

# **BGP Flow Specification Extensions to Enable In-situ Flow Information Telemetry (IFIT)**

draft-liu-idr-flowspec-ifit-04

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# Background

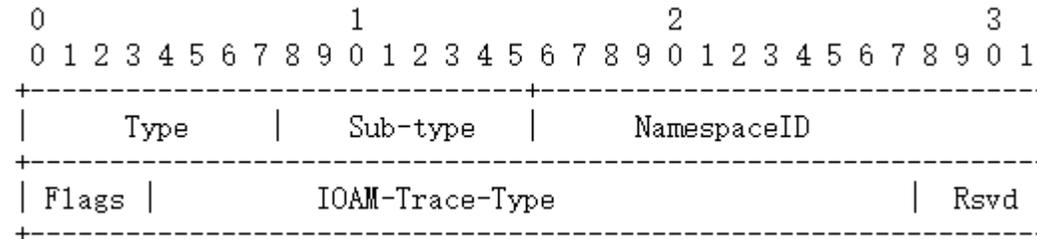
- A family of on-path telemetry techniques emerge.
  - In-situ OAM (IOAM) [I-D.ietf-ippm-ioam-data], Postcard-Based Telemetry (PBT) [I-D.song-ippm-postcard-based-telemetry], IOAM Direct Export (DEX) [I-D.ioamteam-ippm-ioam-direct-export], Enhanced Alternate Marking (EAM) [I-D.zhou-ippm-enhanced-alternate-marking].
- In current deployments, there have been relatively static methods, ACL-like CLI and NETCONF with YANG model to configure the specific flows or packets to be monitored on the relevant IFIT-capable nodes.
- However, with the evolution of Intent-based and autonomous network operation, the future data plane telemetry will support an on-demand and reflection-loop fashion [I-D.song-opsawg-ifit-framework].
- So that flexibility and extensibility of telemetry data acquisition must be considered.
  - Need the automation to enable different IFIT Option Types.
  - It's useful for application-aware network operations to enable desired IFIT Option Types to the target flows dynamically.
- [I-D.ietf-idr-rfc5575bis] defines the Dissemination of Flow Specification Rules and [I-D.ietf-idr-flow-spec-v6] extends BGP Flowspec to make it also usable and applicable to for IPv6 data packets.
  - Provide a protocol extension for propagation of traffic flow information for the purpose of rate limiting, filtering, shaping, classifying or redirecting.
  - BGP Extended Community: to be used to propagate traffic filtering actions along with the flow specification NLRI.

# IFIT Action Specific Extended Community

- In this document, BGP Flowspec mechanism is preferred in the reflection-loop network telemetry framework.
  - BGP Flowspec mechanism support the automatic distribution of traffic policies.
  - IFIT Action Specific Extended Community is extended to BGP Flowspec mechanism.
  - The Extended Community instructs a routing system to add the IFIT-Option-Types into packets of flows that match the Flow Specifications and update relevant IFIT-Data-Fields in packets that traverse.
- Type and Sub-types of IFIT Action Specific Extended Communities:
  - Type TBD1: IFIT Action
    - Sub-type TBD2: IOAM Pre-allocated Trace Option
    - Sub-type TBD3: IOAM Incremental Trace Option
    - Sub-type TBD4: IOAM DEX Option
    - Sub-type TBD5: IOAM Edge-to-Edge Option
    - Sub-type TBD6: Enhanced Alternate Marking Option

# IFIT Action Specific Extended Community

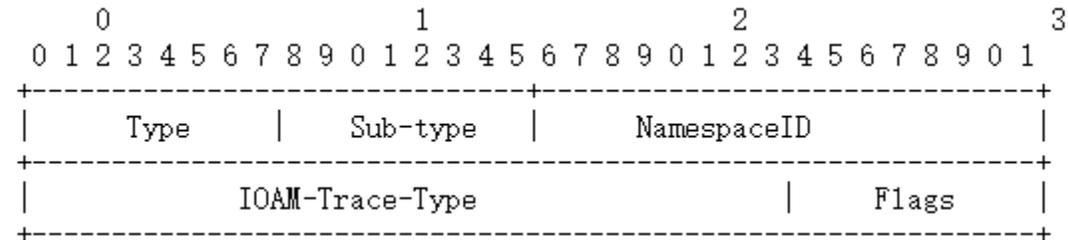
- IOAM Pre-allocated and Incremental Trace Option sub-type



