IS-IS over IPv6

draft-franke-isis-over-ipv6-00

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Motivation

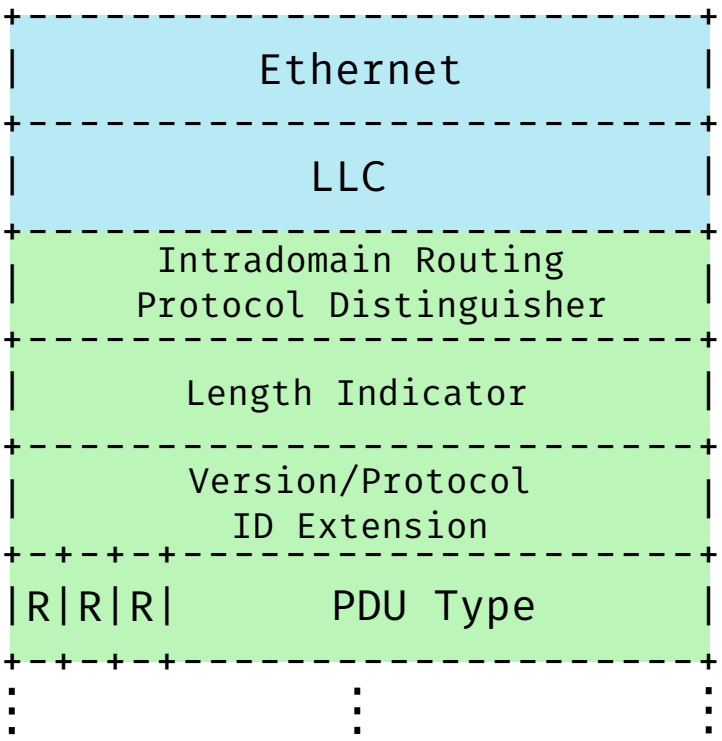
- Define mode of operation not assuming Ethernet/other specific link-layer
- Allow to run IS-IS on any link supporting IPv6

Structure

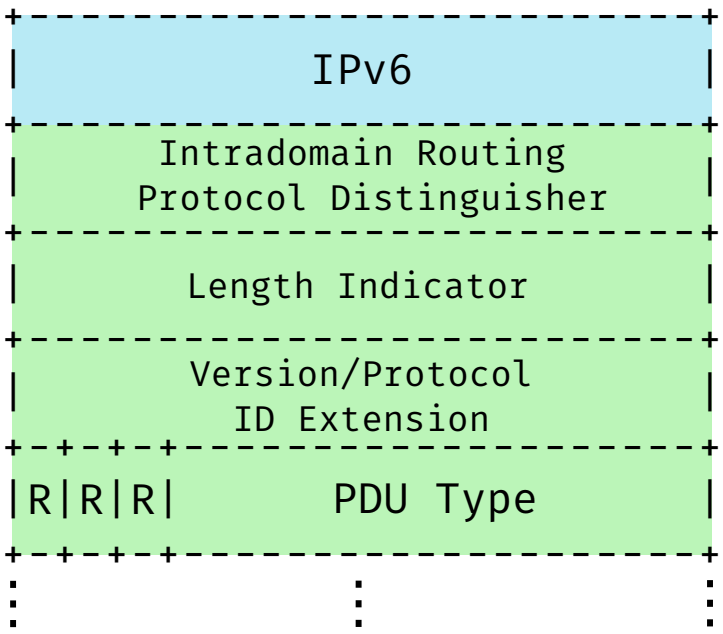
- Keep existing mechanisms and PDU encoding as-is
- Specify new transport encapsulation
- Specify how new transport should be operated
- Clarify consequences of using IS-IS over IPv6

Packet Format

With CLNP:



With IS-IS over IPv6:



Addressing

Packet transmission/reception

- Routers use IPv6 link-local address as source
- Link-local multicast is used as destination
  - Multicast group for `ALL-L1-IS`
  - Multicast group for `ALL-L2-IS`

SNPA

- Use link-local source IP in DIS election

Considerations

- Payload size with same MTU is smaller with IS-IS over IPv6
  - LSP fragment size needs to be adjusted
  - Possibly recommend 1240 bytes
- Routers MUST make sure to validate that received packets are link-local

Status

Running Code

- There are two interoperable implementations

Received Feedback

- Forbid IPv6 fragmentation
  - Pad IIHs to max MTU
  - Only accept packets which aren't fragmented
  - Possibly forbid fragmentation only for IIHs?
- Use UDP instead
  - Allows running multiple IS-IS implementations concurrently on the same network