

Analysis on Forwarding Methods for Service Chaining (draft-homma-sfc-forwarding-methods-analysis-03)

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Agenda

1. Purpose
2. Overview of Investigation
3. Update from Dallas Meeting
4. Next Steps

1. Purpose

Motivations

- There are several methods to achieve service chaining
- The advantages of SFC encapsulation method are not clear enough



Purpose

- Clarifying the following points
 - ✓ Pros/Cons of SFC encapsulation method
 - ✓ What network/service requires which method

2. Overview of Investigation

- We focus on the following key factors of service chaining
 - ✓ How to distribute Chain Information
 - ➡ 1. Forwarding Methods Analysis
 - ✓ Where Service Paths are decided
 - ➡ 2. Path Selection Patterns Analysis

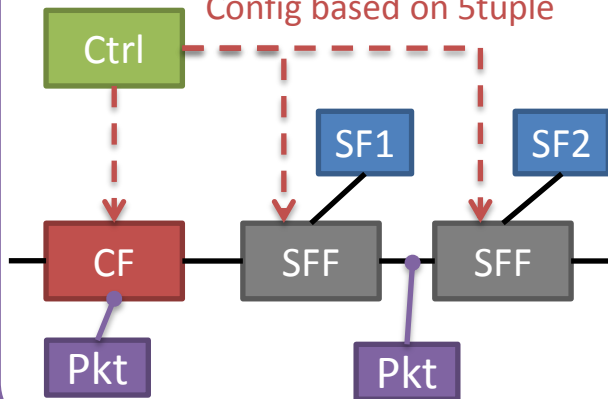
2-1. Overview of Forwarding Methods Analysis

