

I E T F®

IDR WG

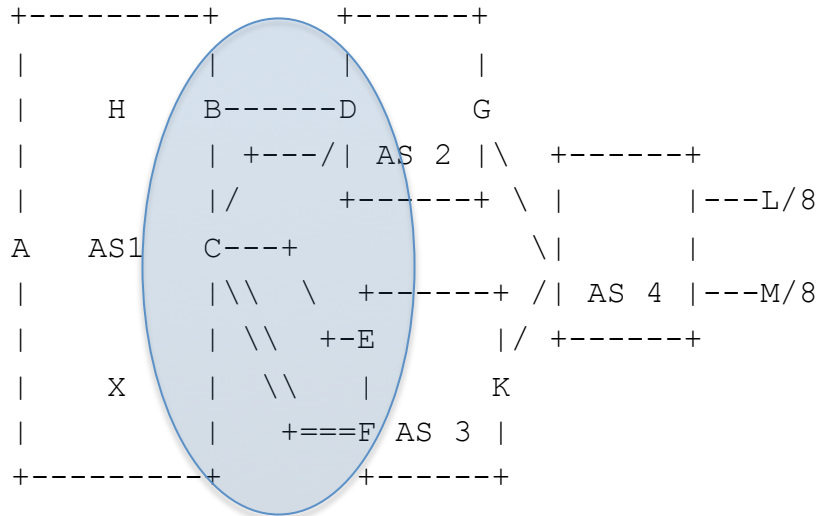
Segment Routing BGPLS Egress Peer Engineering Extensions

draft-previdi-idr-bgpls-segment-routing-epe-00

S. Previdi, C. Filisfilis, S. Ray, K. Patel

Motivations

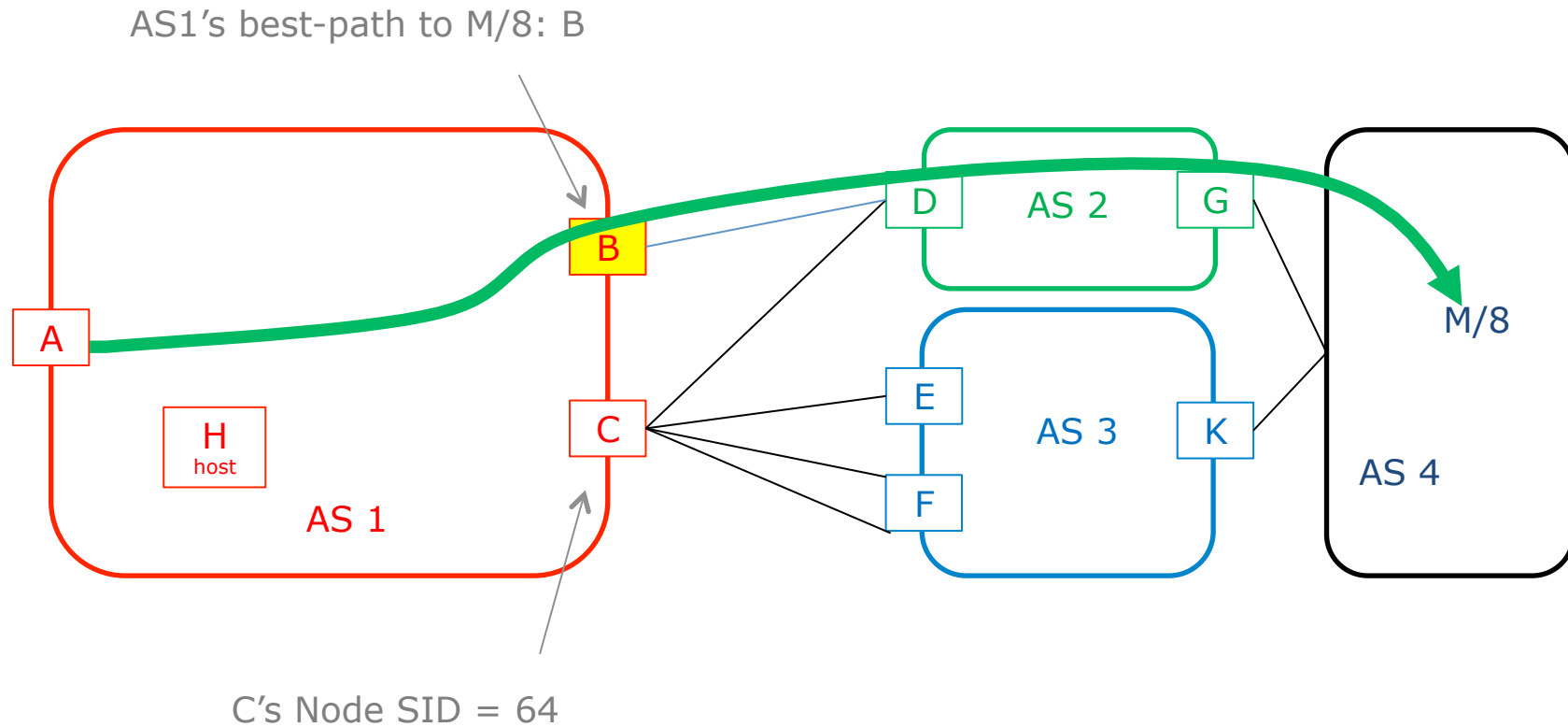
- Problem statement / use case described in draft-filsfils-spring-segment-routing-central-epe



