



**I E T F®**

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# **A YANG Data Model for MPLS Base and Static LSPs**

(draft-saad-mpls-static-yang-02)

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# Background

- The goal of this draft is to specify two YANG models:
  - MPLS Base
  - MPLS Static LSPs
- The MPLS base YANG module serves as a **base** framework for configuring and managing an MPLS switching subsystem
  - Augments the core routing data model [[I-D.ietf-netmod-routing-cfg](#)] with additional data specific to MPLS switching
  - Defines Base MPLS types and MPLS interface list and properties
  - Augmentation by other MPLS protocol modules expected
    - TE, LDP, and LSP static
- The MPLS Static LSP module:
  - Augments the MPLS base YANG module
  - Defines static LSPs and related data

# Update

- Draft initially introduced at IETF-94, Yokohama
- Update to augmentation path to reflect recent change in core routing data model [I-D.ietf-netmod-routing-cfg] (removal of routing-instance)
- MPLS RT Review [-02 Version] is underway
  - Reviewers: Sam Aldrin, Huub van Helvoort, Carlos Pignataro, and Mach Chen
  - Received comments from Huub
- Interest in generalizing the Static LSP Model to non-MPLS technologies
  - Rather than defining Static LSP models for each technology MPLS, OTN, WDM

# Open Issue #1

## Static LSP model for non-MPLS Technologies

- Issue - current Static LSP model is MPLS centric
  - Need Static LSPs functions for multiple other technologies, OTN, WDM, etc.
- Proposal – regroup/restructure of MPLS Static LSP module:
  - Decouple Static LSP model from MPLS technology
    - Abstracting it into technology agnostic data model (similar to TE generic model)
  - Utilize model attachment capability (e.g. mount) to apply generic Static LSP model to different technologies
  - Augment generic Static LSP model with technology specific data

# Open Issue #2

## MPLS-RT reviewer comments (from Huub)

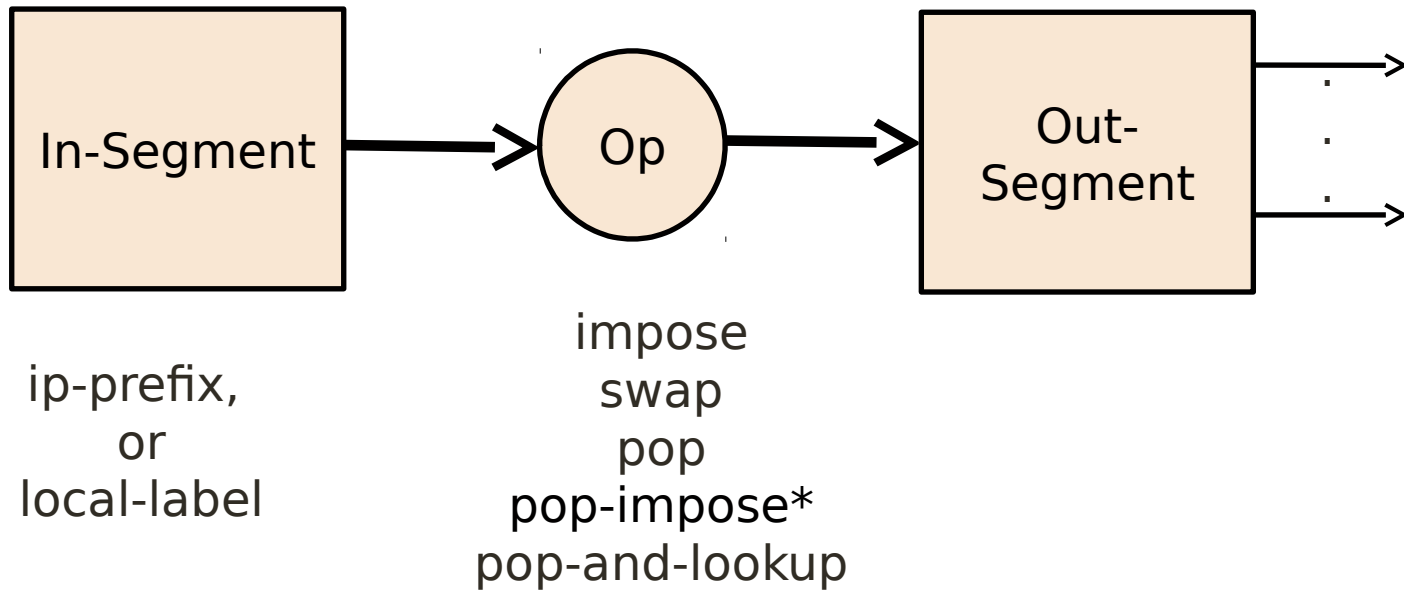
- Comment#1: draft should be split into two separate documents:
  - one for describing the MPLS base YANG module, and
  - one for describing the MPLS Static LSP module
- Comments/other: nits, will be addressed
- Proposal/resolution-
  - Authors agree to divide the two into separate drafts
  - This facilitates generalizing into generic Static LSP model

# Next Steps

- Address outstanding comments
- Soliciting more comments MPLS RT reviewers and WG
- Close on approach to generalize Static LSP model to multiple technologies

# Backup Slides

# MPLS Static LSPs: Building Blocks (2)





# MPLS Static LSPs: Building Blocks

- An MPLS Static LSP is defined as an ordered set of following three:
  - In-segment
  - Operation
  - Out-segment
- In-Segment: Incoming segment of an LSP that is used as a lookup key for taking a forwarding action.
- Operation: Operation (or action) that needs to be performed if lookup succeeds.
- Out-Segment: Outgoing segment of an LSP that contains the actual forwarding information
  - An Out-segment typically comprise 1 or more forwarding paths

# MPLS Static LSPs: Forwarding Path

- Two types of forwarding paths defined:
  - Simple path
    - Uni-path
    - Basic attributes
  - Path List
    - Multi-path
    - Enhanced attributes (such as protection)
- Path attributes:
  - Table Id (next revision)
  - Nexthop address
  - Nexthop interface
  - Label stack (0 or more labels)
  - Load factor
  - Role (primary / backup etc)
  - Path-Id / Backup path-id for protection

# MPLS Base: Tree Diagram - Rev -00

## **mpls-base interface**

```
module: ietf-mpls
augment /rt:routing/rt:routing-instance:
  +--rw mpls
    +--rw interface* [name]
      +--rw name      if:interface-ref
      +--rw config
      |  +--rw enabled
      +--ro state
        +--ro enabled
```