

ISIS extensions for SRv6

draft-bashandy-isis-srv6-extensions-00

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Separate SR MPLS and SRv6 Drafts

draft-ietf-isis-segment-routing-extensions limited to MPLS dataplane

Latest version has removed:

- IPv6 address option from prefix-SID/ADJ-SID
- References to IPv6 SRH(H flag in SR Capabilities)
- Explicitly state draft is for MPLS dataplane only

Ready for Last Call ☰

MUST READ !!!!!!!

[draft-filsfils-spring-srv6-network-programming](#)

Also Read

[draft-ietf-6man-segment-routing-header](#)

What we want to do

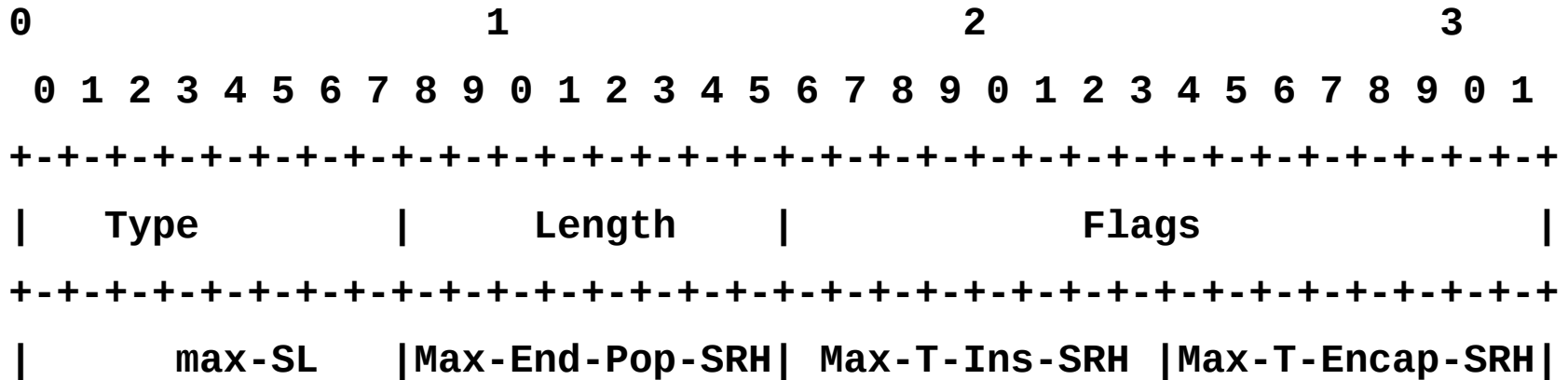
Define protocol extensions to support segment routing over IPv6 Dataplane

- Advertise segments IDs (SIDs)
- Support for the following functions
 - fast convergence
 - traffic engineering

Proposed ISIS Extensions

- 1 Capability sub-TLV: SRv6 Capabilities Sub-TLV
- 1 Top Level TLV: SRv6 SID TLV
- 2 sub-TLV of neighbor reachability:
 - P2P SRv6 cross-connect SID
 - LAN SRv6 cross-connect SID
- 1 SRv6-Function Descriptor (sub-TLV or sub-sub-TLV)

