

Multicast using Multicast Routing Header

draft-chen-pim-mrh6

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1. **Introduction**

- Existing solutions
 - letf-sr-p2mp-policy
 - chen-pim-srv6-p2mp-path (comments received from WG)
- But have weaknesses
- This MRH: a good alternative
 - Taking those comments into account
 - More scalable

Multicast Routing Header (MRH): Format, Ingress

```

+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| Next Header | Hdr Ext Len | RoutingType=TBD | SL |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| b | Rsv | nB |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
: Sub-tree from NH encoded by link numbers :
:
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

SL: points to sub-tree from NH
nB: # branches/links from NH
b : bits used for links from NH

Ingress (e.g., PE1) encapsulates packet in MRH for each NH and sends it to NH.
MRH includes sub-tree from NH (e.g., P1);
SL, nB, b in MRH are set to values for link to NH (i.e., b=1, nB, SL=11)

```

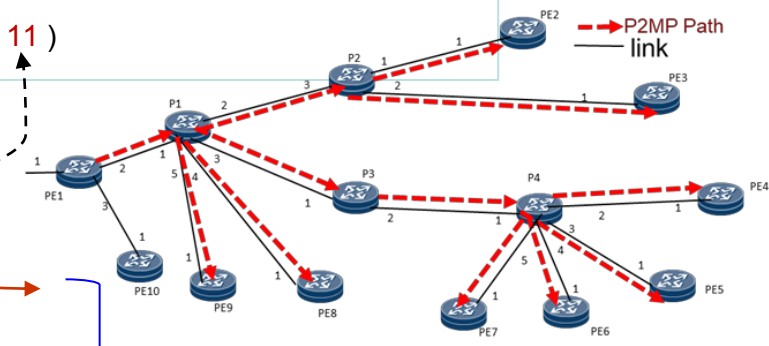
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
size |L|B|Link-No|N-Branches|S-Branches+| link
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
13 | 0 | 1 | 2 | 11 |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
11 | 0 | 1 | 1 | 0 1 1 1 0 0 0 | P1 to P2, P3, PE8, PE9
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|P| S-Bits | Bits |

```

```

+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|L|B|N-Branches|S-Branches+|
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
9 | 0 | 0 | 2 | 6 | P1 to P2
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 0 | 0 | 1 | 4 | P1 to P3
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 1 | P1 to PE8
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 1 | P1 to PE9
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
6 | 1 | 1 | Pad | P2 to PE2
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

