

# PCE TE Constraints for Network Slicing

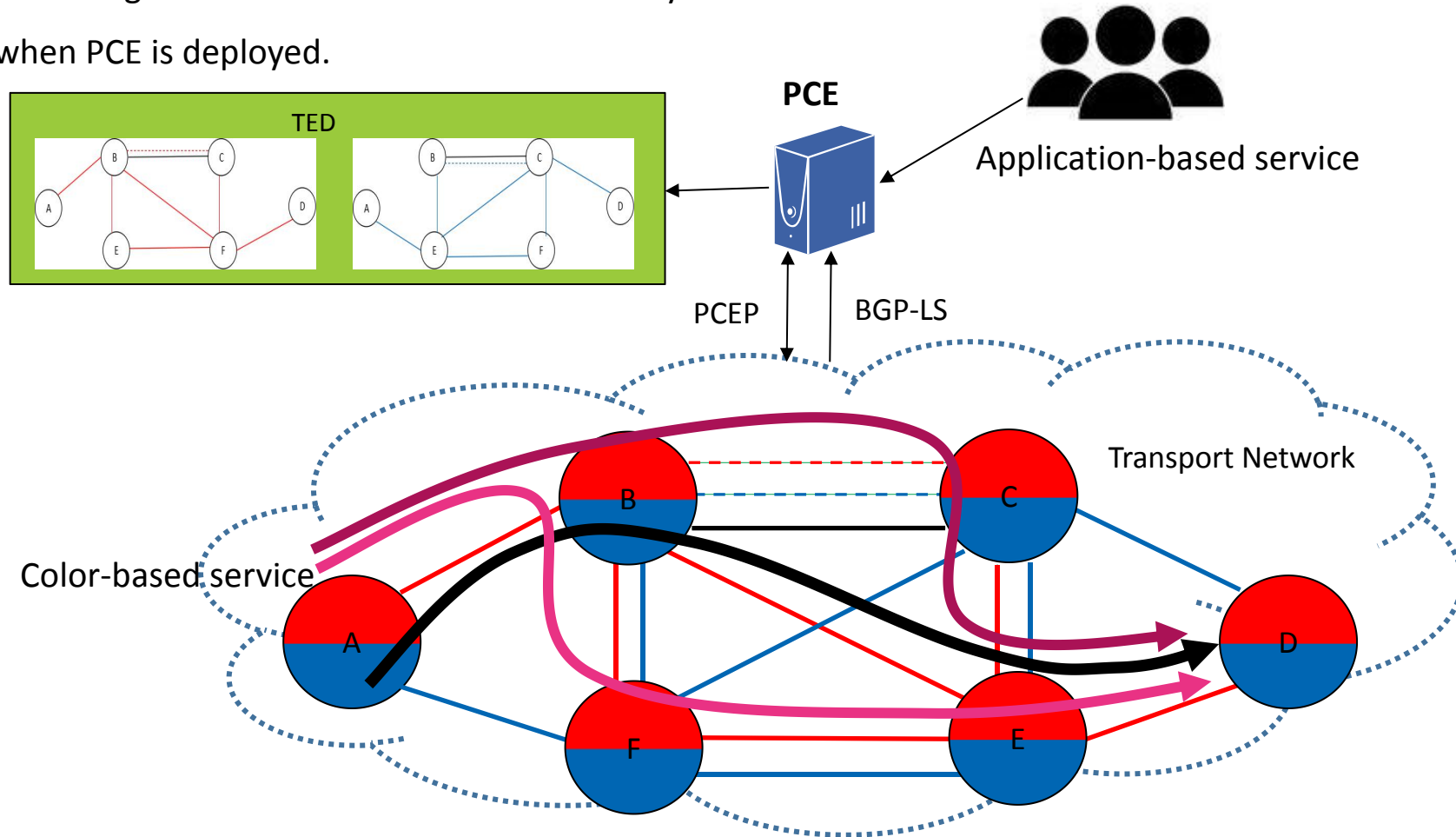
draft-peng-pce-te-constraints-01

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# Overview

- According to 5G context, network slicing is the collection of a set of technologies to support network service differentiation and meeting the diversified requirements from vertical industries. The slices may be seen as virtual networks and partition the network resources into sub-topologies in transport network.
- Multiple existing identifiers could be used to identify the virtual network resource and viewed as constraints of network slicing when PCE is deployed.



