

# Usecases of MPLS Global Label

## draft-li-mpls-global-label-usecases-03

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# Introduction

- As the MPLS technologies develop, MPLS label is not only used with the local meaning which is always be understood by the upstream node and the downstream node, but also used with the global meaning which can be understood by all nodes or part of nodes in the network..
- This document is to define the global label and proposes the possible use cases of global label. The use cases includes:
  - Location identification
  - VPN identification
  - Segment Routing

# Use cases – Location Identification

- [I-D.bryant-mpls-synonymous-flow-labels] propose the challenge of the measurement of packet loss for the multi-point to point LSP.
- [I-D.bryant-mpls-synonymous-flow-labels] proposes the synonymous flow label to be used to introduce some source specific information encapsulated in the packet to identify packet batches from a specific source.
- MPLS global label can be allocated using as the flow label to help identify the source information for MP2P LSP such as LDP LSP.

## Use cases – VPN Identification of Location (1)

- Flow Label of VPN LSP
  - BGP VPN LSP is another type of multi-point to point LSP which faces the challenge of the measurement of packet loss proposed by [I-D.bryant-mpls-synonymous-flow-labels].
  - MPLS global label can be allocated using as the flow label to help identify source VPN.

## Use cases – VPN Identification of Location (2)

- Aggregate MVPN/VPLS over Single P-Tunnel
  - In BGP-base Multicast VPN ( [RFC6513]) and VPLS Multicast([RFC7117]),. context-specific label is introduced and can be allocated to identify specific VPNs over single P-Tunnel using P2MP LSP.
  - MPLS global label can be allocated to identify specific VPNs over single P-Tunnel using MP2MP or P2MP.

# Use cases – Segment Routing

- Global Label in Segment Routing
  - Implicit method: In the MPLS architecture, SRGB is the set of local labels reserved for global segments. When the global segment index is advertised, it can be transited to MPLS label based on the SRGB. When all nodes use the same SRGB, the global segment index will be transited to the global label.
  - Explicit method: [I-D.ietf-ospf-segment-routing-extensions] and [I-D.ietf-isis-segment-routing-extensions] can support to directly allocate global label.

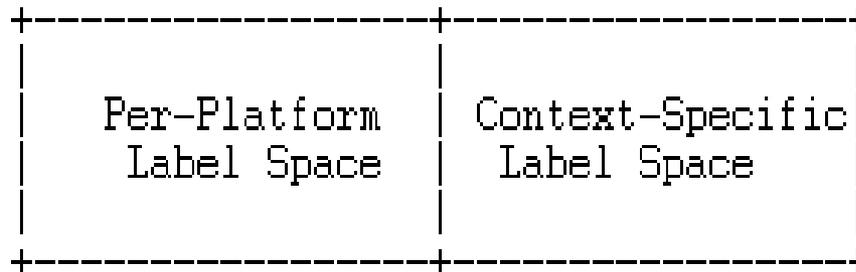
# Updates

- Add one co-author, Luyuan Fang, who are promoting more usecases of MPLS global label.
- Remove the early ideas on possible usecases of MPLS global label.
- Refine the emerging usecase of MPLS global label which is being accepted well.
- Add one new section to discuss the definition of MPLS global label and the section will be removed when make rough consensus in MPLS world.

# Discussion (1)

- Clarification on two pairs of label concepts
  - Per-platform Label Space vs. Context-specific Label Space

MPLS World



- Local Label vs. Global Label

# Discussion (2)

- Challenge of Dichotomy using Local Label/Global

MPLS World

Local Label	vs.	Global Label
		Special Purpose Label (RFC 7274)
		MPLS Upstream Label Assignment /Context-Specific Label Space (RFC 5331)
LDP (RFC 5036)		Entropy Label (RFC 6790)
RSVP-TE (RFC 3209)		Flow Label (RFC 6391)
BGP LSP (RFC 3107)		
L3VPN (RFC 4364)		BGP-base VPLS (RFC 4761)
LDP-based L2VPN (RFC 4762)		Segment Routing
EVPN (RFC 7432)		(draft-ietf-spring-segment-routing)
		Domain-Wide Label (Usecases: Synonymous Label/ Segment Routing, etc.)

# Discussion (3) What is global label?

- Option 1: Try to cover more label concepts and maintain dichotomy using local label and global label.
  - Global label: The meaning of the label mapping will be understood by all nodes or part of nodes in the network other than the local upstream node and downstream node.
  - The definition may cover more label concepts. But the covered label concepts seems have more different characteristics.
- Option 2: Narrow the scope and change name of global label without thinking on dichotomy.
  - Domain-wide label(1): label mapping are distributed in one domain or multiple domains. The meaning of the label mapping can be understood by all nodes of one domain or multiple domains.
    - Special cases: BGP controller may distribute the label which should be unique in PE nodes of one domain or multiple domains. But in order to avoid the label confliction, P nodes should also reserve these labels.
  - Domain-wide label (2): The label value is unique in one domain or multiple domains (that is the label value cannot be reused in one or more domains) , no matter the label mapping is distributed to all nodes or part of nodes of the domain(s).

# Next Steps

- Solicit comments on the definition of global label and try to consolidate the definition.
- Rework on the drafts of usecases and framework of global label according to the possible definition which is well accepted.