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C. Wang
W. Meng
ZTE Corporation
B. Khasnabish
ZTE TX, Inc.
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Multi-Layer OAM for Service function Chaining
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Abstract

Since there are different notions of service chain, such as fully abstract notion named SFC, half-fully abstraction notion named SFP and fully specific notion named RSP, and there are different components defined in SFC architecture, it seems reasonable to define differentiated OAM for these different service chains. This document tries to discuss the multi-layer OAM requirements in SFC domain and provides a multi-layer OAM solution for different service chains.

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Table of Contents

- [1. Introduction](#) [3](#)
- [2. Convention and Terminology](#) [4](#)
- [3. Requirement](#) [5](#)
- [4. Multi-layer SFC OAM architecture](#) [7](#)
- [5. Solution](#) [8](#)
- [6. Security Considerations](#) [9](#)
- [7. IANA Considerations](#) [10](#)
- [8. References](#) [11](#)
 - [8.1. Normative References](#) [11](#)
 - [8.2. Informative References](#) [11](#)
- [Authors' Addresses](#) [12](#)

1. Introduction

Since there are different notions of service chain, such as fully abstract notion named SFC, half-fully abstraction notion named SFP and fully specific notion named RSP, and there are different components defined in SFC architecture, it seems reasonable to define differentiated OAM for these different service chains. This document tries to discuss the multi-layer OAM requirements in SFC domain and provides a multi-layer OAM solution for different service chains.

2. Convention and Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

The terms are all defined in [[I-D.ietf-sfc-architecture](#)].

3. Requirement

In fact, besides the link layer OAM, network layer OAM, SFC service layer OAM is requisite in SFC Domain, which may be typically illustrated in Figure 1.

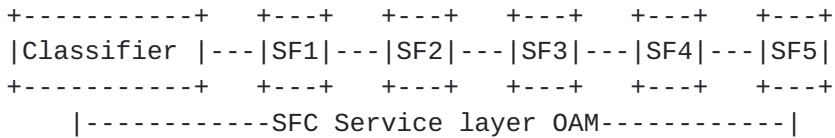


Figure 1: typical SFC service layer OAM

Currently, according to the latest SFC architecture, we know that there are several components defined in the SFC architecture, such as SN, SFF, SF, etc, and the relationship between them like this: several SFs may share the same SFF, and furthermore, several SFFs may share the same SN. As a result of that, multiple RSPs, such as RSP1(SF1--SF3--SF5) and RSP2(SF2--SF4--SF6) in Figure 2, may not share the same transmitting path, but they may share the same SFFs path.

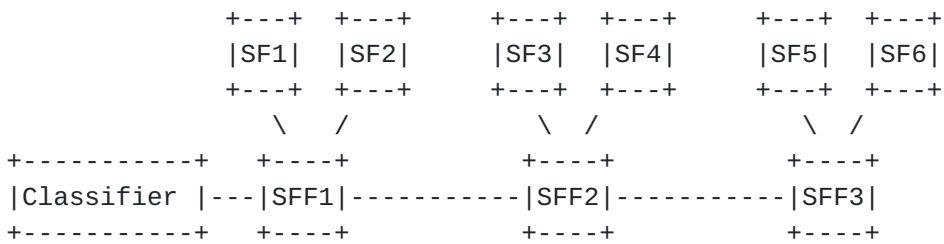


Figure 2: different RSPs share the same SFFs path

And also, multiple SFPs, such as SFP1(SFF1--SFF3--SFF5) and SFP2(SFF2--SFF4--SFF6) in Figure 3, may not share the same SFFs, but they may share the same SNs path.

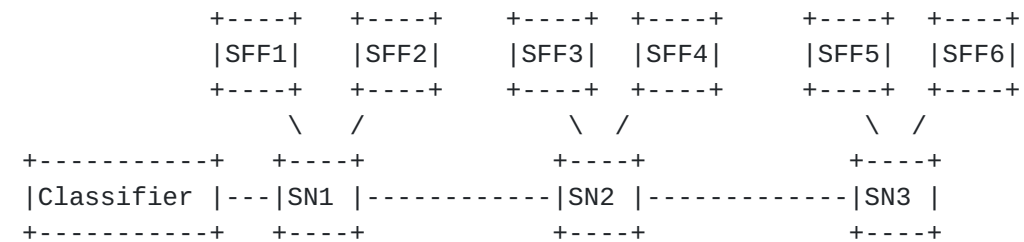


Figure 3: different SFPs share the same SNs path

As for users who want to diagnose, troubleshoot a set of RSPs which transmit the same SFFs, or a set of SFPs which transmit the same SNs, there is an aggregative method which can aggregate a set of RSPs or a set of SFPs into one, then, users only need to diagnose, troubleshoot the aggregative one, rather than the separated one by one. Obviously, they can diagnose, troubleshoot the separated one by one as their preference.

