

BGP SR Policy Extensions to Enable IFIT

draft-ietf-idr-sr-policy-ifit-02

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Background and Motivation

- ❑ In-situ Flow Information Telemetry (**IFIT**) refers to dataplane on-path telemetry techniques, including **IOAM** (draft-ietf-ippm-ioam-data) and **Alternate Marking** (RFC8321, RFC8889)
- A headend can be informed about a candidate path for an SR Policy by using BGP (**draft-ietf-idr-segment-routing-te-policy**).



This document defines **extensions to BGP to distribute SR policies** carrying **IFIT** information.

So data plane on-path telemetry methods can be enabled automatically when the SR policy is applied

Changes from -01

- Specified the usage scenario of IFIT

IFIT is a solution focusing on specific network domains according to RFC8799.

- For a number of reasons, such as policies, options supported, style of network management and security requirements, it is suggested to limit applications including the emerging IFIT techniques to a controlled domain.

- Improved Security Considerations section

IFIT data **MUST** be propagated in a limited domain to avoid malicious attacks. Solutions to ensure this requirement are respectively discussed in [draft-ietf-ippm-ioam-data](#) and [draft-ietf-6man-ipv6-alt-mark](#).

- A limited administrative domain provides the network administrator with the means to select, monitor and control the access to the network, making it a trusted domain also for the BGP extensions defined in this document.

IFIT Attributes in SR Policy

The **SR Policy encoding structure** is aligned with draft-ietf-idr-segment-routing-te-policy (in WG Last Call)

- **IFIT attributes** can be attached at the candidate path level as **sub-TLVs**

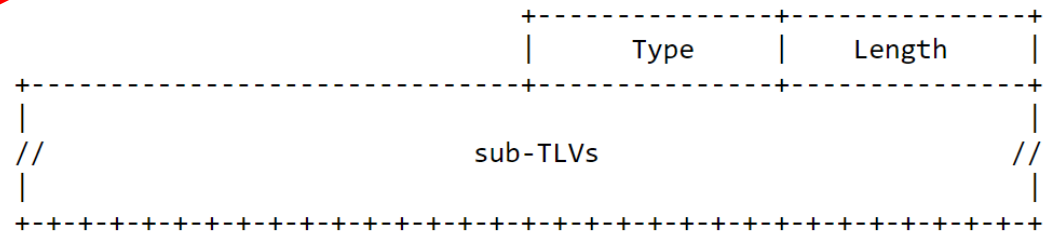
SR Policy SAFI NLRI: <Distinguisher, Policy-Color, Endpoint>

Attributes:

```

Tunnel Encaps Attribute (23)
  Tunnel Type: SR Policy
    Binding SID
    SRv6 Binding SID
    Preference
    Priority
    Policy Name
    Policy Candidate Path Name
    Explicit NULL Label Policy (ENLP)
    IFIT Attributes
    Segment List
      Weight
      Segment
      Segment
      ...
    ...
  
```

The format of the general IFIT Attributes Sub-TLV



sub-TLVs currently defined:

- * IOAM Pre-allocated Trace Option Sub-TLV
- * IOAM Incremental Trace Option Sub-TLV
- * IOAM Directly Export Option Sub-TLV
- * IOAM Edge-to-Edge Option Sub-TLV
- * Enhanced Alternate Marking (EAM) sub-TLV

IOAM Sub-TLVs

When IOAM is enabled, the IOAM header will be inserted into every packet of the traffic that is steered into the SR paths:

- IOAM Pre-allocated Trace Option Sub-TLV

Type=1	Length=6	Namespace ID
IOAM Trace Type		Flags Rsvd

- IOAM Incremental Trace Option Sub-TLV

Type=2	Length=6	Namespace ID
IOAM Trace Type		Flags Rsvd

- IOAM Directly Export Option Sub-TLV

Type=3	Length=12
Namespace ID	Flags
IOAM Trace Type	Rsvd
Flow ID	

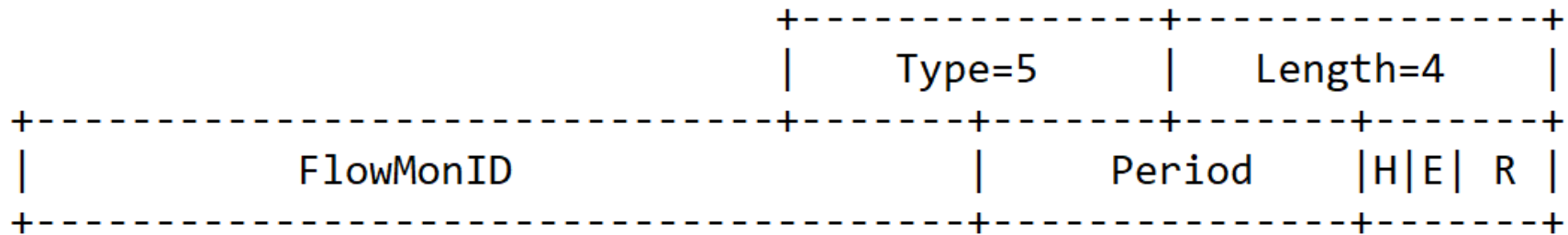
- IOAM Edge-to-Edge Option Sub-TLV

Type=4	Length=4
Namespace ID	IOAM E2E Type

Alternate Marking Sub-TLVs

When Enhanced Alternate Marking is enabled Alt-Mark is applied to each packet of the traffic that is steered into the SR paths

- Enhanced Alternate Marking (EAM) sub-TLV



H: A flag indicating that the measurement is Hop-By-Hop.

E: A flag indicating that the measurement is end to end.

Discussion & Next Steps

- This document simply complements SR Policy Operations described in **draft-ietf-idr-segment-routing-te-policy** by adding the IFIT Attributes.
- Work in progress to make the draft stable
- Welcome questions, comments

Thank you