Advertising Per-node Admin Tags in BGP LS

draft-psarkar-idr-bgp-ls-node-admin-tag-00

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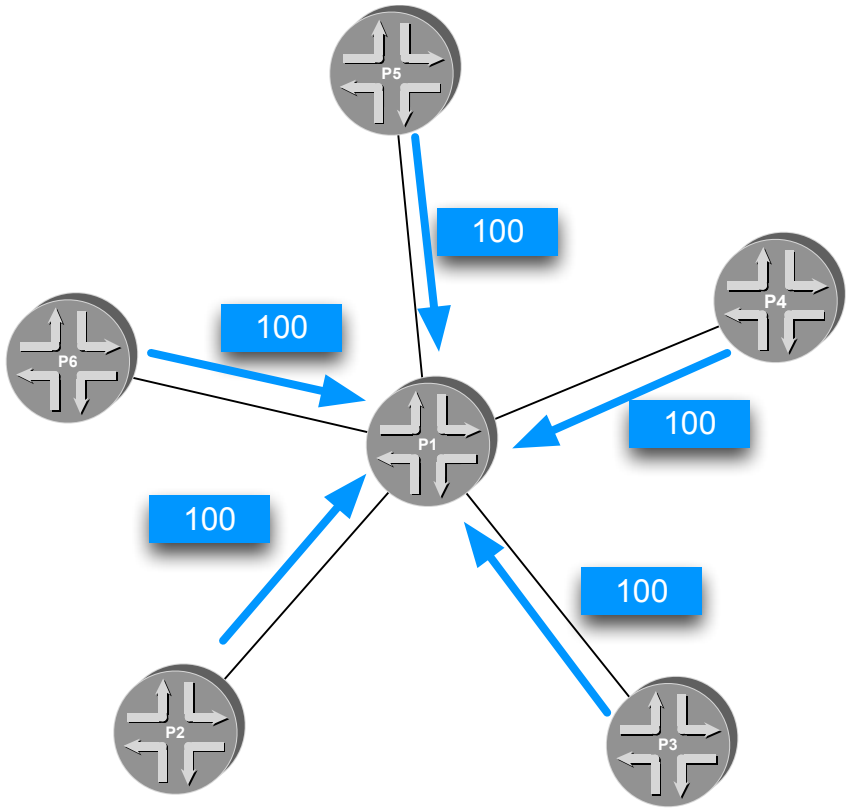
Summary

- Prior Art
- Current Draft Proposal
- Guidelines on Implementation
- Next steps

Prior Art

Why Node-Admin Tag?

- Link colors [RFC 3630, RFC5305]
  - Does not really represent a node characteristic.
  - Even if used to represent node characteristic, ***all incoming links need to be colored*** (one per node characteristic type).



Prior Art

Why Node-Admin Tag?

- Prefix tags [RFC5130]
  - If the router-ID is considered the prefix representing the node
    - Router-ID encoded in TLV134 or TLV242.
    - Corresponding tag encoded in TLVs 135, 235, 236 and 237.
    - ***Additional implementation complexity***
  - No prefix tagging mechanism for OSPF yet
    - Looking for ***consistency across protocols***
    - draft-ietf-ospf-node-admin-tag-00
  - Most Traffic Engineering Database (TED) schema support
    - ***Nodes***
    - ***Links***
    - But ***not Prefixes***

Prior Art

- Per-Node Admin Tags
  - Introduced in IETF-89
    - [I-D.ietf-isis-node-admin-tag]
    - [I-D.ietf-ospf-node-admin-tag]
  - 32-bit unsigned integer value.
  - Represents a specific node characteristic exhibited by one or more nodes in the network
    - One tag per type of node characteristic.