As follow, this document tries to provide an architecture and a solution for differentiated layer OAM for this requirement.

4. Multi-layer SFC OAM architecture

Figure 4 is a possible architecture for multi-layer SFC OAM. In this figure, it tries to figure out three possible layers. The layer 1 is the most aggregative layer for service chain. It stretches the path which SNs go through according to the sets of RSPs or SFPs or SFCs. The layer 2 is the medium aggregative layer for service chain. It outlines the path which SFFs go through according to the sets of RSPs or SFPs or SFCs. The layer 3 is the specific path for service chain. It is exactly the path which SFs go through according to the sets of RSPs or SFPs or SFCs.

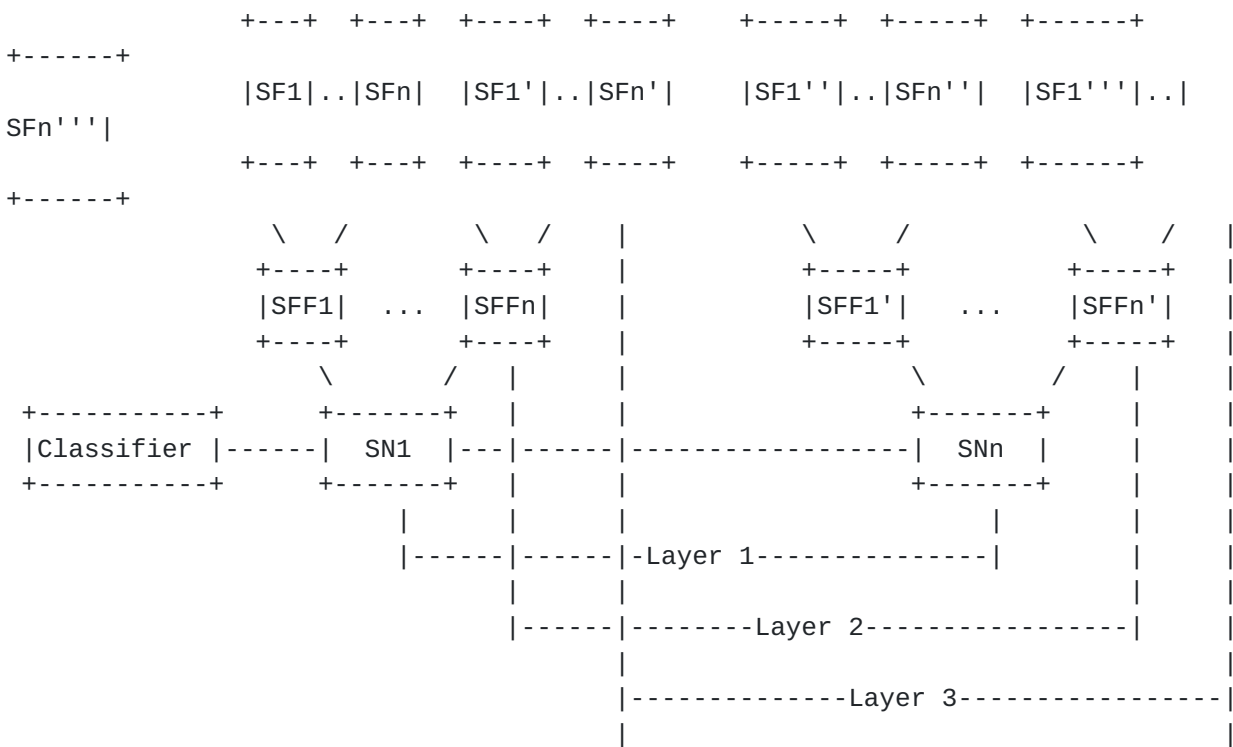


Figure 4: a possible architecture for multi-layer SFC OAM

5. Solution

if anyone is interested in this requirement, I will update the solution in the next version.

6. Security Considerations

It will be considered in a future revision.

[7.](#) IANA Considerations

It will be considered in a future revision.

8. References

8.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

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Authors' Addresses

Cui Wang
ZTE Corporation
No.50 Software Avenue, Yuhuatai District
Nanjing
China

Email: wang.cui1@zte.com.cn

Wei Meng
ZTE Corporation
No.50 Software Avenue, Yuhuatai District
Nanjing
China

Email: meng.wei2@zte.com.cn, vally.meng@gmail.com

Bhumip Khasnabish
ZTE TX, Inc.
55 Madison Avenue, Suite 160
Morristown, New Jersey 07960
USA

Email: bhumip.khasnabish@ztetx.com