SRv6 Capabilities Sub-TLV



Indicates support for SRv6

Existing SR Capability sub-TLV defined in

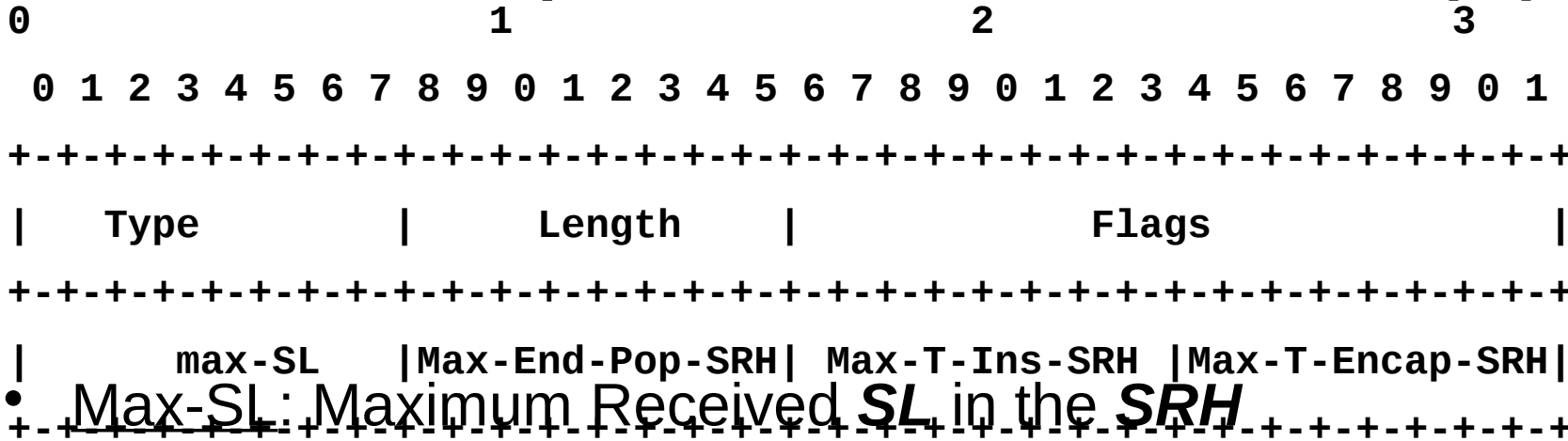
draft-ietf-isis-segment-routing-extensions is SR

MPLS only

One flag defined:

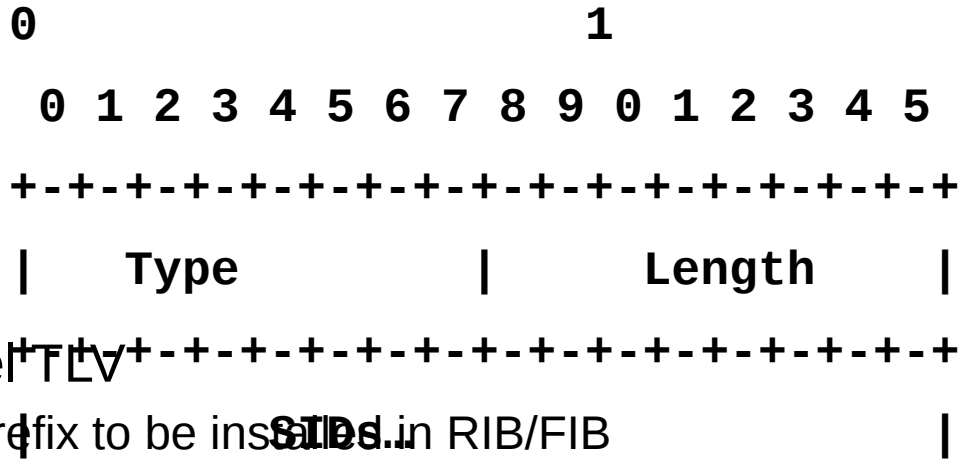
E => T.encap is supported

SRv6 Capabilities Sub-TLV(2)



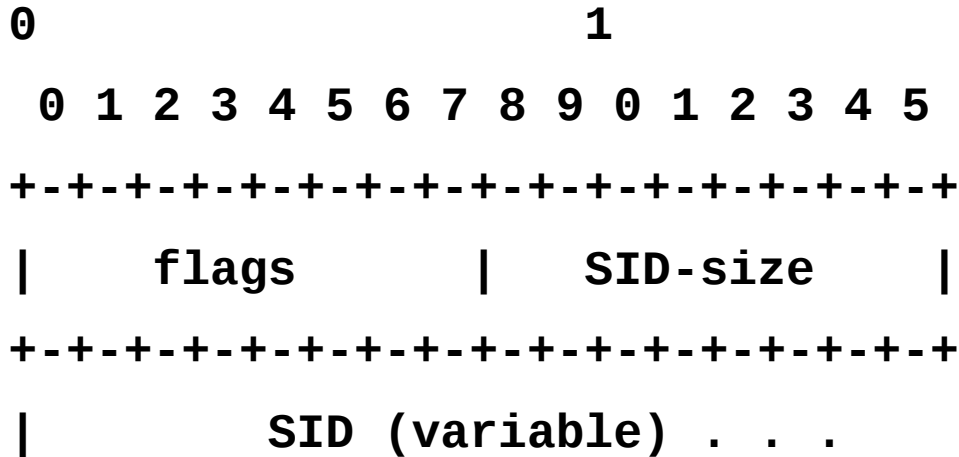
- **Max-SL**: Maximum Received **SL** in the **SRH**
- **Max-End-Pop-SRH**: Maximum number of SIDs when applying **PSP** or **USP** flavors (0 => not supported)
- **Max-T-Ins-SRH**: Maximum number of SIDs when applying **T.insert** (0 => not supported)
- **Max-T-Encap-SRH**: Maximum number of SIDs when applying **T.Encap** (Valid when E-flag is set)
- **Max-End-D-SRH**: Maximum number of SIDs when applying **End.DX6** or **End.DT6**