Prior Art

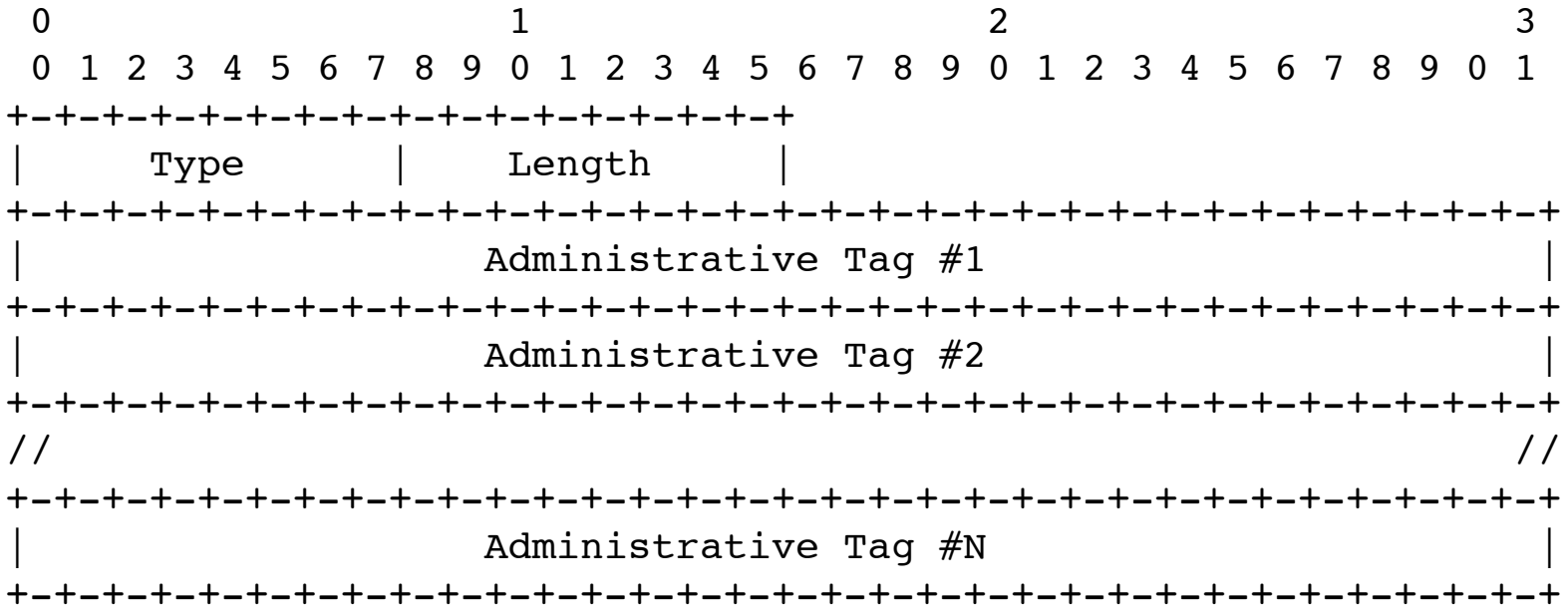
- Per-Node Admin Tags (contd.)
  - Facilitates logical grouping of nodes in network
    - One tag per group (per node characteristic type).
    - Multiple nodes exhibiting same characteristics
      - Tagged with same tag value.
    - Single node exhibiting multiple characteristics
      - Belongs to multiple groups.
      - Tagged with multiple tag values (one per group or node characteristics).

Prior Art

- Meaning of a node-admin tag is
  - Local to the network operator.
  - But unique across all the nodes in the same administrative domain.
  - Independent of the order the nodes are tagged with.
- Facilitate any routing applications, that
  - Require advertisement of any node characteristics within the network deployment.
  - No need to define well-known values for each new characteristic required to be advertised.

