Network Programming extension: SRv6 uSID instruction
draft-filsfils-spring-net-pgm-extension-srv6-usid-01

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The SRv6 uSID concept

• New SRv6 Network Programming SID behavior (like End, End.X or End.DT4)
  • Seamlessly combined with any other SID behavior
  • Fully integrated with Network Programming and the SRH
  • Incrementally deployable in any SRv6 network

• Enables SRv6 scaling to massive network (e.g., millions of nodes and hundreds of subdomains)

• ...with optimized MTU efficiency
uN SID behavior

- Another variant of the endpoint behavior.
- 80-bit argument that contains the next uSIDs in the uSID carrier.
- Upon receiving a packet whose IPv6 DA is a local uN SID, N does:

  1. IF DA[48..63] != 0 ;; Ref1
  2. Copy DA[48..127] into DA[32..111]
  3. Set DA[112..127] to 0x0000
  4. Forward the packet to the new DA
  5. ELSE
  6. Execute the End pseudocode ;; Ref2

- DA[X..Y] refers to the bits from position X to Y in the received IPv6 DA
- End pseudocode is defined in Section 4.1 of draft-ietf-spring-srv6-network-programming
Benefits (1)

• Just another SRv6 endpoint behavior
  • A new instruction of SRv6 Network Programming
  • SRH-compliant
  • No new IPv6 extension required
• Efficient MTU usage
• Scalable SR policies
  • With 18 source routing waypoints in a 40-byte SRH!
• Any IPv6 block available to the operator can be used
Benefits (2)

• Hardware friendly
  • No extra lookup
  • Line rate packet processing on 2013-designed merchant silicon

• Control plane friendly
  • No mapping table
  • No routing protocol extension required (simple IPv6 routes)
Thanks!

• Questions?