Advertising Service Functions Using OSPF
draft-xu-lsr-ospf-service-function-adv-00

Advertising Service Functions Using IS-IS
draft-xu-lsr-isis-service-function-adv-00

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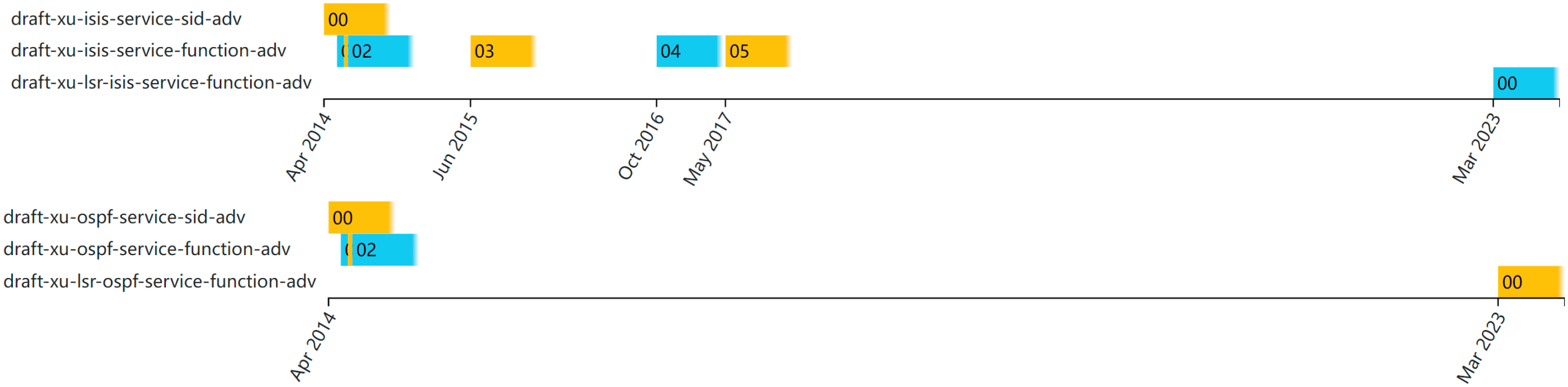
History & Situation



- Two drafts were proposed by Xiaoxu Xu in 2014 to propose IGP extensions for SR SFC.
- As SR-based SFC is gradually experimented and deployed, some control plane problems will be inevitable.
- BGP-LS [RFC9085] enables distribution of topology information from the network to a controller and BGP-LS for SFC [draft-ietf-idr-bgp-ls-sr-service-segments] allows the advertisement of service functions along their associated service segments
- However, BGP-LS is not completely sufficient, and some scenarios require the presence of IGP.
  → Draft revival