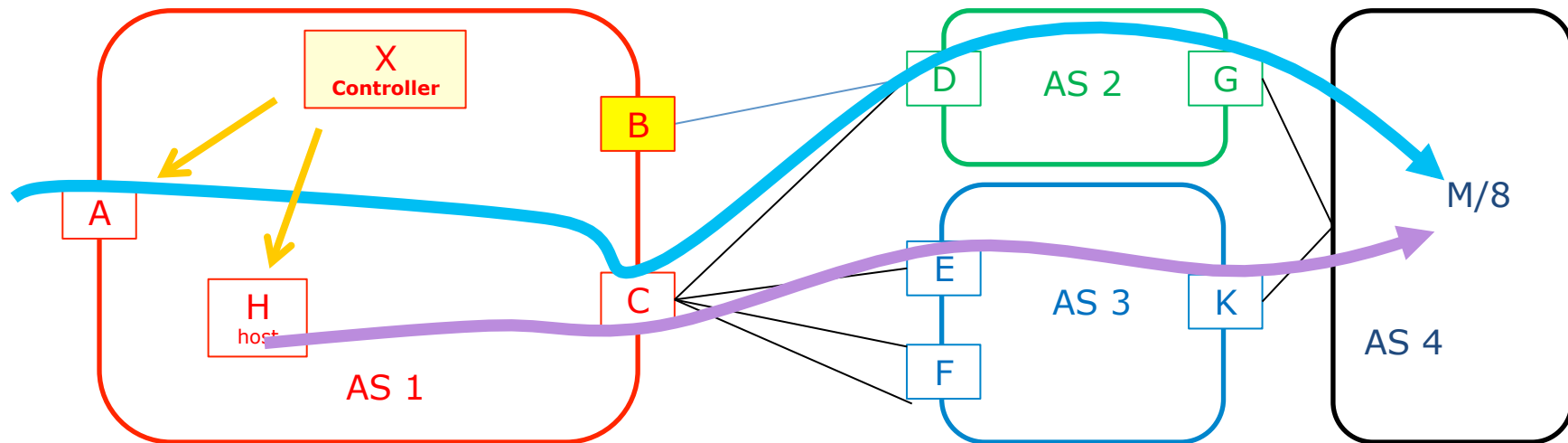
- Section 1.2 Problem Statement

A **centralized controller** should be able to instruct an ingress PE or a content source within the domain to use a specific egress PE and a specific external interface to reach a particular destination.