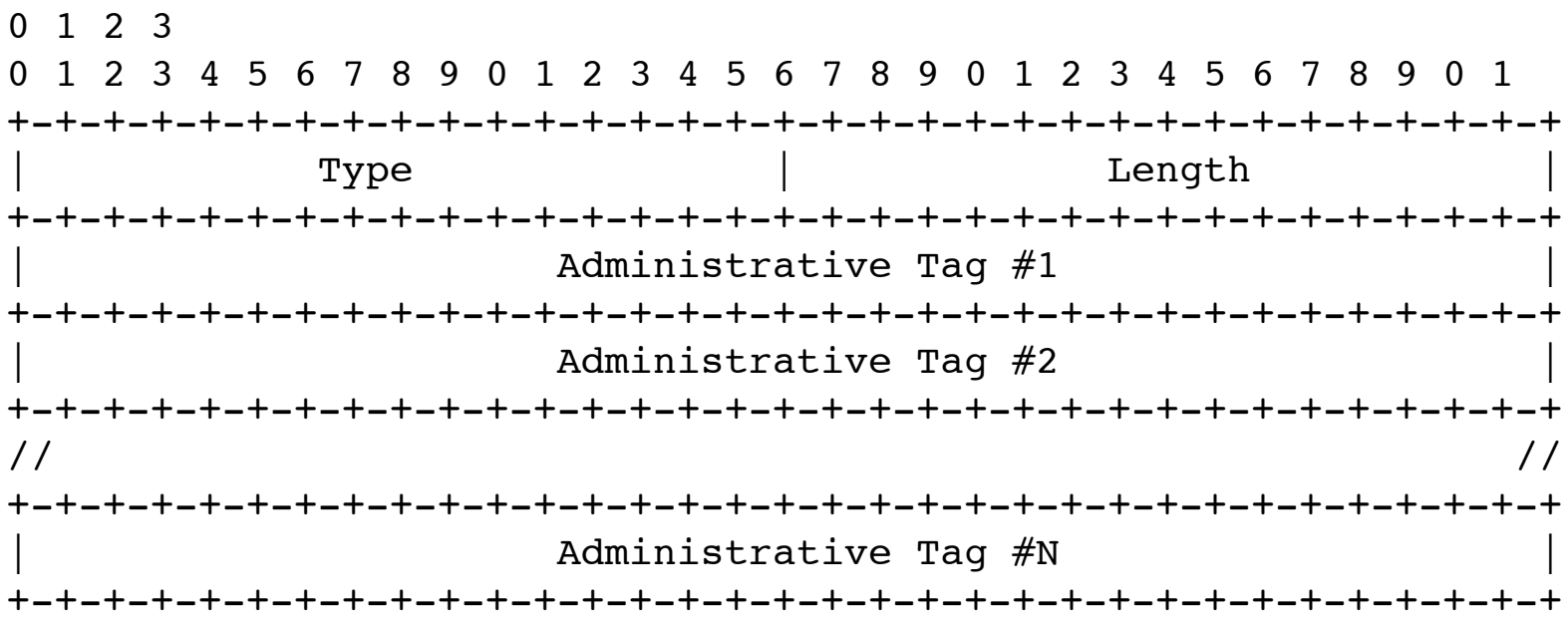
Prior Art

- ***New SubTLV of ISIS Router-Cap TLV #242 (RFC 4971)***
  - Unbound List of 32-Bit node colors (TLV-max-size costraints still applies)



Prior Art

- ***New TLV in OSPF Router Information LSA***
  - List of 32-bit admin tags (node colors).