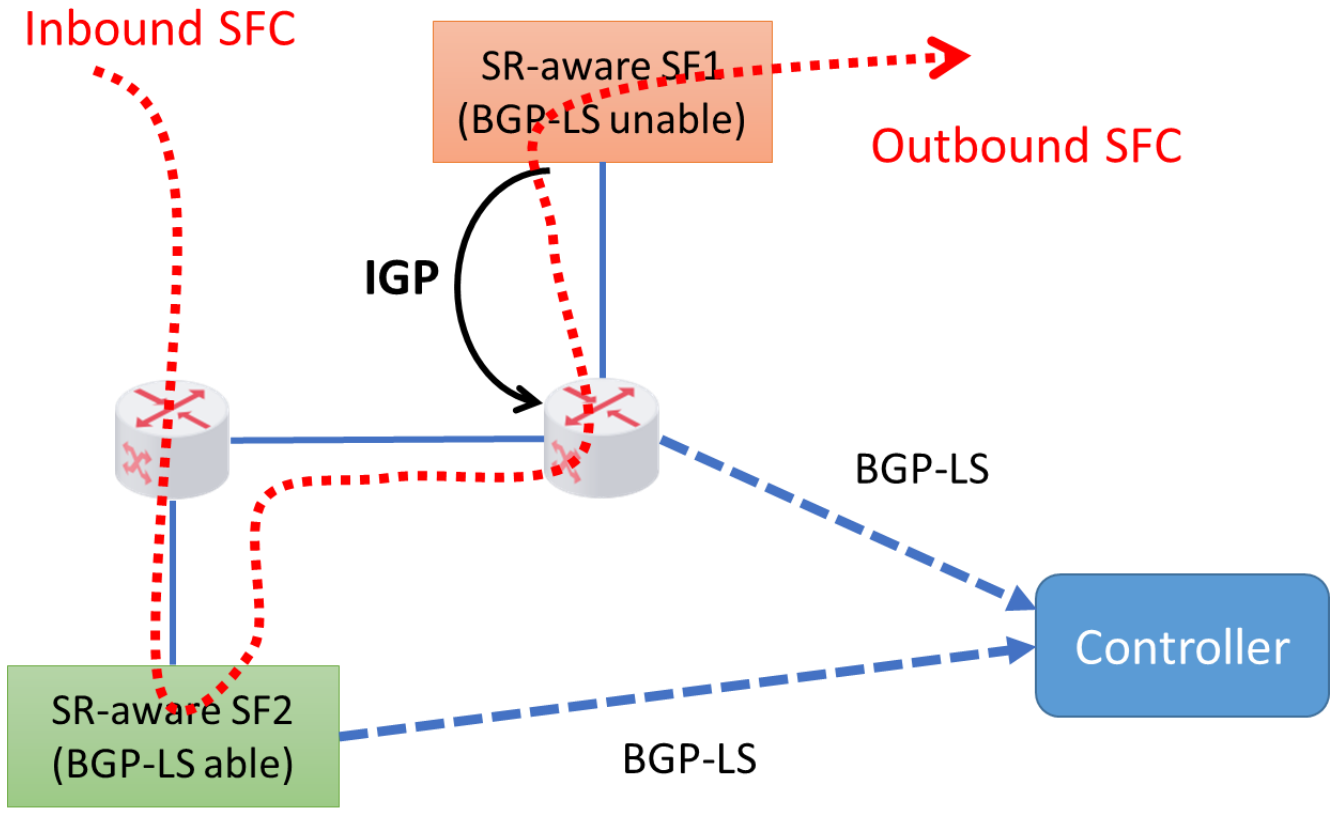
Use Case 1

Usage: Advertise the information of BGP-LS-unable SFs to BGP-LS-able devices through IGP

Without IGP: Only BGP-LS able SF can advertise information of service segments to the controller.

Collaboration with BGP-LS:

1. SR-aware SFs that do not support BGP-LS advertise their segment and service information to the 'proxy' device that supports BGP-LS through the extended IGP protocol.
2. The device that supports BGP-LS will take place of those that do not to interact with controller through BGP-LS.
3. Service function paths can be orchestrated.