Reference Diagram



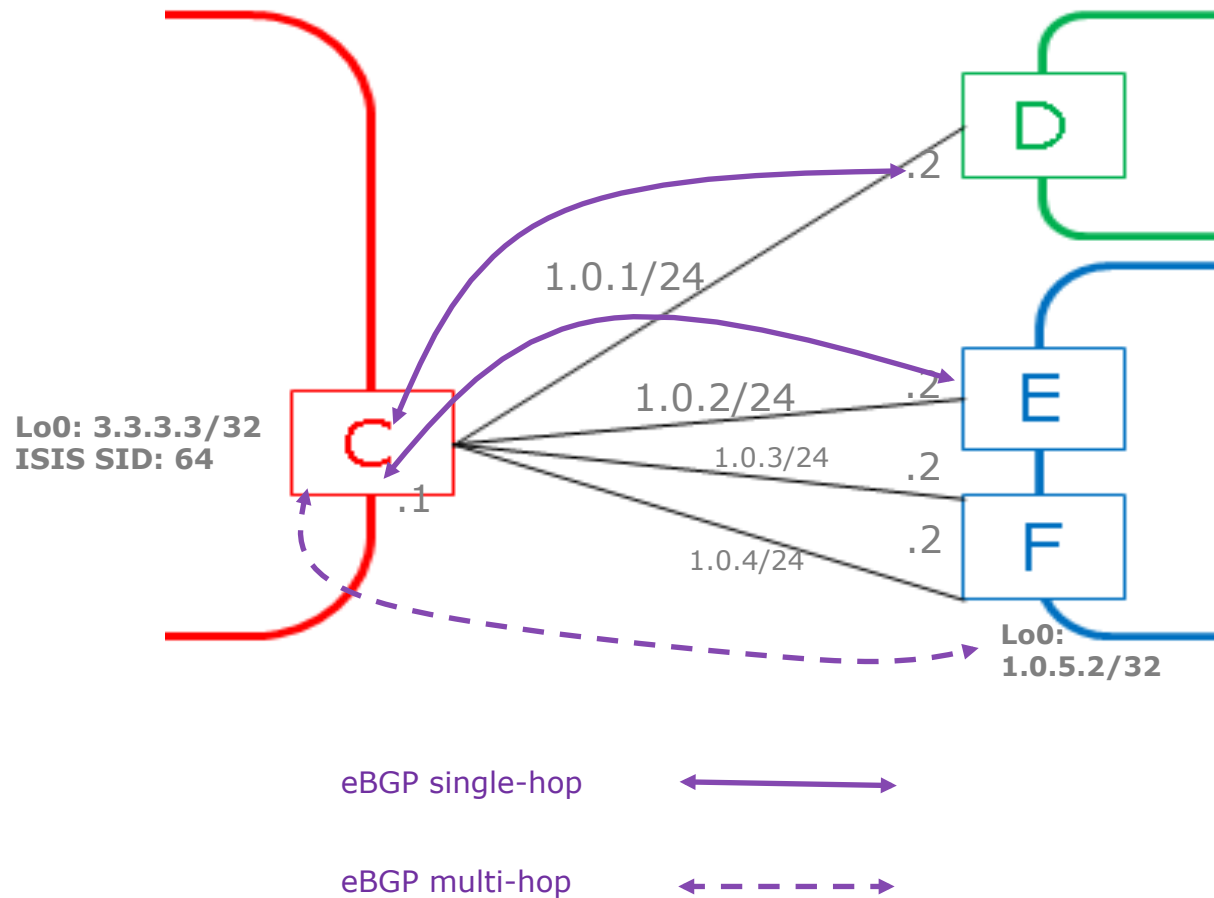
Objective: centralized egress peer engineering



- Per-Flow TE state only at the source node
 - Ingress router or directly at the source host

