

# IOAM Deployment

draft-brockners-opsawg-ioam-deployment-00

Frank Brockners, Shwetha Bhandari, Daniel Bernier

OPSAWG, November 20<sup>th</sup>, 2019

# IOAM Specifications

- **In existence so far:** Specifications which detail aspects of IOAM: Data-Fields, Configuration/YANG, Export, Encapsulations
- **Missing so far:** Document that addresses IOAM deployment, tying all the different specifications together.

## IOAM Data Fields

- <https://tools.ietf.org/html/draft-ietf-ippm-ioam-data-08>
- <https://tools.ietf.org/html/draft-ietf-ippm-ioam-flags-00>
- <https://tools.ietf.org/html/draft-ioamteam-ippm-ioam-direct-export-00>

## YANG/Operations

- <https://tools.ietf.org/html/draft-zhou-ippm-ioam-yang-04>
- <https://tools.ietf.org/html/draft-mizrahi-ippm-ioam-profile-00>

## Data Export

- <https://tools.ietf.org/html/draft-spiegel-ippm-ioam-rawexport-02>

## IOAM Encapsulations

- **IPv6**
  - <https://tools.ietf.org/html/draft-ietf-ippm-ioam-ipv6-options-00>
  - <https://tools.ietf.org/html/draft-ioametal-ippm-6man-ioam-ipv6-deployment-01>

## IOAM Encapsulations (contd.)

- **Protocols which use Ethertype for next protocol (e.gGRE)**
  - <https://tools.ietf.org/html/draft-weis-ippm-ioam-eth-02>
- **NSH**
  - <https://tools.ietf.org/html/draft-ietf-sfc-ioam-nsh-02>
- **Geneve**
  - <https://tools.ietf.org/html/draft-brockners-ippm-ioam-geneve-03>
- **Segment Routing for IPv6**
  - <https://tools.ietf.org/html/draft-gandhi-spring-ioam-sr-mpls-02>
  - <https://tools.ietf.org/html/draft-ali-spring-ioam-srv6-01>
- **VXLAN**
  - <https://tools.ietf.org/html/draft-brockners-ippm-ioam-vxlan-gpe-02>

# Filling the gap: draft-brockners-opsawg-ioam-deployment

Document focuses on IOAM deployment, detailing how the different components relate to each other; as such not a new framework but BCP.

## **IOAM Deployment: Domains And Nodes**

### **Types of IOAM**

- Per-hop Tracing IOAM
- Proof of Transit IOAM
- Edge to Edge IOAM
- Direct Export IOAM

### **IOAM Manageability**

### **Security Considerations**

### **IOAM Data Export**

## **IOAM Deployment Considerations**

- IOAM Namespaces
- IOAM Layering
- IOAM Trace Option Types
- Traffic-sets That IOAM Is Applied To
- IOAM Loopback Mode
- IOAM Active Mode
- Brown Field Deployments:  
IOAM Unaware Nodes

## **IOAM Encapsulations**

- IPv6
- NSH
- GRE
- Geneve
- Segment Routing
- Segment Routing for IPv6
- VXLAN-GPE

# Next Steps

- Good feedback received (thanks Ramesh Sivakolundu, Barak Gafni) from mailing list; to be addressed in -01
  - Expand on "Endpoint active measurement" and "IOAM active measurement using probe packets"
  - Expand IOAM Layering: What does using IOAM in a specific layer entail?
  - IOAM implementation in HW/SW: Consider expanding section 7.3.
  - Discussion of GRE encapsulation options.
- Consider WG adoption?

Thank you