Use case 2

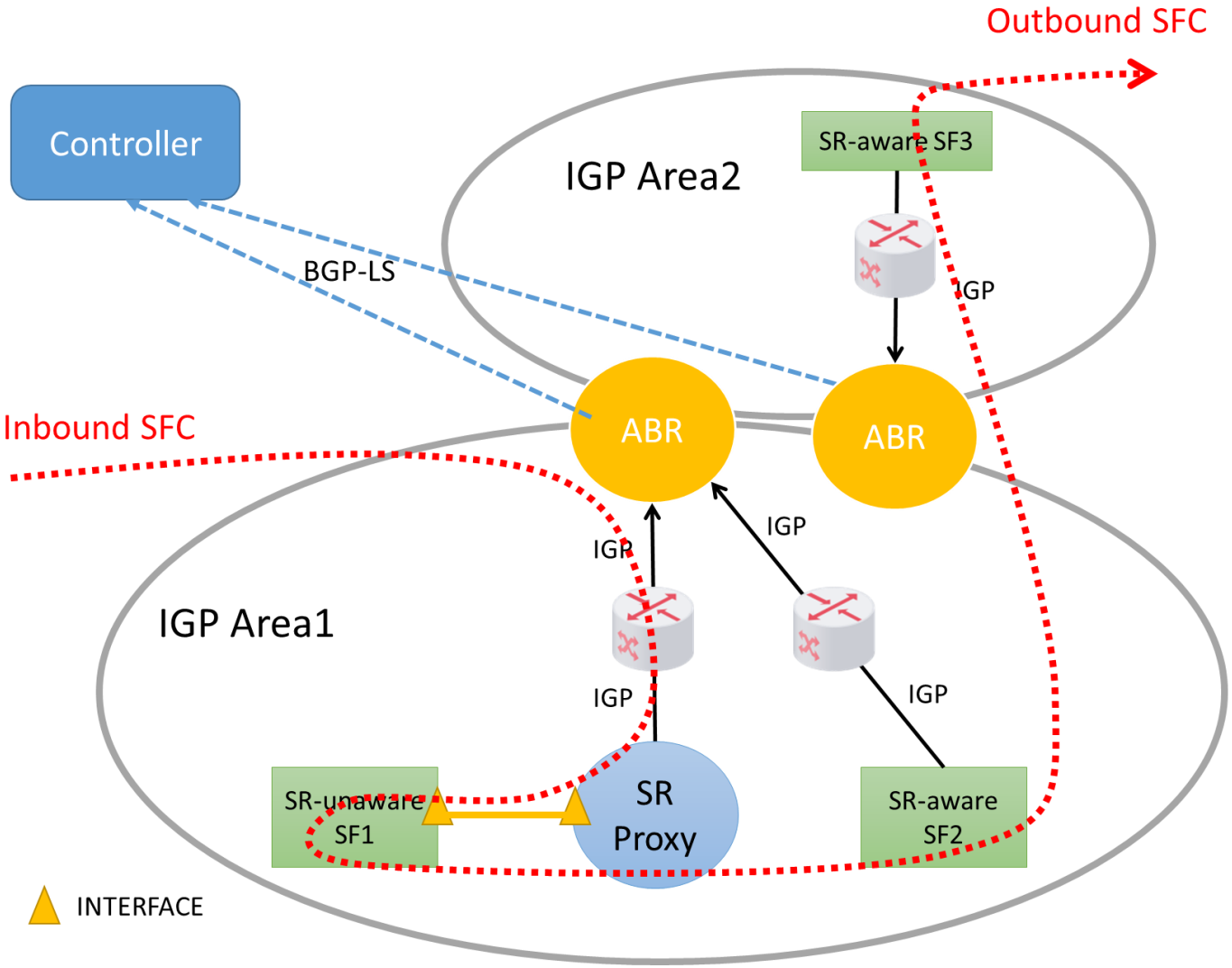
Usage: Distribute SF and Proxy information to a certain device through IGP

-- Reduce the number of BGP peers established between network devices and controllers.

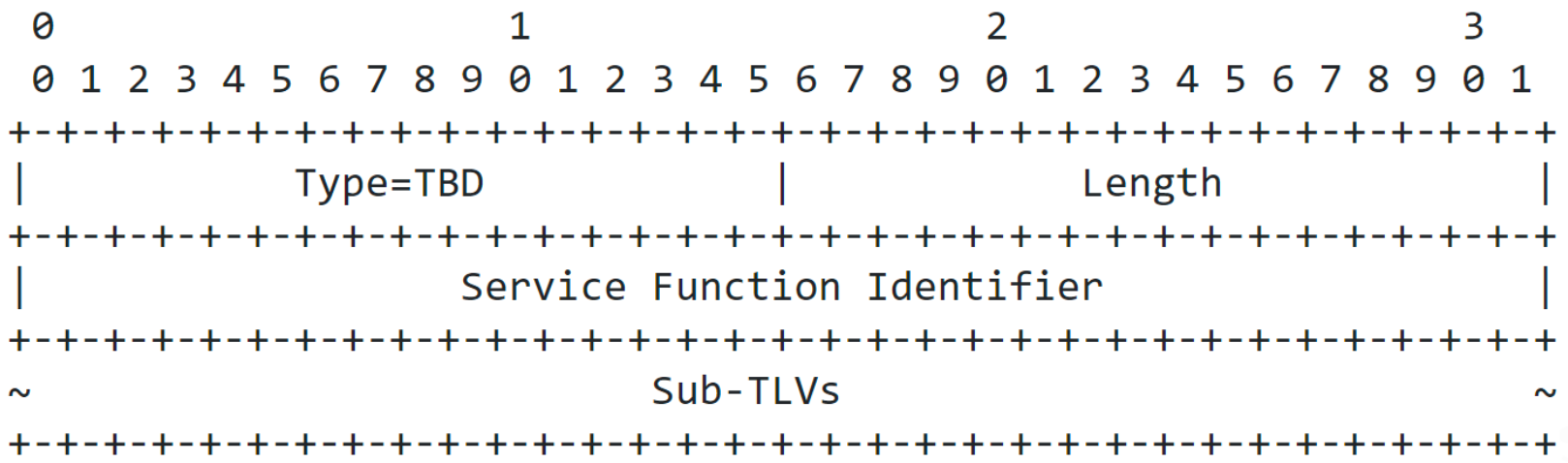
Without IGP: All SF/Proxy within IGP area have to establish connections with the controller.