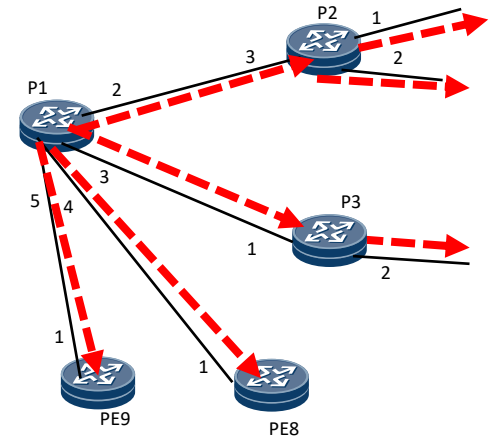
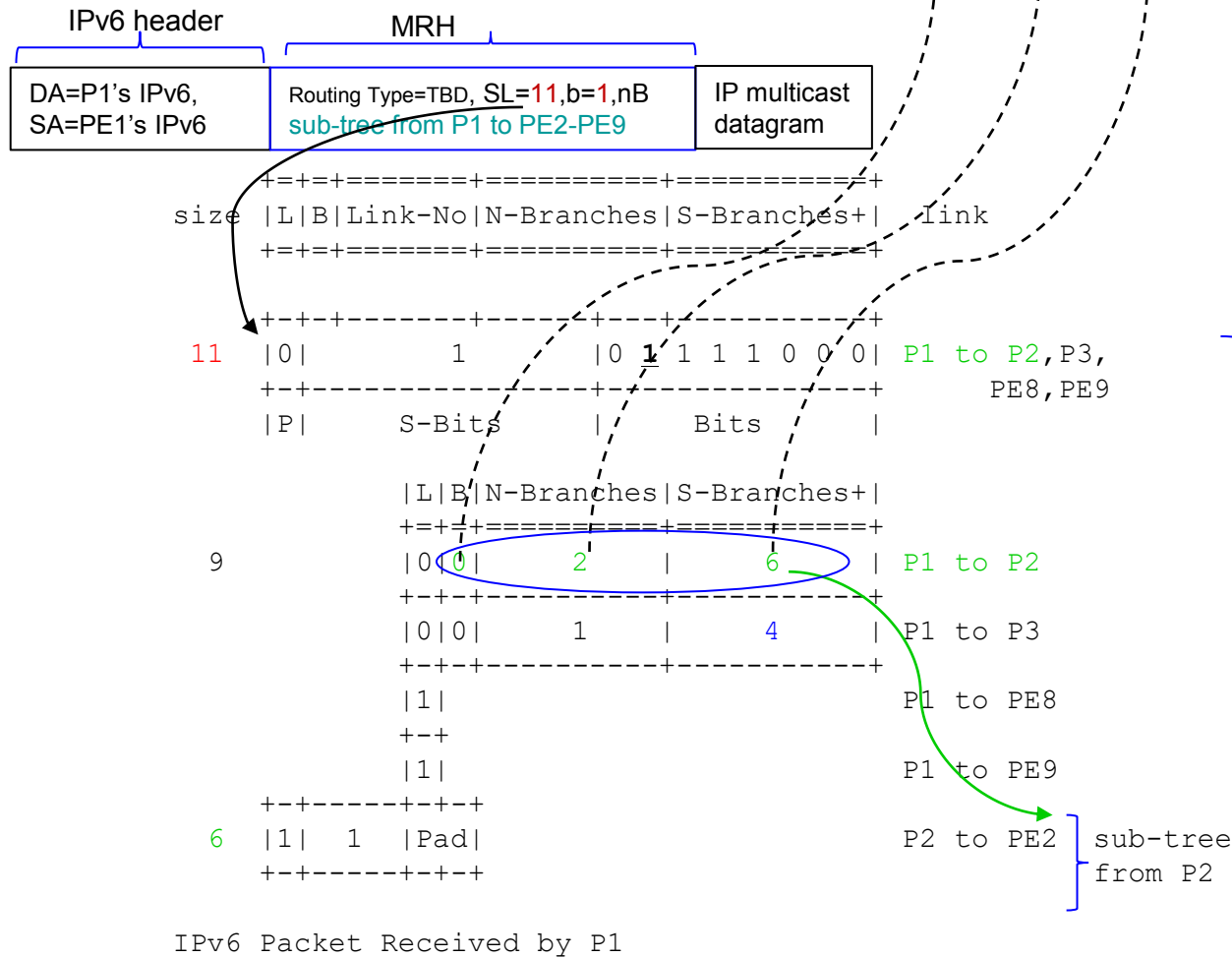


Multicast Routing Header (MRH): Transit, Egress

Packet received by P1: 4 branches/links from P1: P1→P2, P3, PE8, PE9

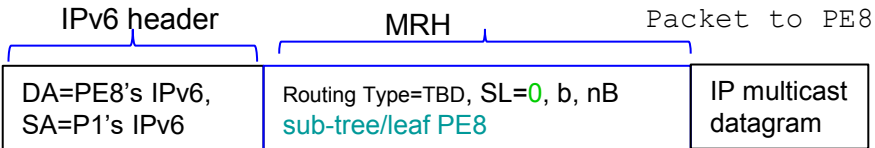
P1 sends a copy to each NH: P2, P3, PE8, PE9

P1→P2: b, nB, SL in MRH are set to values for P1→P2 (i.e., b=0, nB = 2, SL = 6); P1→PE8 (Egress): SL = 0.



sub-tree from P1

sub-tree from P2



Egress PE8: (SL == 0):

Decaps, sends it to IP multicast forwarding