Advertising Per-node Administrative Tags in OSPF

draft-hegde-ospf-node-admin-tag-01
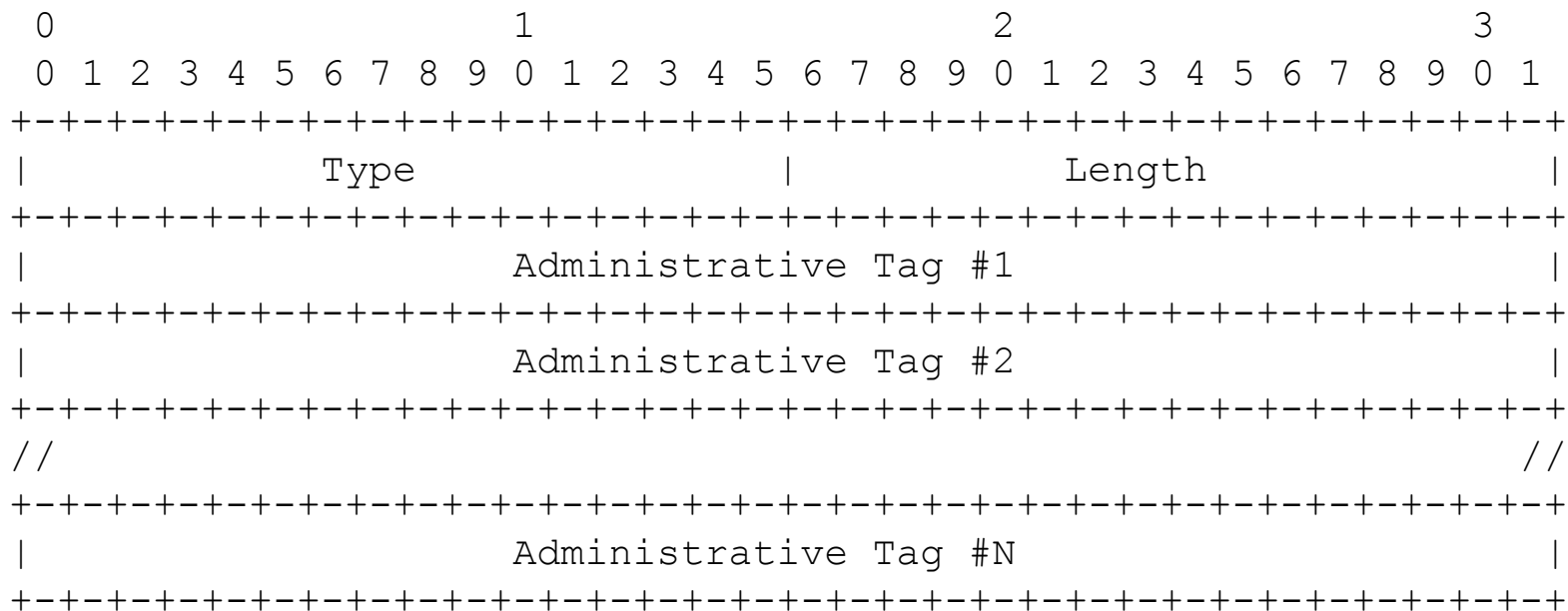
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Rationale

- *Node color* is used for describing path constraints
  - IP paths
  - MPLS paths
- there is a category of path constraints which requires that a certain path *should* or *should not* be routed over a *node with specific properties*.
  - go over the packet-optical super-core
  - don't go over any other PE router
  - don't go over equipment from vendor X
  - don't go over equipment which is running software version x.y.z
  - don't go over nodes with limited hardware capabilities (e.g. LB)
  - de-prefer nodes which don't have good hardware based latency measurements

Per-Node Admin Tag TLV

- ## New TLV in Router Information LSA
  - List of 32-bit admin tags (node colors)
  - Maximum of 64 admin tags
  - Meaning of tag values defined by local policy via configuration.

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|             Type              |             Length            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                     Administrative Tag #1                     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                     Administrative Tag #2                     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
//                                                             //
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                     Administrative Tag #N                     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Application Examples

- ## Service auto-discovery
  - Discover routers to which TE tunnels should be built to automate full mesh TE tunnels.

- ## Fast-reroute with LFA
  - Policy to prefer backup paths through core routers instead of edge routers.
  - Policy to not waste resources performing LFA forward SPF calculations rooted at specific routers
  - Policy to exclude nodes that will not accept incoming targeted-LDP sessions from consideration as remote tunnel endpoints