- Type: to be assigned by IANA.
- Sub-type: to be assigned by IANA.
- Namespace ID: a 16-bit identifier, defined in section 4.4 of [I-D. ietf-ippm-ioam-data].
- Flags: a 4-bit field, defined in [I-D.ietf-ippm-ioam-flags] and section 4.4 of [I-D. ietf-ippm-ioam-data].
- IOAM-Trace-Type: a 24-bit identifier which specifies which data types are used in the node data list, defined in section 4.4 of [I-D. ietf-ippm-ioam-data].
- Rsvd: a 4-bit field reserved for further usage. It should be set to zero and must be ignored when receipt.

# IFIT Action Specific Extended Community

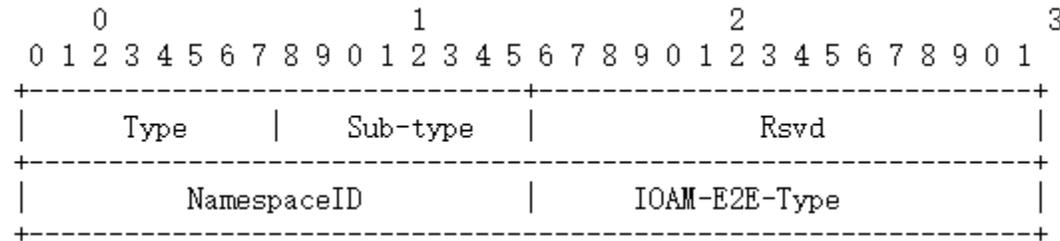
- IOAM DEX Option sub-type



- Type: to be assigned by IANA.
- Sub-type: to be assigned by IANA.
- Namespace ID: a 16-bit identifier, defined in section 4.4 of [I-D. ietf-ippm-ioam-data].
- IOAM-Trace-Type: a 24-bit identifier which specifies which data types are used in the node data list, defined in section 4.4 of [I-D. ietf-ippm-ioam-data].
- Flags: a 8-bit field. Flags are allocated by IANA.

# IFIT Action Specific Extended Community

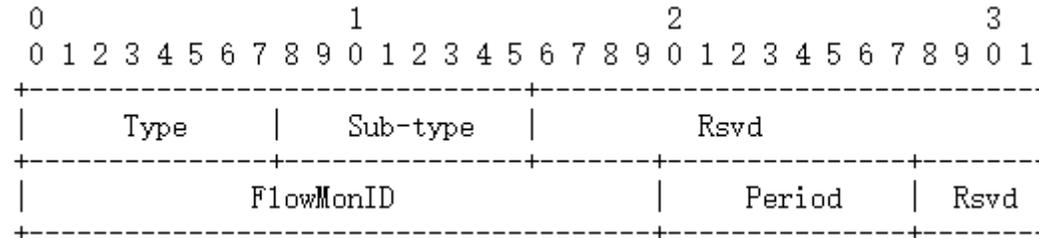
- IOAM Edge-to-Edge Option sub-type



- Type: to be assigned by IANA.
- Sub-type: to be assigned by IANA.
- Namespace ID: a 16-bit identifier, defined in section 4.4 of [I-D. ietf-ippm-ioam-data].
- IOAM-E2E-Type: a 16-bit identifier which specifies which data types are used in the E2E option data, defined in section 4.6 of [I-D. ietf-ippm-ioam-data].
- Rsvd: a 16-bit field reserved for further usage. It should be set to zero and must be ignored when receipt.

# IFIT Action Specific Extended Community

- Enhanced Alternate Marking Option sub-type



- Type: to be assigned by IANA.
- Sub-type: to be assigned by IANA.
- FlowMonID: a 20-bit identifier to uniquely identify a monitored flow within the measurement domain., defined in section 2 of [I-D.zhou-ippm-enhanced-alternate-marking].
- Period: a 8-bit field, indicates the time interval between two alternate marking period. The unit is second.
- Rsvd: a 4-bit field reserved for further usage. It should be set to zero and must be ignored when receipt.

# Next Steps

- Comments are welcome
- Refine the document accordingly

Thank You!