Routing Extension for Fast-Reroute Using Maximally Redundant Trees

draft-li-rtgwg-igp-ext-mrt-frr-00

Zhenbin Li, Nan Wu

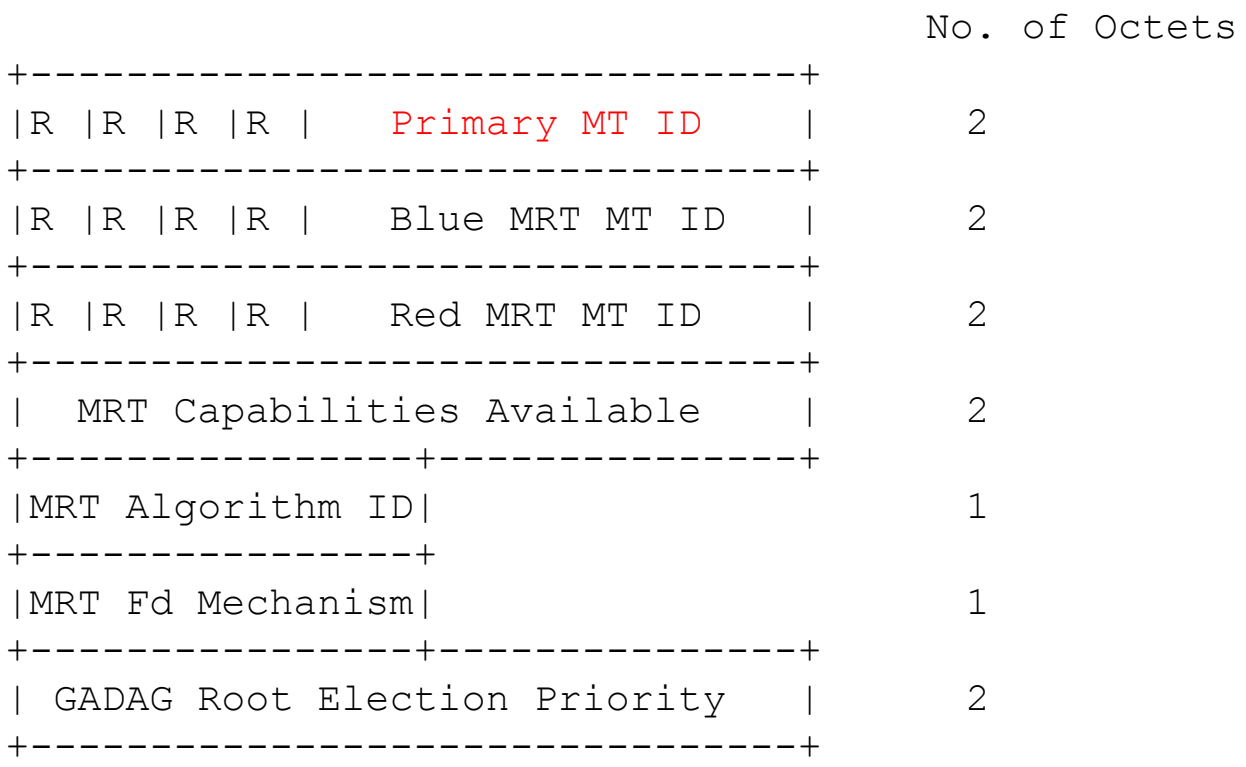
IETF 85, Atlanta, GA, USA

Background Introduction

- [I-D.ietf-rtgwg-mrt-frr-architecture] describes the architecture based on Maximally Redundant Trees (MRT) to provide 100% coverage for FRR. Protocol extensions and considerations has been proposed.
- The draft defines the detailed IGP extensions and procedures to support MRT FRR.

IS-IS MRT-FRR Sub-TLV (1)

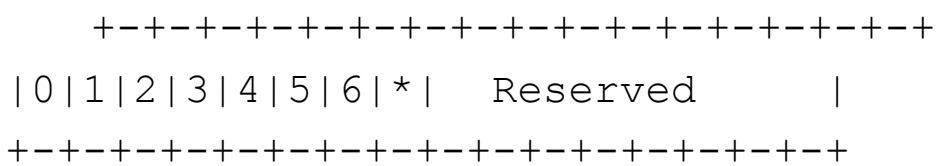
- IS-IS MRT-FRR sub-TLV: It is an optional sub-TLV which can be advertised in the router capability TLV([RFC4971]) . The information has only level-wide scope.



