Segment Routing based OAM use case

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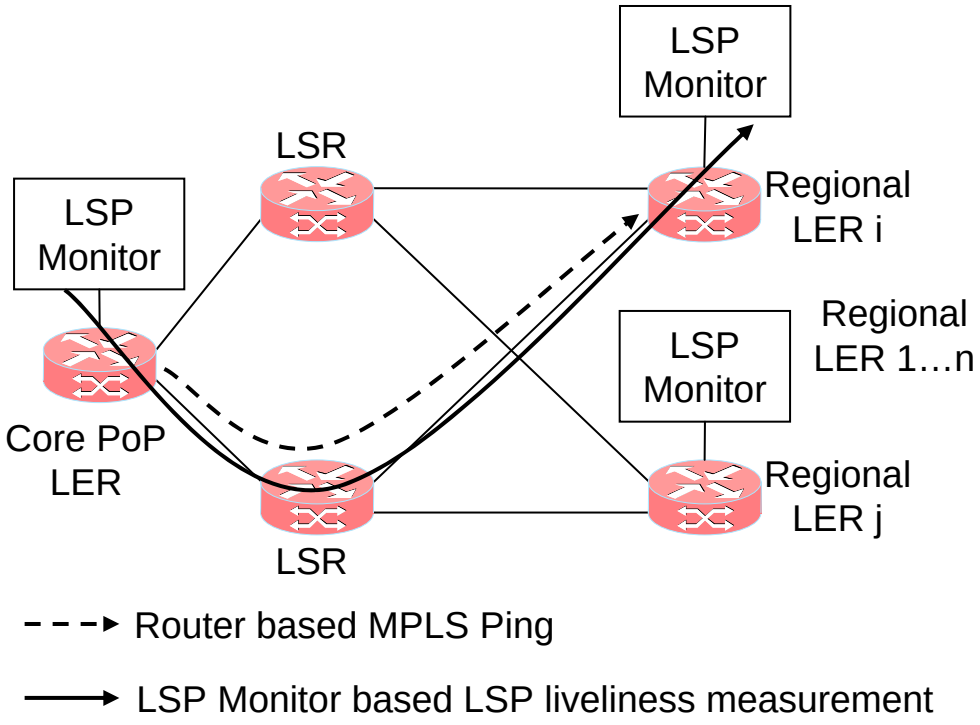
State of the art MPLS OAM: limited functionality, not scaleable in carrier backbone networks. Despite RFC4379 being a very smart and useful solution.

Monitoring MPLS data plane liveliness

- on the fly by router based MPLS OAM commands. Involves control plane, not useful for permanent LSP monitoring.
- permanent monitoring with LSP data plane traffic only: requires dedicated hardware, e.g. at each LER. Limited to path monitoring between routers with attached LSP monitor. Requires dedicated monitoring HW per PoP, ensuring execution of all LSPs is tricky in the presence of ECMP, requires a monitoring result collection and so on.



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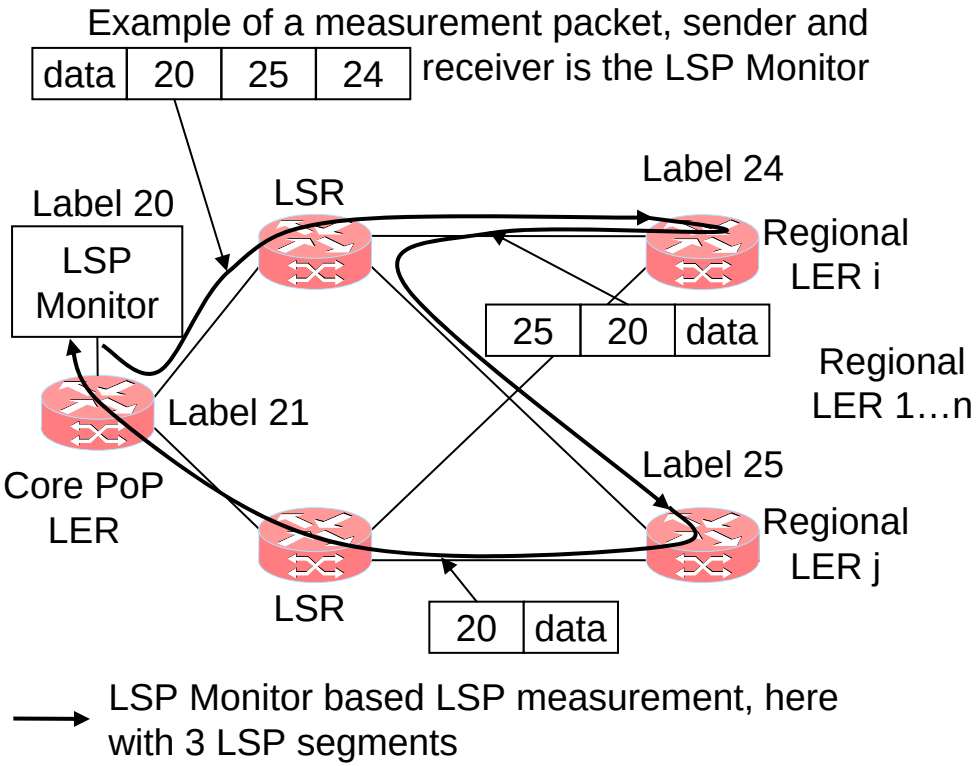
Segment based Routing allows for scaleable LSP monitoring

Monitoring MPLS data plane liveliness

- source based routing allows execution of arbitrary LSP chains.
- then a ping with data plane loop can be built.
- by ISIS the LSP Monitor is aware of the network topology and its state.
- a single LSP monitor is able to adress all LSPs of a domain. A redundant design is possible if desired.
- Example to the right: the LSP monitor checks data plane liveliness between LER i and LER j. In general, by the method shown all LSPs can be monitored.



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State and expectation of DT on segment routing based OAM

- Technical Engineering and NOC convinced of the advantages of SR based MPLS backbone monitoring.
- A self developed prototype is connected to our commercial MPLS backbone.
- SR as proposed by the architecture of the draft-filsfils-rtgwg-segment-routing author team should be set on IETF standards track. ASAP.

State of Google on segment routing based OAM

- A pretty much identical approach to that shown on the page before may be found in Google‘s presentation(s) on „localizing packet loss“, e.g. page 15ff of https://ripe65.ripe.net/presentations/828-RIPE65.Talk29.Google_Blackbox_Monitoring.pdf