- We investigate the features of 3 forwarding methods

Method1

Forwarding based on Flow Identifiable Information
e.g., Policy Based Routing

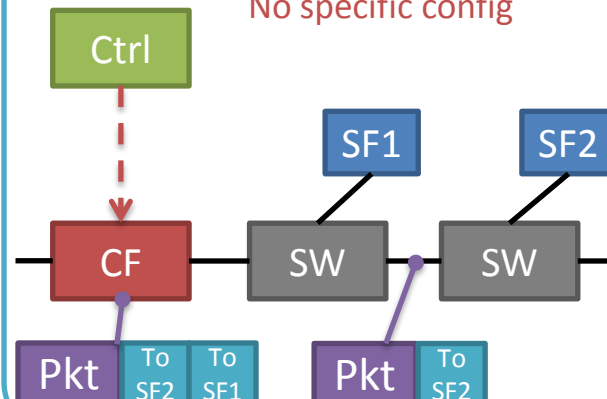
Config based on 5tuple



Method2

Stacking Multiple Tunnel headers
e.g., Segment Routing

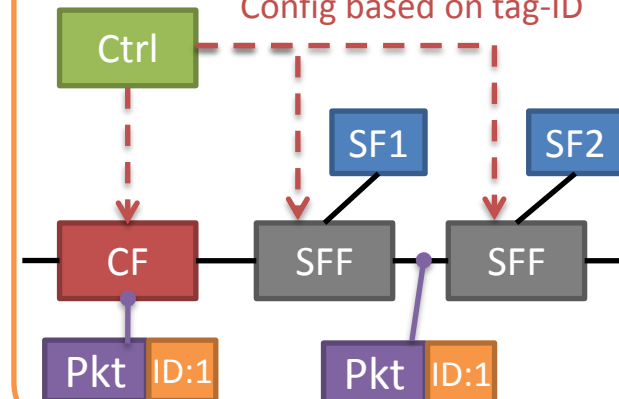
No specific config



Method3

Forwarding based on Chain Identifiable Tags
e.g., SFC encap. method

Config based on tag-ID



2-1. Pros/Cons of SFC encapsulation method

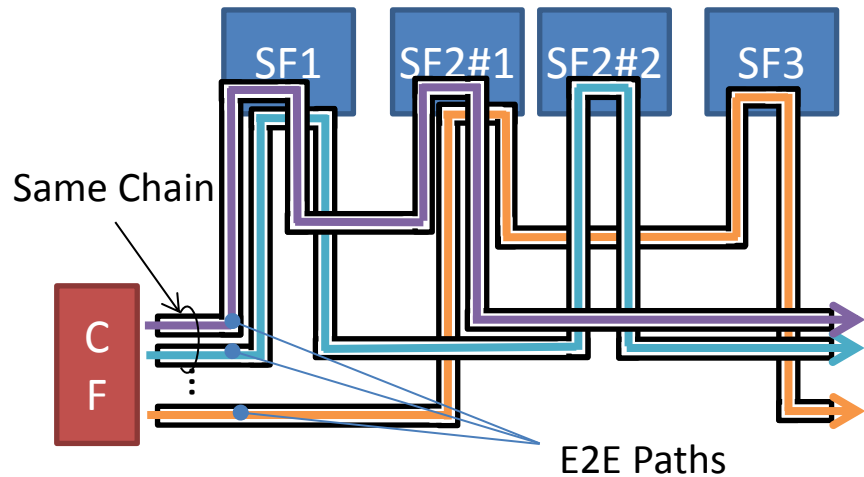
- Pros.
 - ✓ Save the flow table size and control signals
 - ✓ Enable to change path based on the result of service process (Path branching)
- Cons.
 - ✓ Affect to the connecting point between SF and SFC components

(e.g., SFC proxies are required for using legacy SFs)

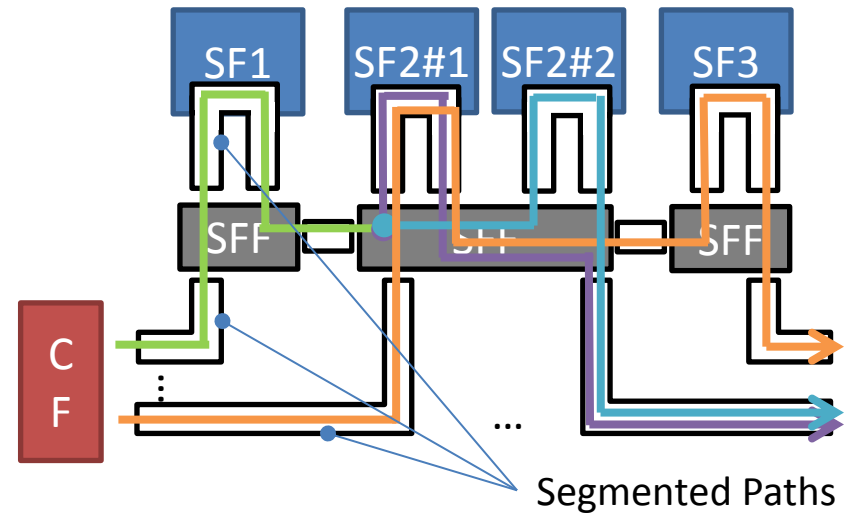
2-2. Overview of Path Selection Patterns Analysis

- We investigate the features of 2 path selection patterns

Pattern1: Static Selection



Pattern2: Dynamic Selection



2-2. Pros/Cons of Dynamic Path Selection

- Pros.
 - ✓ Enable paths branching based on additional information such as load of network/SF
 - ✓ Hierarchical control plane
- Cons.
 - ✓ SFF is required to maintain flow state in bidirection

3. Update from Dallas Meeting

- Separated the forwarding methods analysis into data plane & control plane aspects
- Added quantitative evaluation of method 1 (with OpenFlow)
- A new draft about hierarchical SFC was suggested from this analysis (*draft-dolson-sfc-hierarchical*)
- Enhanced case studies in mobile networks
 - ✓ HTTP Modification
 - ✓ VoLTE Calls
 - ✓ Secure Internet Access
 - ✓ Content Optimizing



Every case will require flow based control, and SFC would be the best practice.

4. Next Steps

- Request continued review and feedback on the analysis
- Gather SFC specific use cases and enhance case studies
- Request WG adoption of *draft-homma-sfc-forwarding-methods-analysis*

Thank you!