# TE Constraints for Network Slicing

- As define in RFC4655, the PCE MAY compute the path of a TE on the TED based on the constraints such as metric, bandwidth, delay, affinity, etc.
- This document proposes a set of constraints for network slicing:
  - ✓ Network topology information
    - Source Protocol ID (defined in RFC7752)
    - Muti-topology ID (defined in RFC7752)
    - Administrative Instance Identifier (AII) (defined in draft-peng-lsr-network-slicing)
  - ✓ Policy information (defined in draft-ietf-spring-segment-routing-policy)
    - Color template
  - ✓ Application attributes defined in draft-ietf-isis-te-app

# Constraint 1-Source Protocol

- Source Protocol Object
  - Sub-topology identified by the specific source protocol.

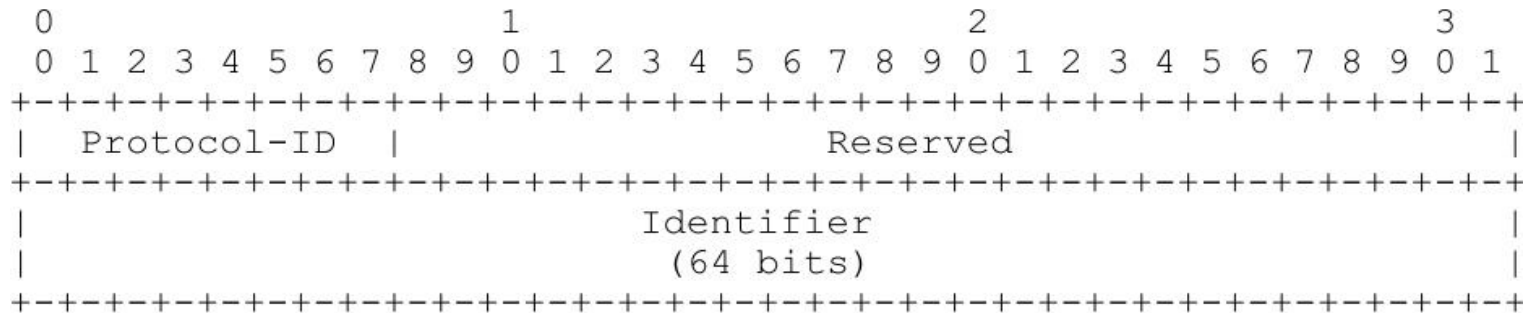


Figure 1: Source Protocol Object

- Protocol-ID : defined in RFC7752, Source Protocol identifier.
- Identifier : defined in RFC7752, identify the routing universe.

Protocol-ID	NLRI information source protocol
1	IS-IS Level 1
2	IS-IS Level 2
3	OSPFv2
4	Direct
5	Static configuration
6	OSPFv3

Table 2: Protocol Identifiers

Identifier	Routing Universe
0	Default Layer 3 Routing topology

Table 3: Well-Known Instance Identifiers

# Constraint 2-Multi-topology

- Multi-topology Object
  - Sub-topology identified by the specific Multi-Topology ID within a source protocol.

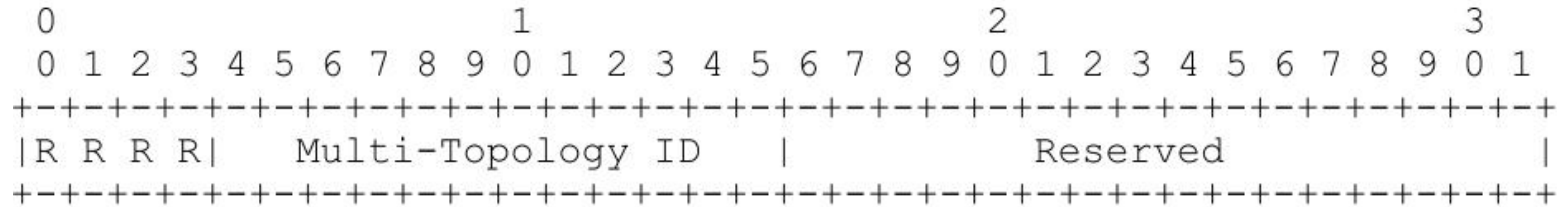


Figure 2: Multi-topology Object

- Multi-Topology ID :
  - defined in RFC5120, 12bits, non-zero MT ID of the topology being announced Source Protocol identifier.
  - defined in RFC4915, 8bits, represent Multi-Topology ID.
- R bits: set to 0 when originated and ignored on receipt.

# Constraint 3-virtual network

- All Object
  - Sub-topology identified by the specific All, which is independent of routing protocols such as IGP/BGP and can be applied to any of the virtual network.

