LSP Ping/Traceroute for Enabled In-situ OAM Capabilities

draft-xiao-mpls-lsp-ping-ioam-conf-state-01

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Recap of this draft

• This draft defines LSP Ping extensions to achieve IOAM Capabilities Discovery in MPLS Networks
  – A companion document of RFC 9359
  – MPLS Node IOAM Information Query mechanism
  – For this Query mechanism, six IOAM Capabilities sub-TLVs are defined in this draft:
    • IOAM Pre-allocated Tracing Capabilities sub-TLV
    • IOAM Incremental Tracing Capabilities sub-TLV
    • IOAM Proof of Transit Capabilities sub-TLV
    • IOAM Edge-to-Edge Capabilities sub-TLV
    • IOAM DEX Capabilities sub-TLV
    • IOAM End-of-Domain sub-TLV
Why not IGP?

• This draft was presented at IETF 115, and there was a significant question (as the title of this slide) raised by Tarek Saad

  – Basically IGP is an alternative for IOAM Capabilities Discovery, however it’s not employed by RFC9359

  – RFC9359 mentions IGP solution too, it provides some reasons why IGP solution is not preferred (pls see the next page for details)
Why not IGP? (Cont.1)

• In section 1 of RFC9359 it says:
  – “When IGP is used in this scenario, the IGP and IOAM-Domains don't always have the same coverage. For example, when the IOAM encapsulating node or the IOAM decapsulating node is a host, the availability can be an issue. Furthermore, it might be too challenging to reflect enabled IOAM capabilities at the IOAM transit and IOAM decapsulating node if these are controlled by a local policy depending on the identity of the IOAM encapsulating node.”

• Except for the above reasons, the IGP solution is:
  – Requiring Multi-Instance IGP support of the IOAM devices (pls refer to draft-ietf-lsr-ospf-transport-instance)
Why not IGP? (Cont.2)

- As demonstrated in draft-ietf-mpls-spring-inter-domain-oam:

```
+-------------------+
| Controller/PMS   |
+-------------------+

|----AS1----|     |-----AS2-----|     |-----AS3----|

ASBR2----ASBR3
/      \      /  \
/       /      /   \
PE1----P1----P2  P3----P4----PE4  P5----P6----PE5
\      /      /   \
\    /      /     \
ASBR1----ASBR4 ASBR5----ASBR7 ASBR6----ASBR8
```

Figure 1: Inter-AS Segment Routing topology

- When an LSP crosses over multiple ASes
  - the IGP and IOAM-Domains don't always have the same coverage
Why not IGP? (Cont.3)

- RFC5654 (Requirements of an MPLS Transport Profile) says:

  “2.3. Data Plane Requirements
  36 It MUST be possible to operate and configure the MPLS-TP data plane without any IP forwarding capability in the MPLS-TP data plane. That is, the data plane only operates on the MPLS label.”

  “2.4. Control Plane Requirements
  This section defines the requirements that apply to an MPLS-TP control plane. Note that it MUST be possible to operate an MPLS-TP network without using a control plane.”

- When the IOAM is deployed in an MPLS-TP network
  – the IGP is possible to be unavailable
Next steps

• Ask for more reviews and comments
• Revise this draft to improve it
• Request for WG adoption

Thank you!