Collaboration with BGP-LS:

1. Devices in the same IGP Area can collect SF topology and service information to the ABR (Area Boarder Router) through the IGP protocol
2. ABR reports it to the central controller through BGP-LS at the ABR for SFC orchestration.
3. Service function paths can be orchestrated.



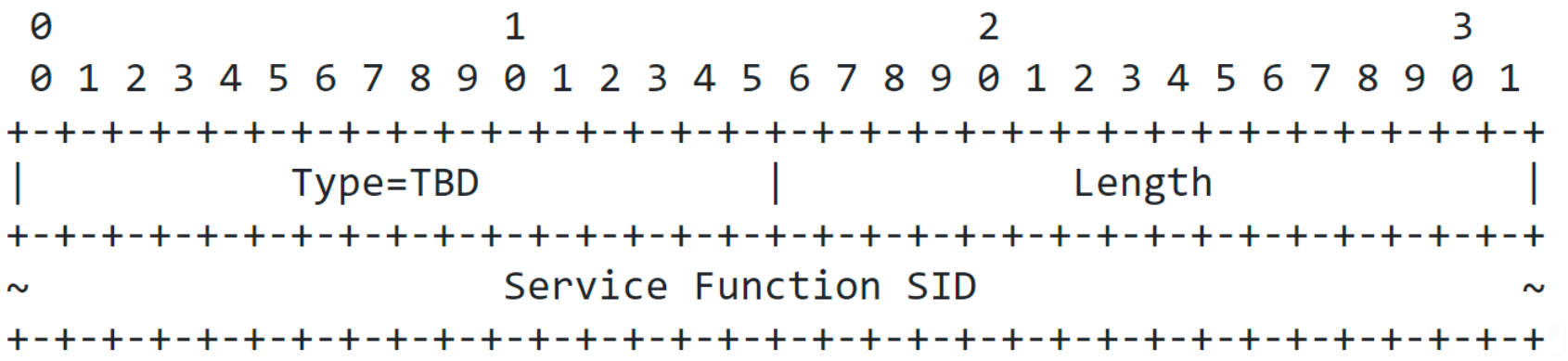
OSPF Extension



- OSPF Router Information (RI) Opaque LSA
- Service Function Identifier: A unique identifier that represents a service function within an SFC-enabled domain.
- Sub-TLVs: contains zero or more sub-TLVs corresponding to the particular attributes of a given service function.

