SFC OAM Requirements and Framework

draft-krishnan-sfc-oam-req-framework-00

IETF 90
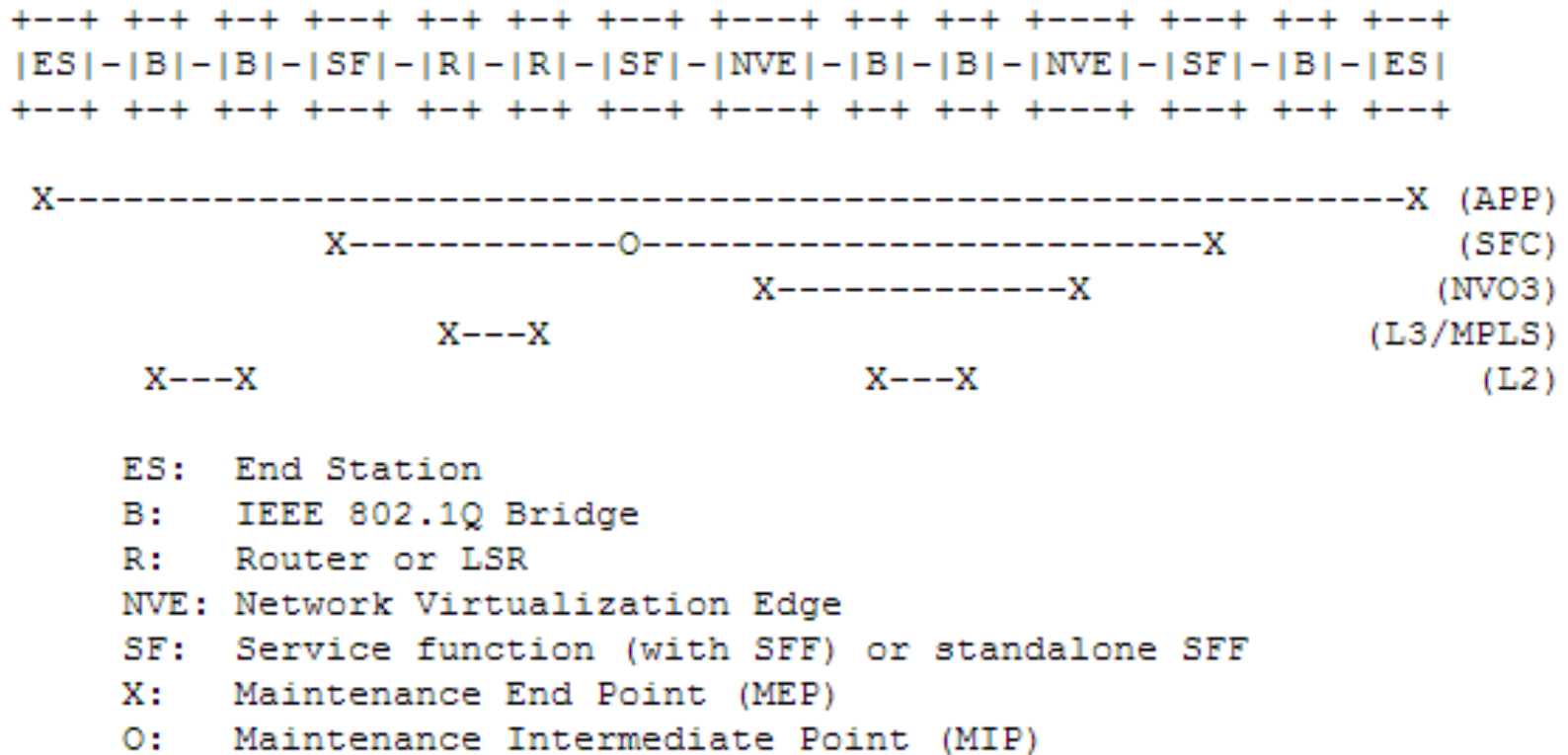
Ram (Ramki) Krishnan, Brocade Communications

Anoop Ghanwani, Dell

Pedro A. Aranda Gutierrez & Diego Lopez, Telefonica I+D

Joel Halpern & Sriganesh Kini, Ericsson

Andy Reid, BT

Layered OAM Architecture

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+--+ +-+ +-+ +--+ +-+ +-+ +--+ +---+ +-+ +-+ +---+ +--+ +-+ +--+
|ES|-|B|-|B|-|SF|-|R|-|R|-|SF|-|NVE|-|B|-|B|-|NVE|-|SF|-|B|-|ES|
+--+ +-+ +-+ +--+ +-+ +-+ +--+ +---+ +-+ +-+ +---+ +--+ +-+ +--+


 X------------------------------------------------------------X (APP)
          X-----------O--------------------------------X        (SFC)
                          X-------------X                       (NVO3)
              X---X                                           (L3/MPLS)
    X---X                                X---X                    (L2)


 ES:  End Station
 B:    IEEE 802.1Q Bridge
 R:    Router or LSR
 NVE: Network Virtualization Edge
 SF:  Service function (with SFF) or standalone SFF
 X:    Maintenance End Point (MEP)
 O:    Maintenance Intermediate Point (MIP)
```

- SFC OAM does not attempt to monitor actual SFs

- SFC OAM does not replace or obviate the need for transport-level OAM functions such as NVO3 OAM, IEEE 802.1ag, MPLS OAM, or whatever else may be applicable depending on the network technology that the SFC is implemented on

SFC OAM Requirements

- Topologies
  - Entire SFP or portion of an SFP
  - Point-to-point and multipoint
  - SFC OAM for SFFs that send data packets to more than one output

- SFF Connectivity Check
  - Test the liveness of a given SFF along a given SFP
  - It should be possible to allow such SFC OAM messages to be sent along the same path that a given data packet would follow

- SFP Trace
  - Provide the list of SFFs that comprise the SFC
  - It should be possible to allow such SFC OAM messages to be sent along the same path that a given data packet would follow

SFC OAM Requirements (2)

- Performance
  - Measure SFP parameters such as the loss, delay, and delay variation

- Leakage of OAM Messages
  - An SFF should not forward OAM messages to a device that would discard such messages as a result of not knowing how to process them, e.g. an SF or an end station

SFC OAM Requirements (3)

- SF Types
  - Transparent SFs
    - These SFs typically do not make any modifications to the packet
    - It is straightforward for the SFF to process OAM messages without any knowledge of the SF(s)
  - SFs that modify the packet
    - Modify one or more of MAC, Overlay, IP, transport headers (e.g. NAT)
    - The application session itself may be terminated and a new session initiated, e.g. a load balancer that offers HTTPS termination

More on SFs that Modify the Packet

- There are known cases where SFs modify data packets or metadata and trigger reclassification (either implicitly or explicitly)

- SFC OAM messages are not expected to be processed by SFs

- Thus any SF-driven reclassification would introduce complexities for SFC OAM

Differences with Respect to Other SFC OAM Drafts

- SFC OAM behavior in cases where SFs modify the packet

- Various topologies such as point-to-point or multipoint

Next Steps

- Discuss with authors of <draft-aldrin-sfc-oam-framework>

- Merge the drafts?

Thank You