SRv6 SID TLV



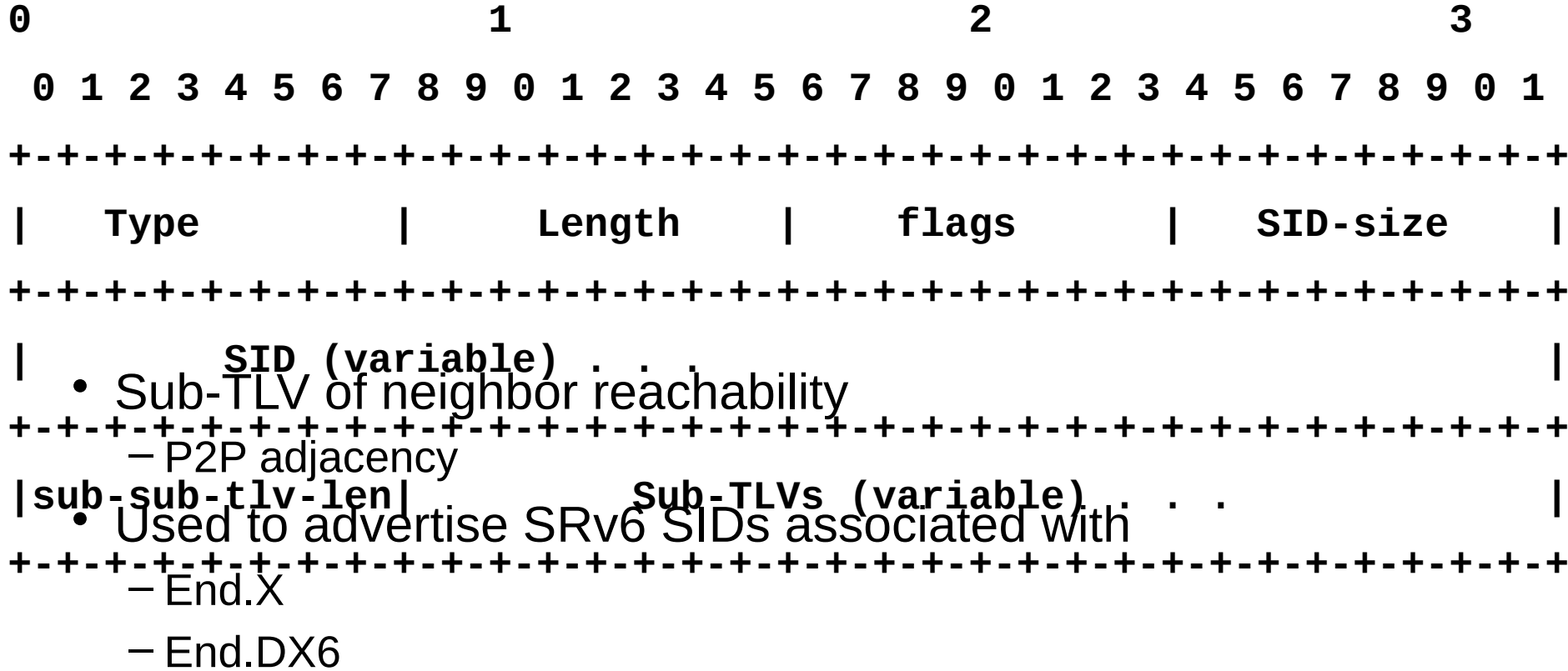
- Top Level TLV
 - Not a prefix to be installed in RIB/FIB
 - Minimum impact on routing functionality
- Advertises SRv6 SIDs and the associated attributes
- Used for SIDs not related to neighbors
- Does **NOT** result in **routing** action on its own
- Shares sub-TLV space with prefix reachability TLV (135/235/236/237)
- Can be leaked between levels
- Advertised SRv6 SID **need not** be covered by IPv6 prefix reachability (TLV 236 and 237)
 - E.g. may be reachable via static route

