

IETF Hackathon

IPv6 IOAM

IETF 109
November 9-13, 2020
Online



Hackathon Plan

- Improve kernel implementation
- Update VPP implementation
 - draft-ietf-ippm-ioam-ipv6-options
 - draft-ietf-ippm-ioam-data
- Kernel/VPP interoperability testing
- Implement draft-herbert-6man-eh-attrib to allow in-flight insertion/removal of EHs

What got done

- No interop testing yet
- Implementations are going well
- The implementation of draft-herbert-6man-eh-attrib looks promising

What got done

7 0.120859	db01::1	db02::2
8 0.120891	db02::2	db01::1
9 0.169324	db01::1	db02::2
10 0.169356	db02::2	db01::1
11 0.212937	db01::1	db02::2
12 0.212968	db02::2	db01::1

13 0.124840	db01::1	db02::2
14 0.124857	db02::2	db01::1
15 0.165136	db01::1	db02::2
16 0.165153	db02::2	db01::1
17 0.224887	db01::1	db02::2
18 0.224903	db02::2	db01::1

```

Next Header: IPv6 Hop-by-Hop Option (0)
Hop Limit: 64
Source: db01::1
Destination: db02::2
▼ IPv6 Hop-by-Hop Option
  Next Header: UDP (17)
  Length: 4
  [Length: 40 bytes]
  ▶ Unknown IPv6 Option (31) Attribution Option 1
  ▶ Unknown IPv6 Option (49) IOAM Option REMOVE
  ▶ PadN
  ▶ Unknown IPv6 Option (31) Attribution Option 2
  ▶ Unknown IPv6 Option (49) IOAM Option
  ▶ Unknown IPv6 Option (48) Original Option
User Datagram Protocol, Src Port: 53, Dst Port: 53

```

```

0000 2e fe 7c b0 c7 73 2e fe 7c b0 c7 72 86 dd 60 00
0010 00 00 00 30 00 40 db 01 00 00 00 00 00 00 00 00
0020 00 00 00 00 00 01 db 02 00 00 00 00 00 00 00 00
0030 00 00 00 00 00 02 11 04 1f 04 01 00 00 00 31 06
0040 de ad be ef 12 34 01 00 1f 04 01 00 00 00 31 06
0050 de ad be ef 12 34 30 06 aa bb cc dd ee ff 00 35
0060 00 35 00 08 49 6d

```

```

▶ .... 0000 0000 .... = Traf
.... 0000 0000 0000 0000 0000 = Flow
Payload Length: 32
Next Header: IPv6 Hop-by-Hop Option (0)
Hop Limit: 63
Source: db01::1
Destination: db02::2
▼ IPv6 Hop-by-Hop Option
  Next Header: UDP (17)
  Length: 2
  [Length: 24 bytes]
  ▶ Unknown IPv6 Option (31) Attribution Option 2
  ▶ Unknown IPv6 Option (49) IOAM Option
  ▶ Unknown IPv6 Option (48) Original Option
User Datagram Protocol, Src Port: 53, Dst Port:

```

```

0000 2e fe 7c b0 c7 75 2e fe 7c b0 c7 74 86 dd 60 00
0010 00 00 00 20 00 3f db 01 00 00 00 00 00 00 00 00
0020 00 00 00 00 00 01 db 02 00 00 00 00 00 00 00 00
0030 00 00 00 00 00 02 11 02 1f 04 01 00 00 00 31 06
0040 de ad be ef 12 34 30 06 aa bb cc dd ee ff 00 35
0050 00 35 00 08 49 6d

```

What we learned

- The IPv6 encapsulation solution is RFC8200 compliant
- BUT it brings several problems:
 - Destination address?
 - Anonymous decap → security?
 - Same path?
- Will make a few suggestions to IPPM for draft-ietf-ippm-ioam-ipv6-options
- Draft-herbert-6man-eh-attrib could be a solution, push for WG adoption (6man)

Wrap Up

Team members:

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First timers @ IETF/Hackathon:

Mauricio Solis

Jérôme Bayaux

<https://github.com/iurmanj/ipv6-attribution-option>