- Primary MT ID: Introduced to support multi-instance for MRT FRR.

IS-IS MRT-FRR Sub-TLV (2)

- MRT Capabilities Available: A bitmap to specify the set of MRT capabilities that the router can support.



Bit0 - MRT-BIT
Bit1 - IP-BIT
Bit2 - LDP-BIT
Bit3 - PIM-BIT
Bit4 - PIMG-BIT
Bit5 - mLDP-BIT
Bit6 - mLDPG-BIT

IS-IS MRT-FRR Sub-TLV (3)

- MRT Algorithm ID: Specify the particular MRT algorithm used by the router.

```
+-+-+-+-+-+-+-+-+
|0|1|*|*|*|*|*|*|
+-+-+-+-+-+-+-+-+

Bit0 - LP-BIT
Bit1 - SPF-BIT
```

IS-IS MRT-FRR Sub-TLV (4)

both destination and MRT.

- Option B - LDP Topology Label: Use a Topology-Identifier label on top of the IP packet.

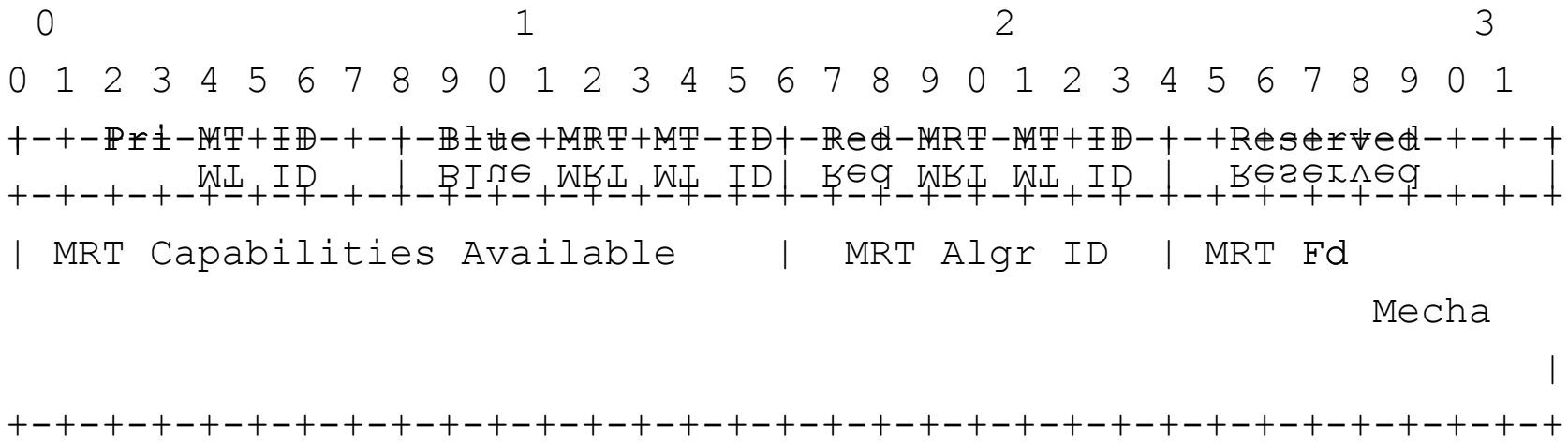
```
+-+-+-+-+-+-+-+-+

Bit0: LDP Destination-Topology Label
Bit2: IP-in-IPv4
Bit3: IP-in-IPv6
Bit4: Encode MT-ID in Labels
Bit3: IP-in-IPv6
Bit4: Encode MT-ID in Labels
```

- Red MRT Loopback Address and Blue MRT Loopback Address: If IP-in-IPv4 or IP-in-IPv6 are used as forwarding mechanisms for IP, they should be advertised by the Multi-Topology Reachable IPv4/IPv6 Prefixes TLV ([RFC5120]).

OSPF MRT-FRR TLV

- OSPF MRT-FRR TLV: It is an optional TLV which can be advertised in the OSPF router information LSA([RFC4970]). The information has only area-wide scope.
- OSPF MRT-FRR TLV: It is an optional TLV which can be advertised in the



Next Steps

list)

- Split the draft into two drafts (ISIS and OSPF) ?