

BGP Extension for Advertising In-situ Flow Information Telemetry (IFIT) Capabilities

draft-wang-idr-bgp-ifit-capabilities-02

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Outline

1) Requirements and Goals

2) IFIT-Capability Advertisement

- Format of IFIT Capabilities
- Option 1: Extensions to BGP Extended Community ~ updated
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Requirements and Goals

- **Requirements:**
 - In-situ Flow Information Telemetry (IFIT) refers to a family of dataplane on-path telemetry techniques, including In-situ OAM (IOAM) (draft-ietf-ippm-ioam-data) and Alternate Marking (RFC8321).
 - To avoid IFIT-data leakage, the IFIT decapsulating node (tail node) must remove the data fields.
 - A head node must need to determine whether the tail node can support a specific IFIT-Capability before encapsulating IFIT in traffic packets.

- **Goals:** extensions to BGP to advertise the IFIT decapsulating node capabilities.
 - Extensions to IPv4/IPv6 Address Specific Extended Community
 - Extensions to BGP Next-Hop Capability

- **Why?** Important to be designed, because:
 - Such advertisement would be useful for mitigating the leakage threat and determine whether a particular IFIT option type can be encapsulated in data packets.

Format of IFIT Capabilities

- IFIT Capabilities is formed of a 16-bit bitmap as follows:

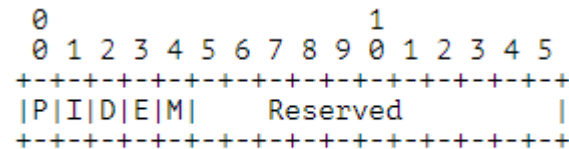


Figure 1. IFIT Capabilities

- P-Flag: IOAM Pre-allocated Trace Option Type flag [I-D.ietf-ippm-ioam-data].
- I-Flag: IOAM Incremental Trace Option Type flag [I-D.ietf-ippm-ioam-data].
- D-Flag: IOAM DEX Option Type flag [I-D.ioamteam-ippm-ioam-direct-export].
- E-Flag: IOAM E2E Option Type flag [I-D.ietf-ippm-ioam-data].
- M-Flag: Alternate Marking flag [RFC8321].

Option 1: Extensions to BGP Extended Community

- For IPv4/IPv6 networks, a type of BGP Extended Community called **IPv4/IPv6-Address-Specific IFIT Extended Community** [RFC4360,RFC5701]. It is a **transitive optional** extended community with type 0x01/0x00 and sub-type TBA.
- This draft defines extensions to be used by the IFIT decapsulation node to notify its IFIT Capabilities to its partner (i.e., the IFIT encapsulation node).

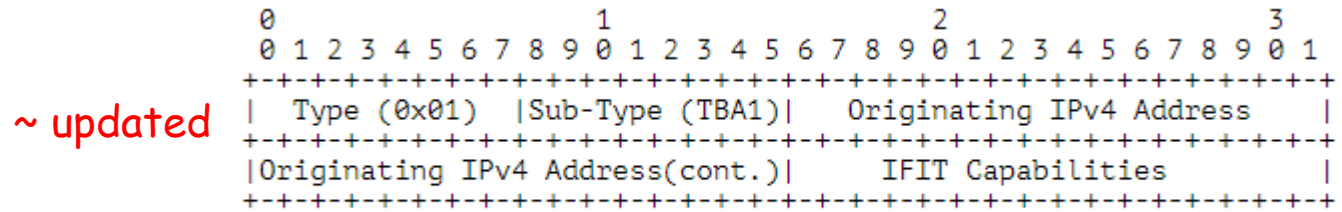


Figure 2. IPv4-Address-Specific IFIT Tail Community

- IFIT Capabilities: as defined in previous slide.
- Originating IPv4 Address: a IPv4 address of the IFIT decapsulation node.

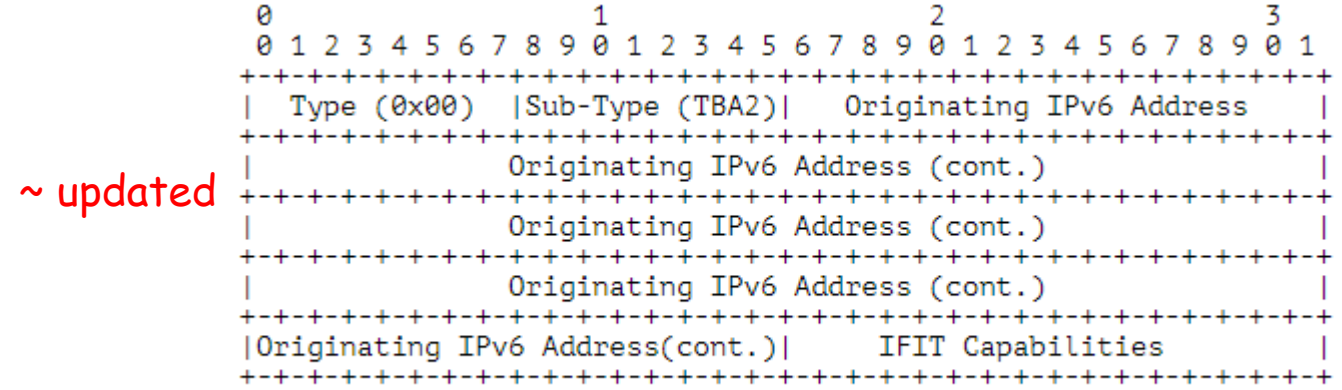


Figure 3. IPv6-Address-Specific IFIT Tail Community

- Originating IPv6 Address: a IPv6 address of the IFIT decapsulation node.

Option 2: Extensions to BGP Next-Hop Capability

- A new type of BGP Next-Hop Capability for IFIT is extended as follows. It is a non-transitive BGP attribute with Capability Code (TBA).
- The inclusion of the IFIT Next-Hop Capability with the NLRI advertised in the BGP UPDATE.
- Indicates the BGP Next-Hop can act as the IFIT decapsulating node.

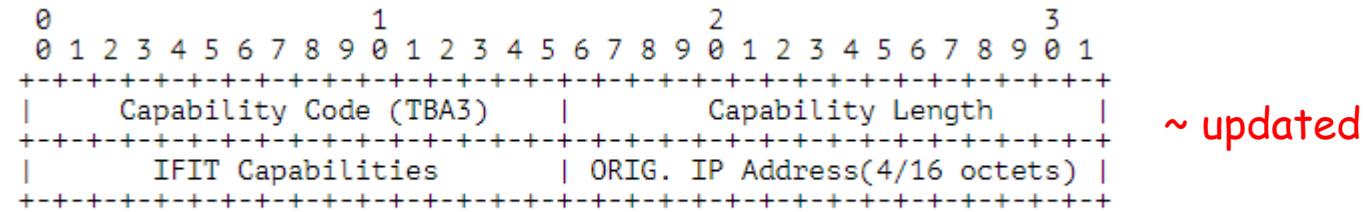


Figure 4. BGP Next-Hop Capability

- Capability Code (TBA): a two-octet unsigned binary integer which indicates the type of ‘Next-Hop Capability’ advertised
- IFIT Capabilities: as defined in previous slide.
- ORIG. IP Address: an IPv4 or IPv6 Address of the IFIT Decapsulation node.

Next Steps

- Comments and suggestions on the two extension options are welcome.
- Requesting WG adoption.

Thank You !