx is even though alternate path available (Rx, R1, Ry, R2)
- This gets fixed
 - Either by enabling V6 on that link (making network congruent)
 - Use RFC 5120, MT-ID #2



Topology & Address Family ?

- It's complicated ..
- Terminology is fully intertwined here
- MT ID #2 is called "Reserved for IPv6 routing topology"
- Yes, one can define other MT's for IPv6 other than above.
- Tiring conversation !!
 - Want IPv6 only \cong Use MT ID #2
 - I don't want Multi-Topology, just want IPv6 IS-IS \cong yes, use MT-ID #2
- One of the goals of this document is to ease this conversation.



Next Steps

- Can we do anything to change here, thoughts??
- Folks suggested to present in V6ops (may be next IETF)
- Comments/Feedback from operators?

Thank you!