SRv6 SID



- D flag – Set when leaked from Level-2 to Level-1
- Sub-TLVs (variable) One sub-TLV defined: SRv6 Function Descriptor
- Multiple SIDs can be in one TLV

P2P X-SID sub-TLV

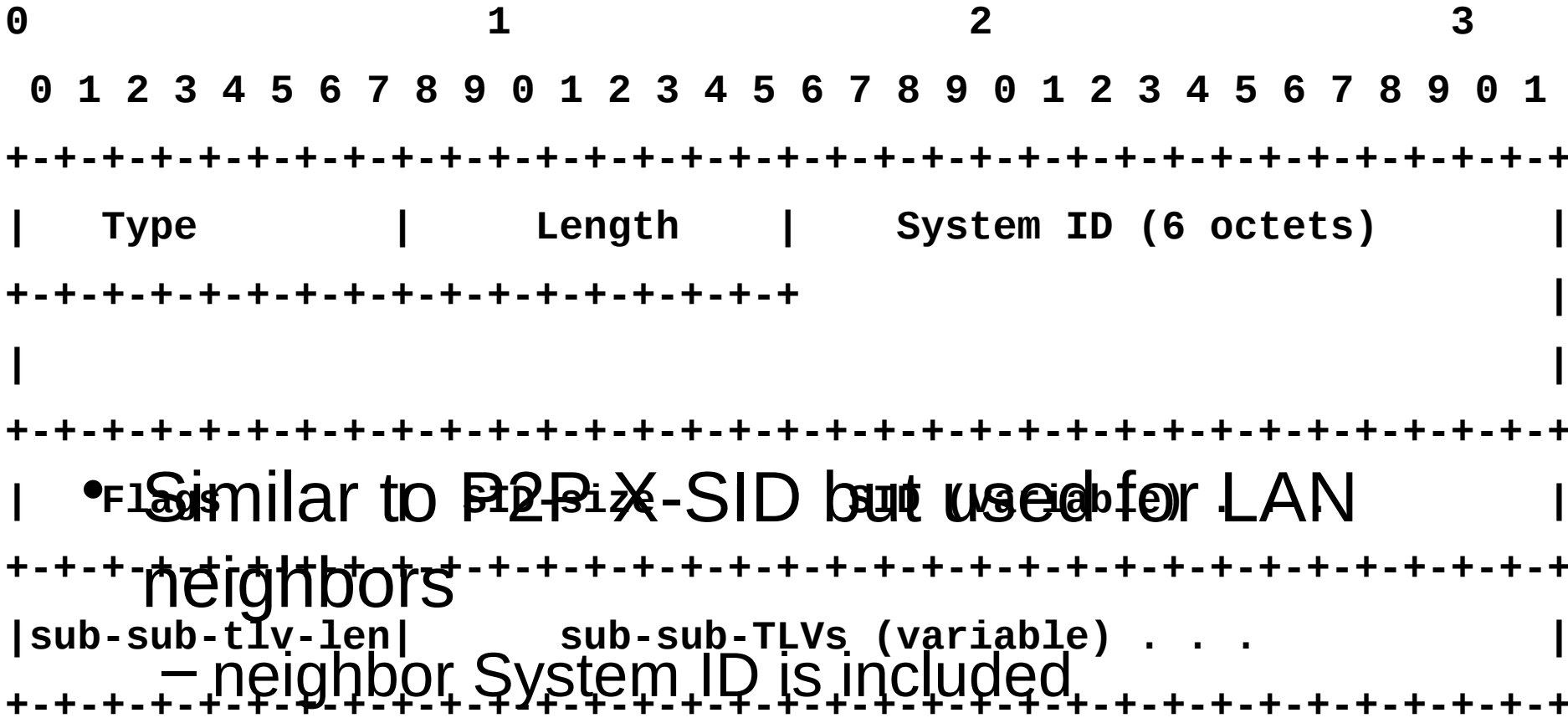


- Same structure as SRv6 SID TLV

- Takes sub-sub-TLVs

- ▬ Associated Function is specified by encoding the “**SRv6 Function Descriptor**” sub-TLV

