# Requirements for OAM in MPLS Transport Networks

`draft-vigoureux-mpls-tp-oam-requirements-00`

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# Rationales for OAM

- As a network-oriented mechanism to monitor network infrastructure and to implement internal mechanisms in order to enhance the general behaviour and the level of performances the network

- As a service-oriented mechanism to monitor offered services to end customers in order to be able to react rapidly in case of a problem and to be able to verify some of the SLA parameters
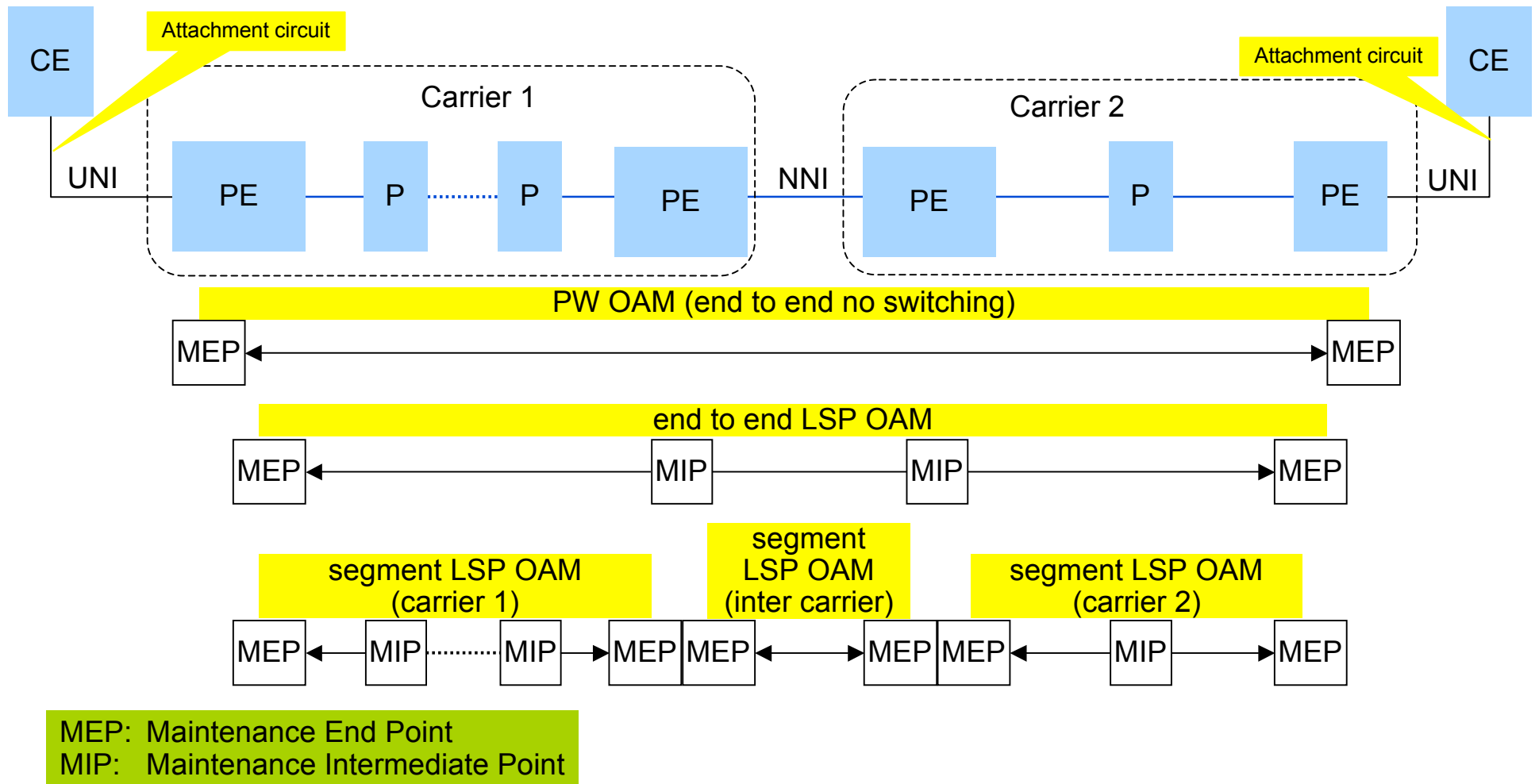
# The document

- Early versions based on ITU-T Y.Sup4
  - Streamlined, reworded, re-architected
- Some definitions
  - Some will be removed (already solutions, e.g. TCME)
- Context and rationales
  - mpls-tp section will be removed (was to educate the reader)

# The document

- Architectural requirements
- Functional requirement
- Required functions

# JWT example: PW over LSP



CE

Attachment circuit

Carrier 1

PE — P ⋯ P — PE

NNI

Carrier 2

PE — P — PE

Attachment circuit

CE

UNI

UNI

PW OAM (end to end no switching)

MEP ⟷ MEP

end to end LSP OAM

MEP ⟷ MIP — MIP ⟷ MEP

segment LSP OAM (carrier 1)

segment LSP OAM (inter carrier)

segment LSP OAM (carrier 2)

MEP ← MIP ⋯ MIP → MEP | MEP ⟷ MEP | MEP ← MIP → MEP

MEP: Maintenance End Point
MIP: Maintenance Intermediate Point

# Core reqs

- Commonality
  - Covers MPLS Sections, LSPs, PWs
- Independence (not isolation)
  - Independence from client and server layers
  - Independence between functions operated at each monitored entity (MPLS Sections, LSPs, PWs)

# Core reqs

- Capability to run without relying on IP forwarding nor on distributed control protocols for configuration
- bi-directionality and p2mp support
- Segment monitoring (aka tandem connection monitoring)
- OAM packets run in-band and fate share with data packets
- IP addressing and forwarding is not required but cannot be precluded
  - Node addressing scheme other than IP YTBD

# IP addressing, forwarding

- The ability to use MPLS-TP OAM over IP/MPLS networks is not clearly stated and will be added for -01

- Interoperability with IP/MPLS networks must be clarified in -01

- Authors agree this is simple oversight and will be clarified in all docs

# Functions

- CC, CV
- Packet Loss and Delay Measurement
- Trace
- Remote Defect Indication
- Others
  - Lock, alarm suppression, diag
  - AC failure propagation
- Allow support of vendor-specific and experimental functions

# Open Points

- CC & CV
  - Currently, no real distinctions made
    - inheritance from G.8113 where continuity and connectivity (check) functions are combined and referred to as CC
    - Loopback requirement was rephrased as on-demand CC in Y.Sup4
  - Proposition:
    - pro-active Continuity Check to monitor if the path is present (e.g. a heart beat mechanism)
    - Loopback to verify and potentially localize a reported defect

# Open Points

- RDI used in PM?
- Proactive Delay Measurement?
- Performance Requirements and Scalability discussion
- OAM packets prioritization
- Positioning wrt. RFC 4377
- Security section
  - Currently a bit weak, would welcome inputs from experts

# Next Steps

- Close the open points
- Already three ISPs involved, would welcome additional ones to make sure we catch all requirements.
- Substantial work done for 00 version
  - Working group document?