eBGP Peering Topology

BGP Peering Segments



Automated BGP Peering SID allocation

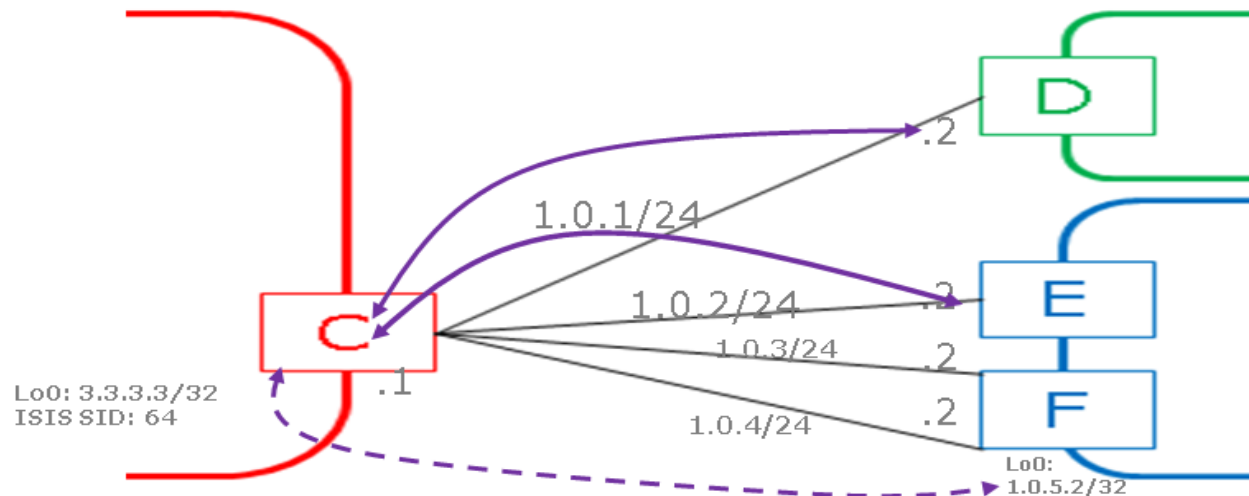
BGP Peering SID's in C's MPLS Dataplane

PeerNode SID's:

- 1012: pop and fwd to 1.0.1.2/32 (D)
- 1022: pop and fwd to 1.0.2.2/32 (E)
- 1052: pop and fwd to 1.0.5.2/32 (ecmp to F)

PeerAdj SID's:

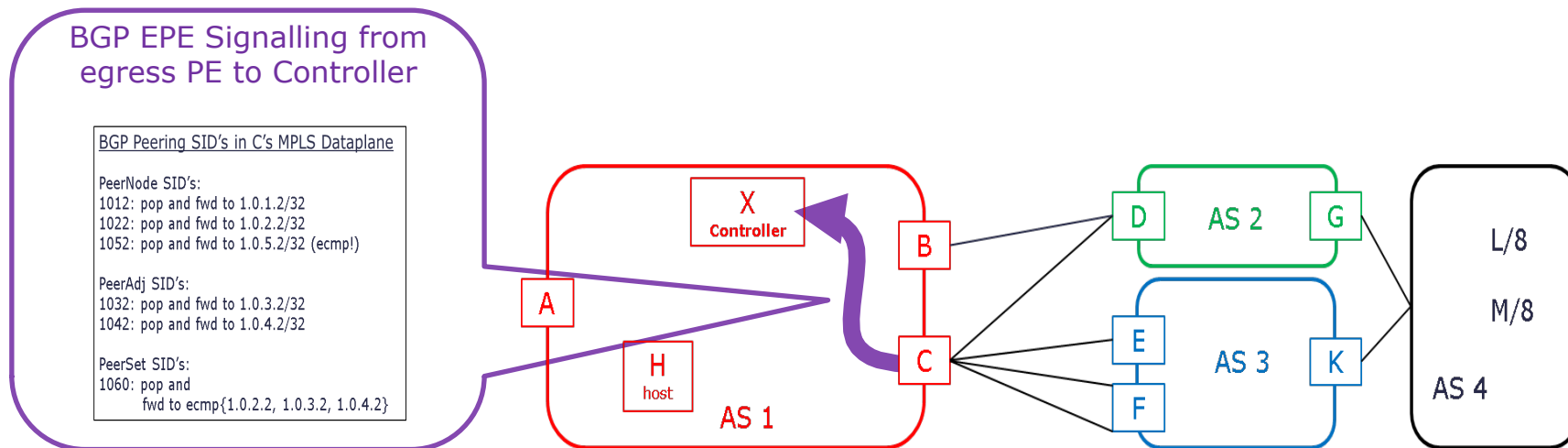
- 1032: pop and fwd to 1.0.3.2/32 (upper link to F)
- 1042: pop and fwd to 1.0.4.2/32 (lower link to F)



BGP EPE Routes

draft-previdi-idr-bgpls-segment-routing-epe

- The controller learns the BGP Peering SID's and the external topology of the egress border router via BGP-LS EPE routes