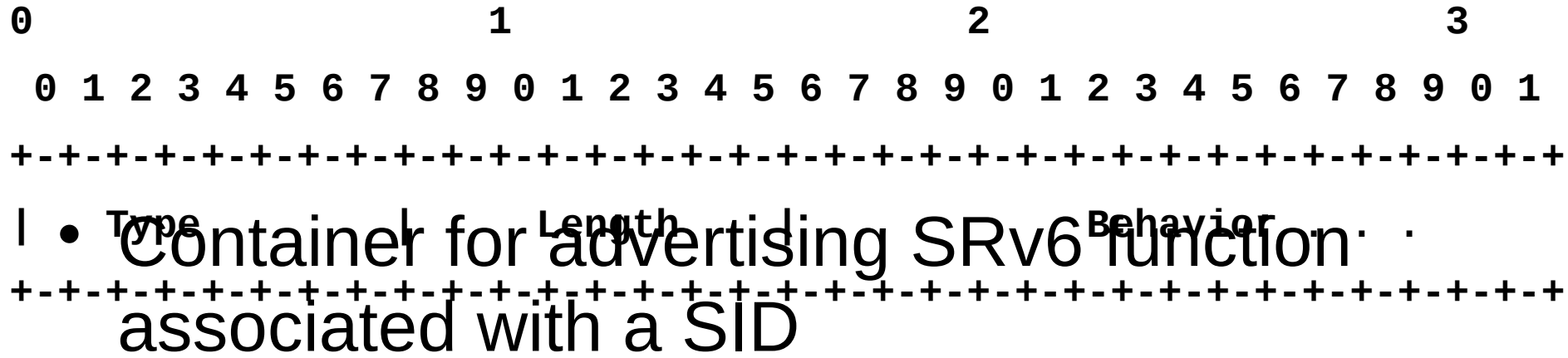
LAN X-SID sub-TLV



- Similar to P2P X-SID but used for LAN neighbors
- sub-sub-TLVs (variable) . . .
- neighbor System ID is included

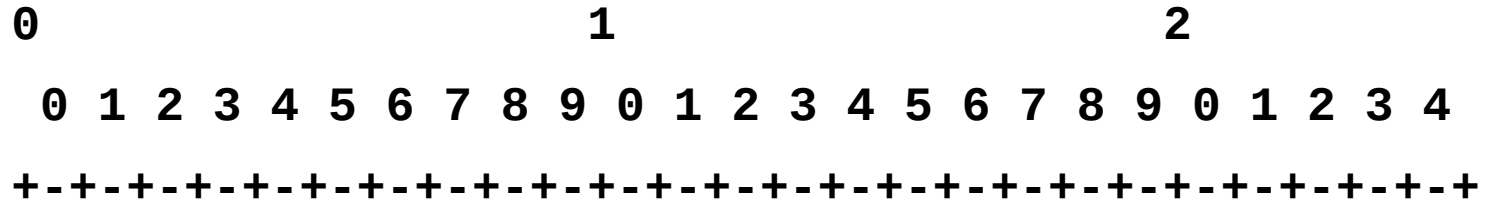
- Takes sub-sub-TLVs
 - ▬ Associated Function is specified by encoding the “**SRv6 Function Descriptor**” sub-sub-TLV

SRv6 Function Descriptor



- Behavior
 - Encodes one function with optional flavors
- Multiple Behaviors may be in one sub-TLV
- sub-TLV in SRv6 SID TLV
- Sub-sub-TLV in P2P/LAN X-SID sub-TLVs

Behavior



- Encodes one function with optional flavors
 - **P-flag**: If set then **PSP** flavor is enabled
 - **U-flag**: If set, then **USP** flavor is enabled
- Flags
 - **P-flag**: If set then **PSP** flavor is enabled
 - **U-flag**: If set, then **USP** flavor is enabled
- Function
 - Encodes the function code point of the function

Next Step

WG adoption