# MPLS-TP Use Cases and Design Considerations

draft-fang-mpls-tp-use-cases-and-design

Luyuan Fang lufang@cisco.com

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# Contributing co-authors

| | |
|---|---|
| • **Luyuan Fang** | **Cisco** |
| • **Dan Frost** | **Cisco** |
| • **Nabil Bitar** | **Verizon** |
| • **Raymond Zhang** | **ALU** |
| • **Masahiro DAIKOKU** | **KDDI** |
| • **Jianping Zhang** | **CT** |
| • **Mach Chen** | **Huawei** |
| • **Lei Wang** | **Telenor** |
| • **Nurit Sprecher** | **NSN** |
| • **Henry Yu** | **TW Telecom** |
| • **Curtis Villamizar** | **Infinera** |

# Objectives

- Objectives:
  - Provide MPLS-TP use case studies
  - Discuss design considerations and options
  - Intent to serve as best practice guide
- Intended category: Informational
- Status:
  - Discussed in IETF 78, 79, 80
  - Recent input from Curtis on packet optical transport
  - Work in progress for new additions especially in design considerations

# Overview

- Use cases
  - Metro Agg/Acc, Mobile backhaul, Packet Optical Transport
  - In general, MPLS-TP provides the transport for multi-services, e.g. wireline/wireless, business VPNs/ residential broadband, whole sale/retail…
  - Bring in latest real world deployment/planning examples which using IETF standards MPLS-TP solutions.

# Design Considerations (1)

- Technologies selections
  - What is the role of MPLS-TP? De-confusion.
  - Operational reality often dictate the solution
  - Balance between today's reality and needs for future proof
- Operational Model selections
  - NMS provisioned
  - GMPLS control plane
  - Combination,  interaction of both in some cases
- LSP related design options
  - Bidirectional co-routed vs. associated
  - Bidirectional vs. Unidirectional
  - BW reservation, QoS, nested LSPs

# More on Design Considerations (2)

- Protection
  - 1:1, 1+1, 1:N (1 protects n working lsps)
  - Linear/Ring/Shared mesh protection
  - Recovery coordination among layers
  - PW protection and LSP protection
  - Support of multi-homing, multi-chassis redundancy
  - Delay variation between working and protect LSPs
- OAM
  - Balance between protection coverage and efficiency/reduce complexity
  - Tuning BFD hello interval and hold off timer
  - Distance impact to AIS/RDI/LDI – use of TP style fast reroute
  - Clocking and loss/delay measurement
  - Use of loopback and lock Instruct for test and maintenance
  - OAM and control plane relations

# More on Design Considerations - Inter-connections

| Agg./Access | Inter-connect | Core |
|---|---|---|
|  | | |
| MPLS-TP | - PW over LSP<br>- VLAN | MPLS PW |
| MPLS-TP | - PW over LSP<br>- MPLS-TE<br>--VLAN | MPLS-TE |
| IP/MPLS | - GMPLS-UNI<br>- PW over LSP<br>- VLAN | MPLS-TP (w/ GMPLS CP) |
| Metro Ethernet<br>(VPLS or native E) | - VLAN<br>- H-VPLS<br>- GMPLS-UNI | MPLS-TP |

- Interconnection models:
  - Overlay vs. Peering
  - LSP stitching vs. termination
  - PW switching vs. PW mesh

# Design Considerations (3)

- Good general practice
  - Starts as simple as possible – make it happen!
  - Stay on standards track
  - Keep flexibility for future enhancement

# Next Steps

- Issue 04 draft soon
  - Fix the author list in the front page
  - Address all points listed
- More input/comments from WGs appreciated
- Asking for WG document adoption after revision