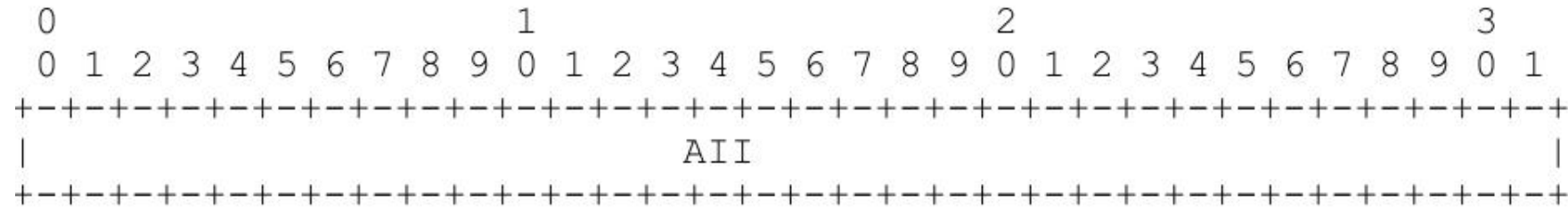


Figure 3: AII Object

- All (32 bits): Administrative Instance Identifier defined in draft-peng-lsr-network-slicing.

# Constraint 4-Color Template

- Color Object
  - Sub-topology identified by the specific Color Template which carried specific color parameter and it is suitable for any TE instance such as RSVP-TE, SR-TE, SR-policy.

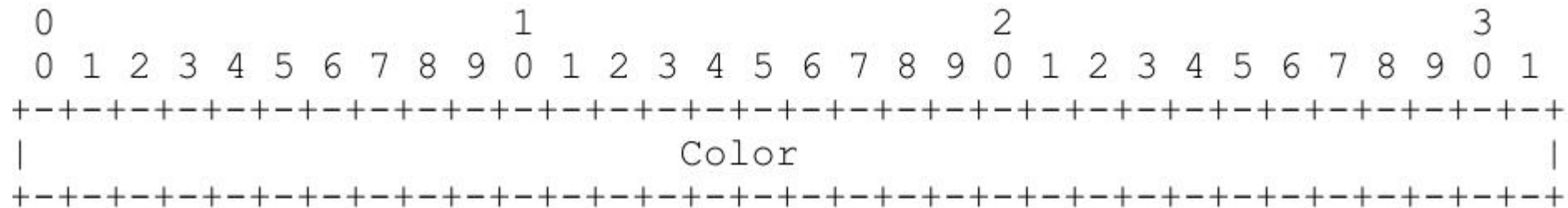
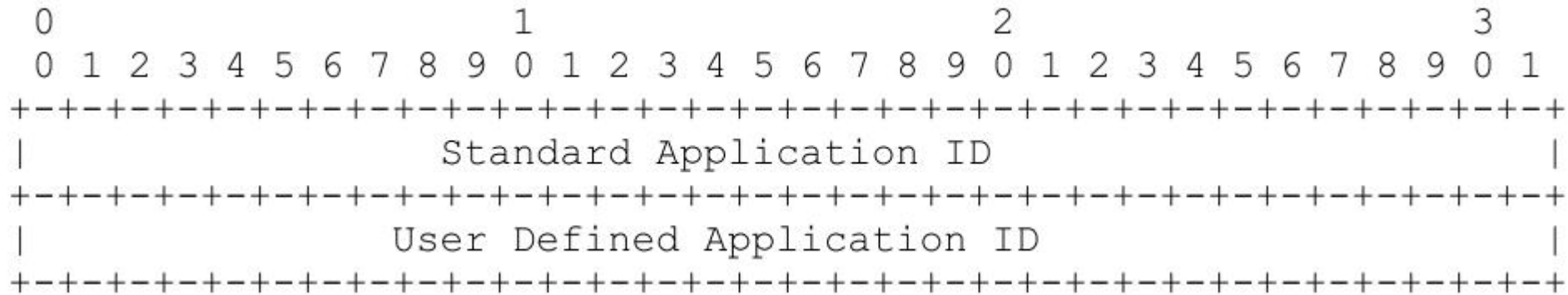


Figure 5: Color Object

- Color: indicate a TE template. It is consistent with the Color Extended Community defined in draft-ietf-idr-tunnel-encaps, and the color of SR policy defined in draft-ietf-spring-segment-routing-policy.

# Constraint 5-Application Attributes

- Application Specific Object
  - Sub-topology provides the Application Specific information.



- Standard Application ID : Represents a bit-position value for a single STANDARD application defined in draft-ietf-isis-te-app.
- User Defined Application ID : Represents a single user defined application which is a specific implementation.



# Next Step

- Comments and discussions are very welcome!

Thank you!