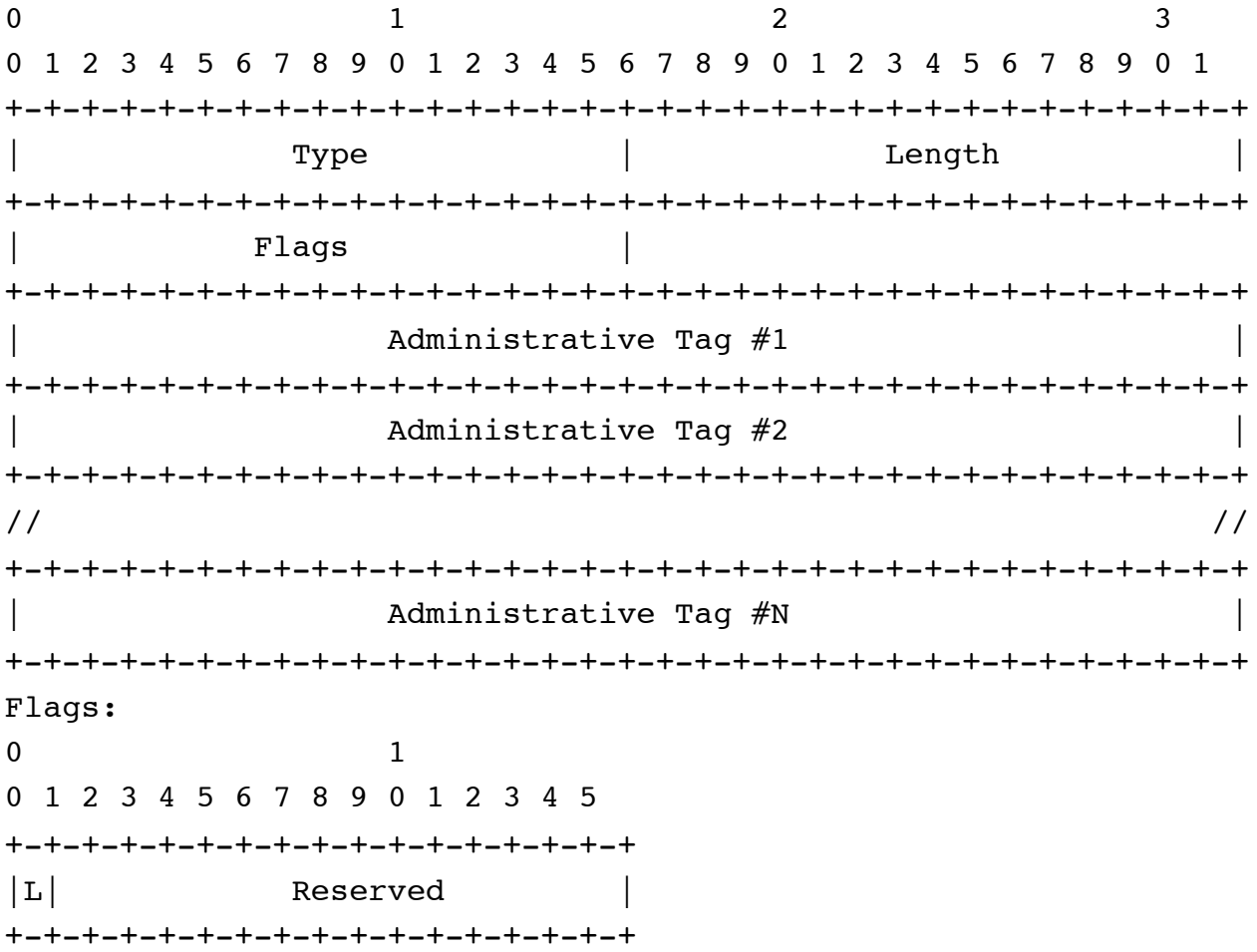


Draft Proposal

- BGP LS speaker(s) attached to each IGP area
  - Learn per-node admin tags from IGP link-state advertisements
  - Originate the same in corresponding BGP-LS advertisements.
    - As new Node-Admin Tag TLVs in appropriate instance of BGP-LS Node NLRI..
- BGP LS receivers
  - Learn all Node-Admin Tags
  - Associate them with the Area-Id(OSPF) or Level(IS-IS) attributes received in the same Node NLRI
- Facilitate any intra/inter-AS applications
  - Require grouping of nodes with similar characteristics/ capabilities
    - Both within and across AS boundaries.

Draft Proposal

- ***New Link State Node Admin Tag TLV in BGP-LS Node NLRI***



Implementations Guidelines

- While copying node admin tags from IGP link-state advertisements to corresponding BGP-LS Node NLRI
  - Separate ‘Node Admin Tag TLV’(s) with ‘L’ bit set to ‘1’
    - To carry all ‘level/area-wide’ node-admin tags.
  - Separate ‘Node Admin Tag TLV’(s) with ‘L’ bit reset to ‘0’
    - To carry all ‘domain-wide’ node-admin tags.
- .

Next Steps

- Questions and Comments?
- Working group review.
- Adoption as a WG draft.