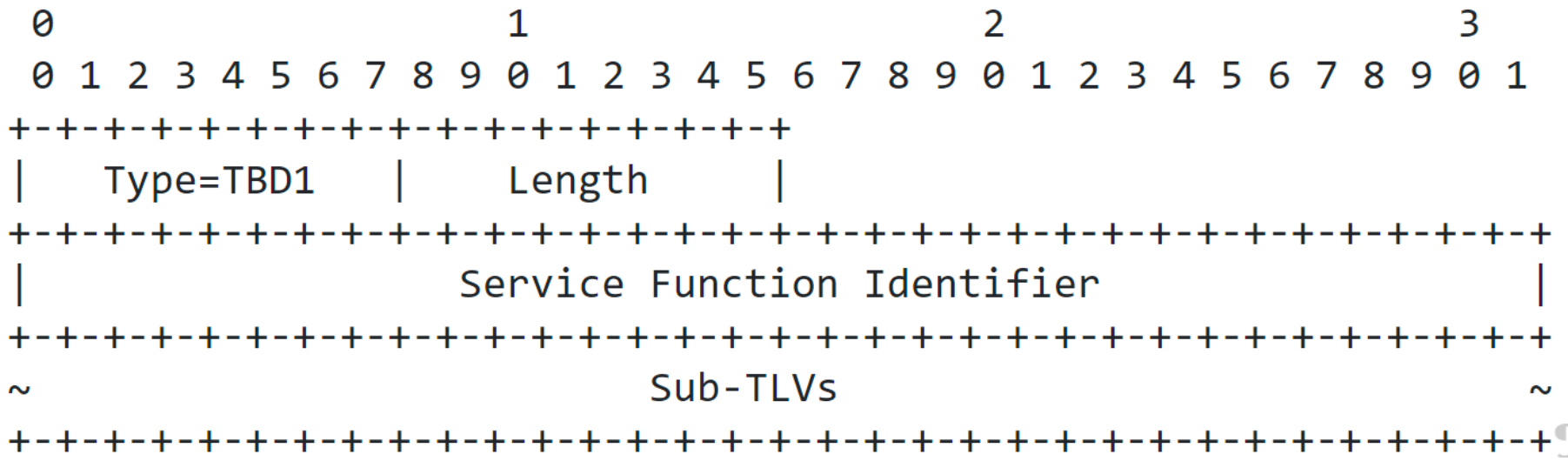
OSPF Extension(Cont’d)

- Example Sub-TLV: Service Function SID Sub-TLV



- Sub-TLV can also define some service information(e.g., type, vendor info)

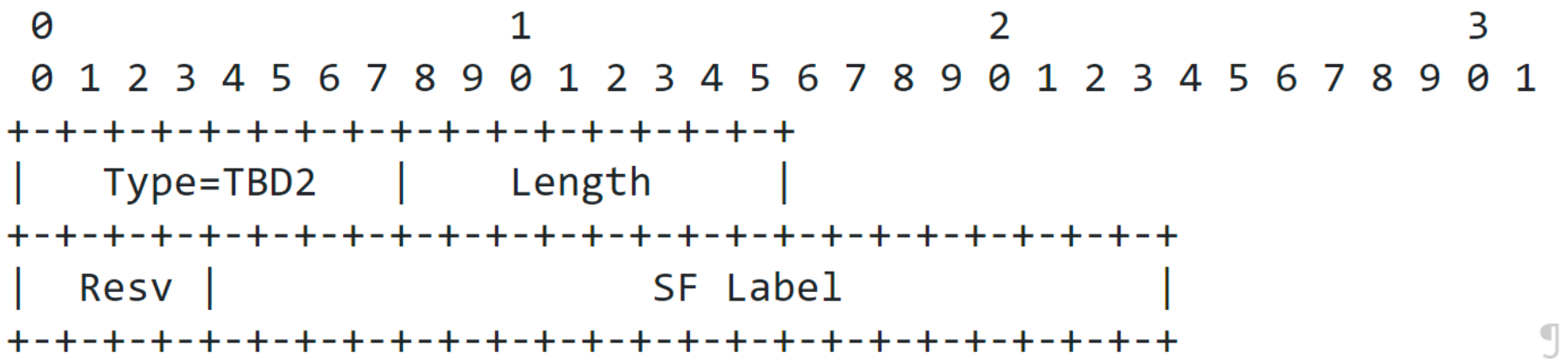
ISIS Extension



- IS-IS Router CAPABILITY TLV
- Service Function Identifier: A unique identifier that represents an SF within an SFC-enabled domain.
- Sub-TLVs: contains zero or more sub-TLVs corresponding to the particular attributes of a given SF.

ISIS Extension(Cont’d)

- Example Sub-TLV: SF Label Sub-TLV



- Sub-TLV can also define some service information(e.g., type, vendor info)

Next Step:

1. Refresh the draft by adding content about the aforementioned use case, and refining TLVs;
2. Think about whether the current BGP-LS should have extensions that are more suitable for the cooperation with IGP
3. Welcome comments / questions