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Signaling MNA Capability Using IGP and BGP-LS
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Abstract

This document defines a mechanism to signal MNA Capability using IGP and Border Gateway Protocol-Link State(BGP-LS).

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on 31 July 2026.

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1. Introduction

[RFC9789] describes the architectural framework for MPLS Network Action (MNA) technologies.MNA technologies are used to indicate actions for Label Switched Paths (LSPs) and/or MPLS packets and to transfer data needed for these actions.The specific encoding mechanisms and header formats for these actions are defined in [I-D.ietf-mpls-mna-hdr].

Building upon these specifications, [I-D.ietf-mpls-mna-nrp-selector] and [I-D.ietf-mpls-mna-ioam] specify the mechanisms for carrying Network Resource Partition (NRP) Selectors and In-situ OAM (IOAM) data fields, respectively, using MPLS Network Actions.

The ingress node /Controller should obtain the network action of the nodes within the MNA infrastructure, which ensure that the encapsulated data packets by the ingress node can be correctly parsed by the on-path nodes. Specifically, while intermediate nodes can skip unsupported actions, the ingress node need to know whether the decapsulating node is capable of parsing and removing the MNA-related headers (e.g., NRP or IOAM data fields), thereby avoiding potential packet drops or forwarding errors

This document defines how the ingress node knows of the network action all the on-path nodes within the MNA infrastructure. It defines a mechanism to signal the MPLS Network actions(MNA) using IGP and BGP-LS.

1.1. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

2. Advertising MNA Using IS-IS

This section defines the MNA-Capabilities Sub-TLV that are inserted into the IS-IS Router Capability that is defined in [RFC7981].

The format of the MNA-Capabilities Sub-TLV is:

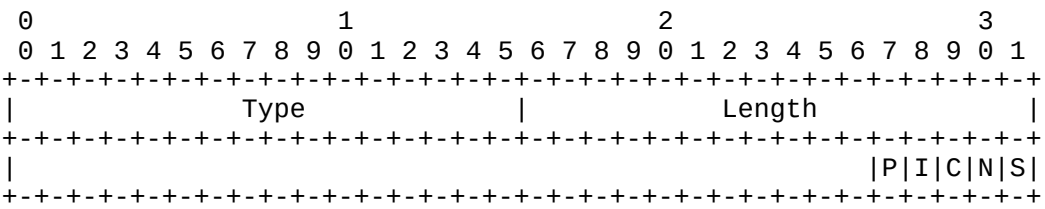

Figure 1. MNA-Capabilities Sub-TLV

where:

Type: TBD1.

Length: 4.

Flags: 4 octet of flags. The following are defined:

* S: 13-bit NRP Selector flag. If set, then the router is capable of processing 13-bit NRP Selector (NRPS13) (as defined in Section 2.1 of [I-D.ietf-mpls-mna-nrp-selector]) on all interfaces.

* N: 20-bit NRP Selector (NRPS20) flag. If set, then the router is capable of processing 20-bit NRP Selector (NRPS13)(as defined in Section 2.2 of [I-D.ietf-mpls-mna-nrp-selector]) on all interfaces.

* C: 20-bit Entropy and NRP Selector (ENRPS20) flag. If set, then the router is capable of processing 20-bit Entropy and NRP Selector (ENRPS20) (as defined in Section 2.3 of [I-D.ietf-mpls-mna-nrp-selector]) on all interfaces.

* I: IOAM ISD flag. If set, it indicates that the router is capable of processing the IOAM option encoded as In-Stack Data (ISD) (as defined in Section 4.2 of [I-D.ietf-mpls-mna-ioam]) on all interfaces.

* P: IOAM PSD flag. If set, it indicates that the router is capable of processing the IOAM option carried in the PSD (as defined in Section 4.1 of [I-D.ietf-mpls-mna-ioam]) on all interfaces.

The TLVs defined in this section are applicable to both OSPFv2, OSPFv3 and BGP-LS.

3. Advertising MNA Using OSPF

This section defines the MNA-Capabilities TLV that are inserted into the Router Information Opaque LSA（for OSPFv2）and OSPFv3 Router Information Opaque LSA（for OSPFv3）(defined in [RFC7770]). The format of the MNA-Capabilities TLV is the same as section 2.

4. Signaling MNA in BGP-LS

The IGP extensions defined in this document can be advertised via BGP-LS (distribution of Link-State and Traffic Engineering information using BGP) [RFC7752] using existing BGP-LS TLVs.

This section defines the following Node Attribute TLV:

Type	Description
TBD	the MNA-Capabilities TLV

5. Acknowledgements

TBD.

6. IANA Considerations

TBD.

7. Security Considerations

Procedures and protocol extensions defined in this document do not affect the IS-IS, OSPFv2 , OSPFv3 and BGP security model. See Section 5 of [RFC7981] for a discussion of IS-IS security, Section 5 of [RFC7684] for a discussion of OSPFv2 TLV-encoding considerations, Section 7 of [RFC8362] for a discussion of OSPFv3 security and Section 8 of [RFC7752] for a discussion of BGP-LS security.

8. Normative References

[I-D.ietf-mpls-mna-hdr]
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[I-D.ietf-mpls-mna-ioam]
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Li, T., Beeram, V. P., Drake, J., Saad, T., and I. Meilik, "MPLS Network Actions for Network Resource Partition Selector", Work in Progress, Internet-Draft, draft-ietf-mpls-mna-nrp-selector-03, 23 December 2025, <https://datatracker.ietf.org/doc/html/draft-ietf-mpls-mna-nrp-selector-03>.

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[RFC9789] Andersson, L., Bryant, S., Bocci, M., and T. Li, "MPLS Network Actions (MNAs) Framework", RFC 9789, DOI 10.17487/RFC9789, July 2025, <https://www.rfc-editor.org/info/rfc9789>.

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