

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?