# draft-geib-spring-oam-usecase

**IETF 89, London**

Rüdiger Geib, Deutsche Telekom (IPR disclosure 2014-02-05, ID # 2314)

## Use case LSP monitoring: aim

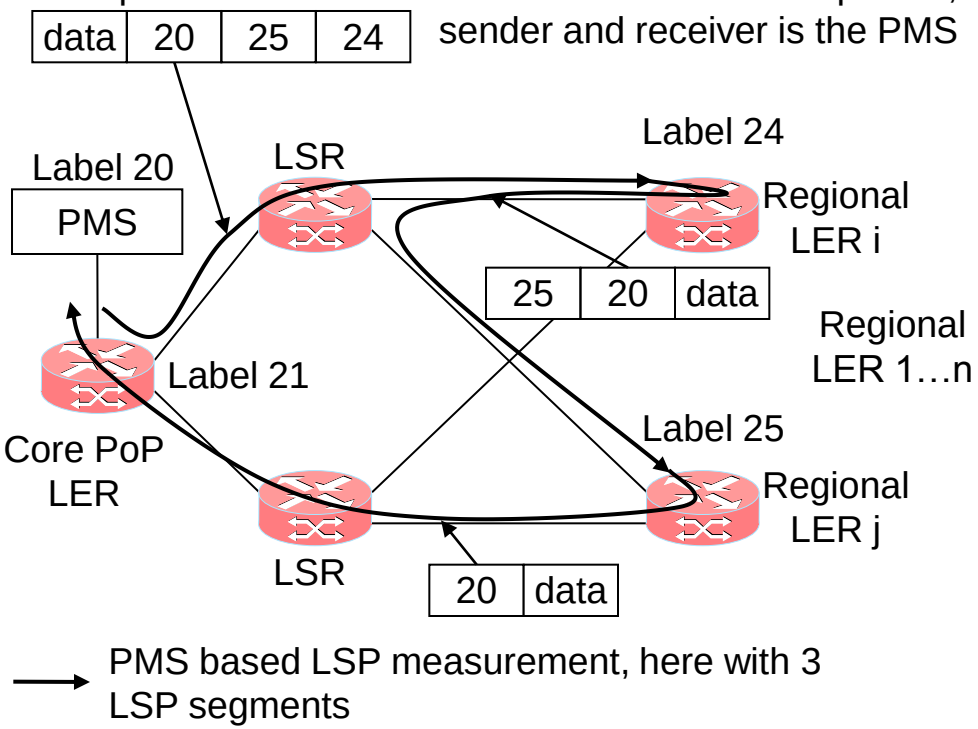
Monitoring MPLS data plane liveliness

- the PMS is aware of the IP and MPLS network topology and their state.
- a single PMS is able to address all LSPs of a domain. A redundant design is possible if desired.
- Task: PMS based data plane failure detection between LER i and LER j.

In general, all MPLS LSPs of a domain can be monitored this way.

PMS: MPLS Path Monitoring System

Example of a minimum label stack measurement packet, sender and receiver is the PMS



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Use case LSP monitoring: Detect MPLS data plane failures with a minimum label stack.

- the LSPs from the PMS to LER i and from LER j to the PMS must be available. Then the path they take is not relevant. Each of them requires one Label (if the PMS participates in SPRING IGP routing).
- IP based ECMP may be deployed between LER i and LER j. RFC4379 IPv4 based tree trace functionality allows to
  - trace all LSPs between LER i and LER j.
  - by analysing the echo reply, the PMS is able to select different specific RFC 4379 IPv4 echo request destination adresses to execute specific LSPs between LER i and LER j.

  This allows to add only one other label to address any single LSP between LSR i and LSR j.
- If ECMP is based on Entropy labels a suitable RFC4379 extension is required. An IPv6 MPLS domain requires RFC4379 extensions too.
- Data plane failure detection by circulating monitoring packets can be executed at any time. MPLS traceroutes as specified above should be executed only during off peak times (and then with limited parallel MPLS ping/trace load).
- Topology changes may justify exceptional MPLS ping/trace activities.

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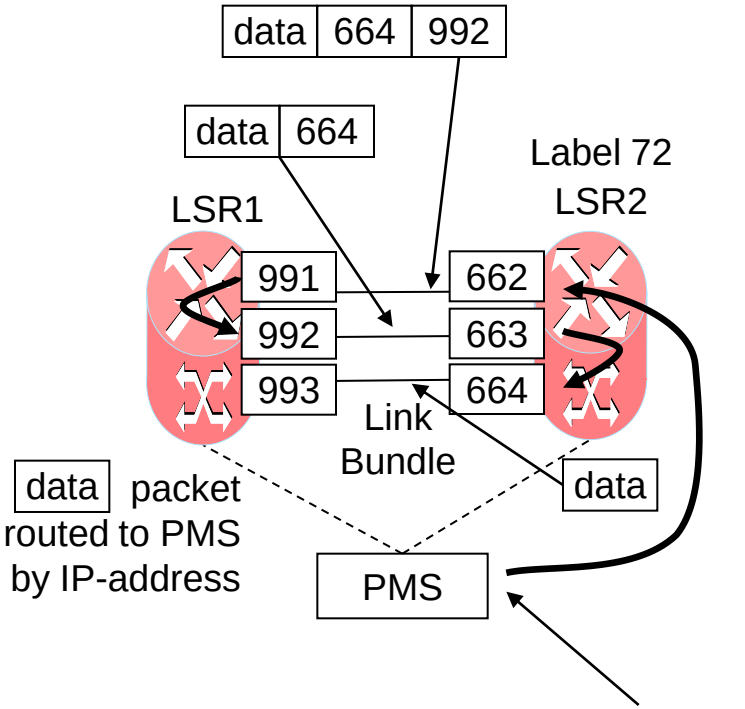
Use case link bundle monitoring.

Detecting failure of individual links of a link bundle

- the PMS is aware of the Adjacency SIDs assigned by LSR1 and LSR2 to the local interfaces of the individual links of the bundle.
- if the monitoring packet is returned to the PMS, all links of the bundle are available (in the direction tested).
- If the monitoring packet doesn‘t return, check availability of individual links (different possibilities exist to do that, e.g. testing link by link in the order as above or testing each link individually by three monitoring packets).




Example of a measurement packet, sender and receiver is the PMS

| data | 664 | 992 | 662 | 72 |
|---|---|---|---|---|