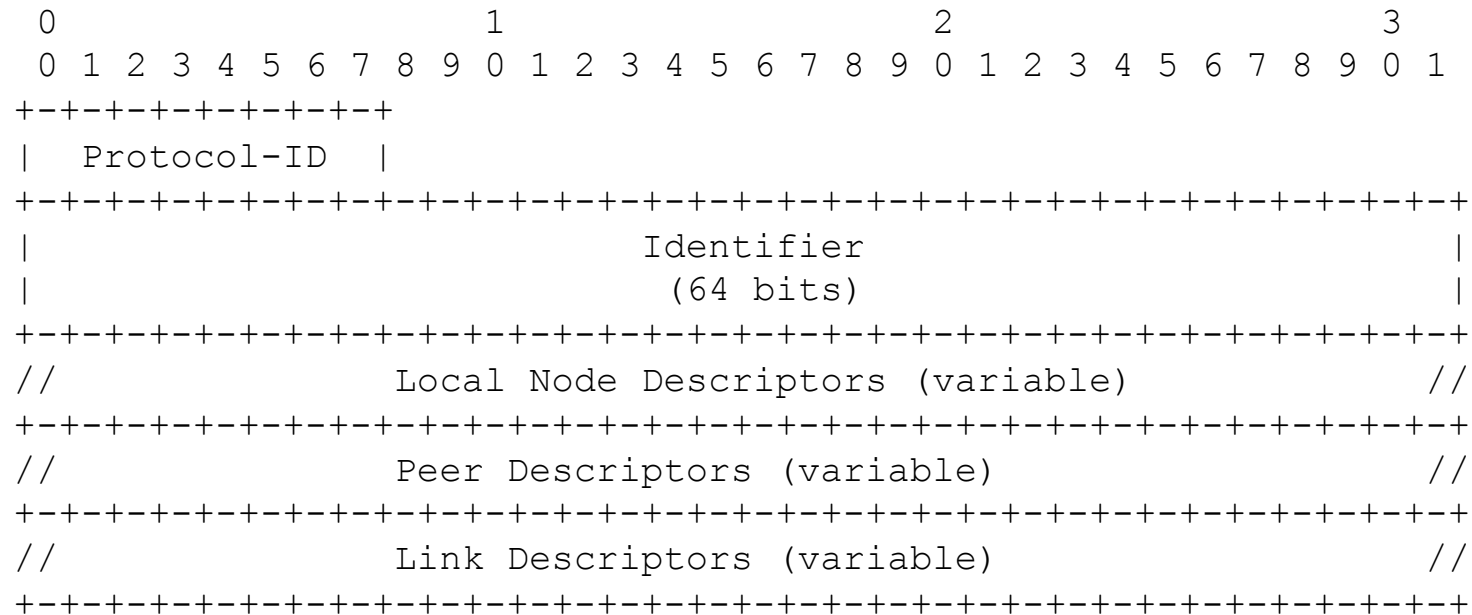


Controller – Decision

- Collects valid internet routes from peers
- Collect performance information across peers
 - EPE solution allows to target probes across probed peer
- Based on business policy and performance information, decides to engineer a flow via an explicit peer different than the best-path
- Outside the scope of the IETF drafts

Peer NLRI Type

- New NLRI Type (TBA, suggested value 5)
 - Peer NLRI-Type
 - Describes the connectivity of a BGP Egress router



- Local Node Descriptors: as defined in draft-ietf-idr-ls-distribution Section 3.2.1.2.
- Link Descriptors: as defined in draft-ietf-idr-ls-distribution Section 3.2.2.

Peer Descriptors

- Peer Descriptors (Peer Descriptors Sub-TLVs are defined in draft-ietf-idr-ls-distribution)

Sub-TLV Code Point	Description	Length
512	Peer Autonomous System	4
513	BGP-LS Identifier	4

Peer Attributes

- The Peer Attributes Sub-TLVs codepoints (defined in draft-idr-ls-distribution):

TLV Code Point	Description	Length	IS-IS SR TLV /sub-TLV
1099	Adjacency Segment Identifier (Adj-SID)	variable	31 (section 2.3.1)
1100	LAN Adjacency Segment Identifier (Adj-LAN SID)	variable	32 (section 2.3.2)
TBA	Peer Set SID	variable	31 (section 2.3.1)

Peering Segments

- See [draft-filsfils-spring-segment-routing-central-epe](#) for description of use cases

Questions?

Thanks!