

Report of Interconnectivity Testing of Service Function Chaining by Six Companies

NTT
Alaxala Networks
Cisco Systems
Hitachi
Alcatel-Lucent Japan
et al.

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March 26th, 2015

Agenda

1. Purpose of this Testing
2. Overview of the Demo
3. Issues in Implementation
4. Future Work

1. Purpose of this Testing

- Confirm feasibility of SFC which is a new framework
 - Connectivity in forwarding plane (control plane was out of scope in this testing)
 - Feasibility of SFC using multi-vendor devices

Ref) <http://www.ntt.co.jp/news2015/1502e/150212a.html>

2. Overview of the Demo

- Showed advantages of SFC
 - Easiness of switching service
 - Optimizing Service Chain (Path Branching)

- Provided 3 scenarios as follows:

Scenario 1 : Security Service

Used Traffic Monitor, Traffic Analyzer and Firewall

Scenario 2 : Optimal Communication Service

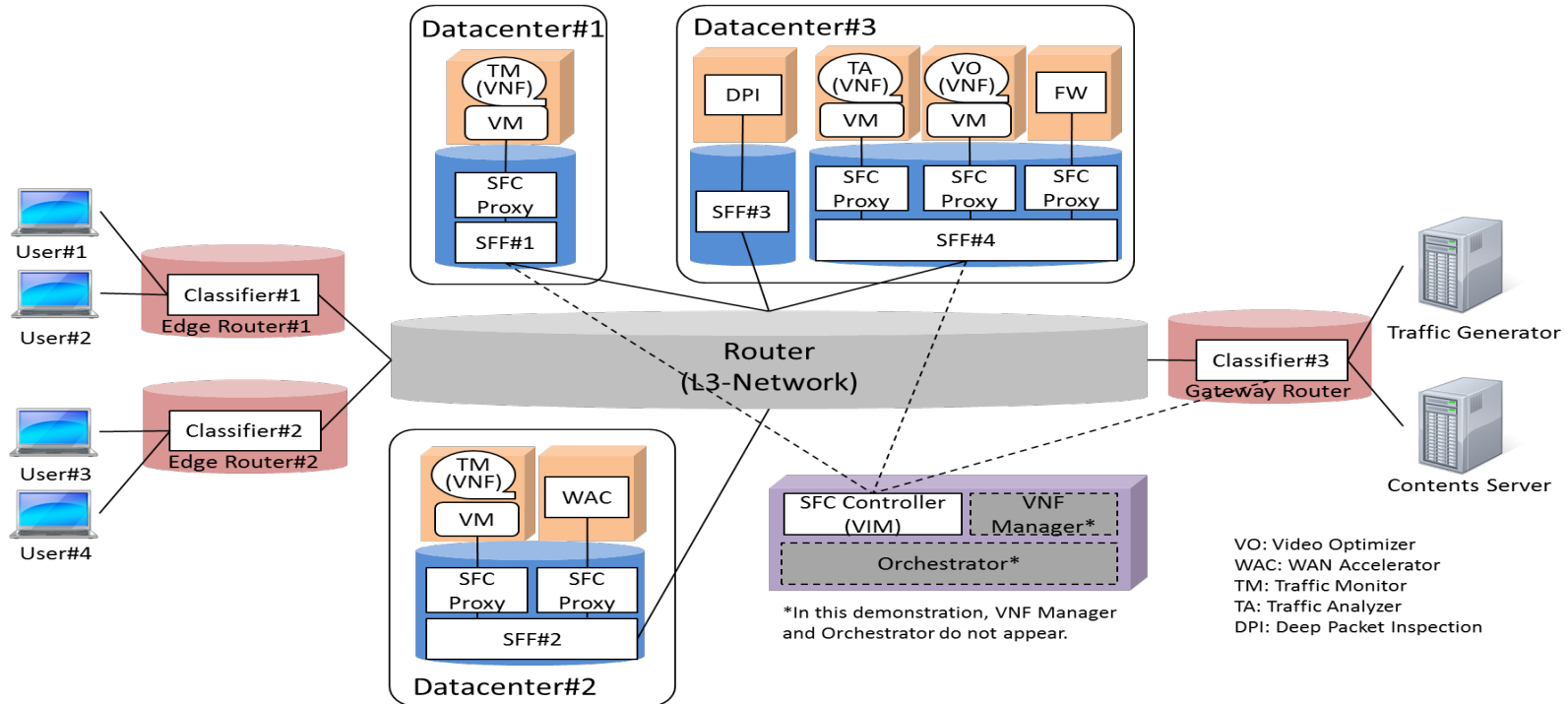
Used DPI, Video Optimizer and WAN Accelerator

Scenario 3 : Redundant chains

Used Traffic Monitor and Firewall

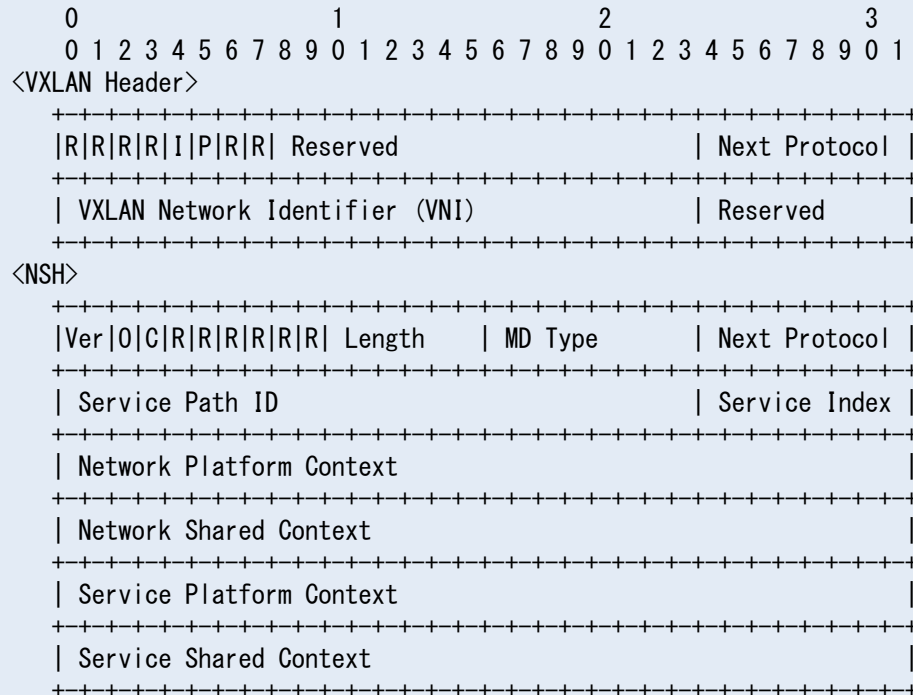
Demo Structure

- Assumed large network including multiple data centers
(Ref. [draft-ietf-sfc-dc-use-cases-02](#))



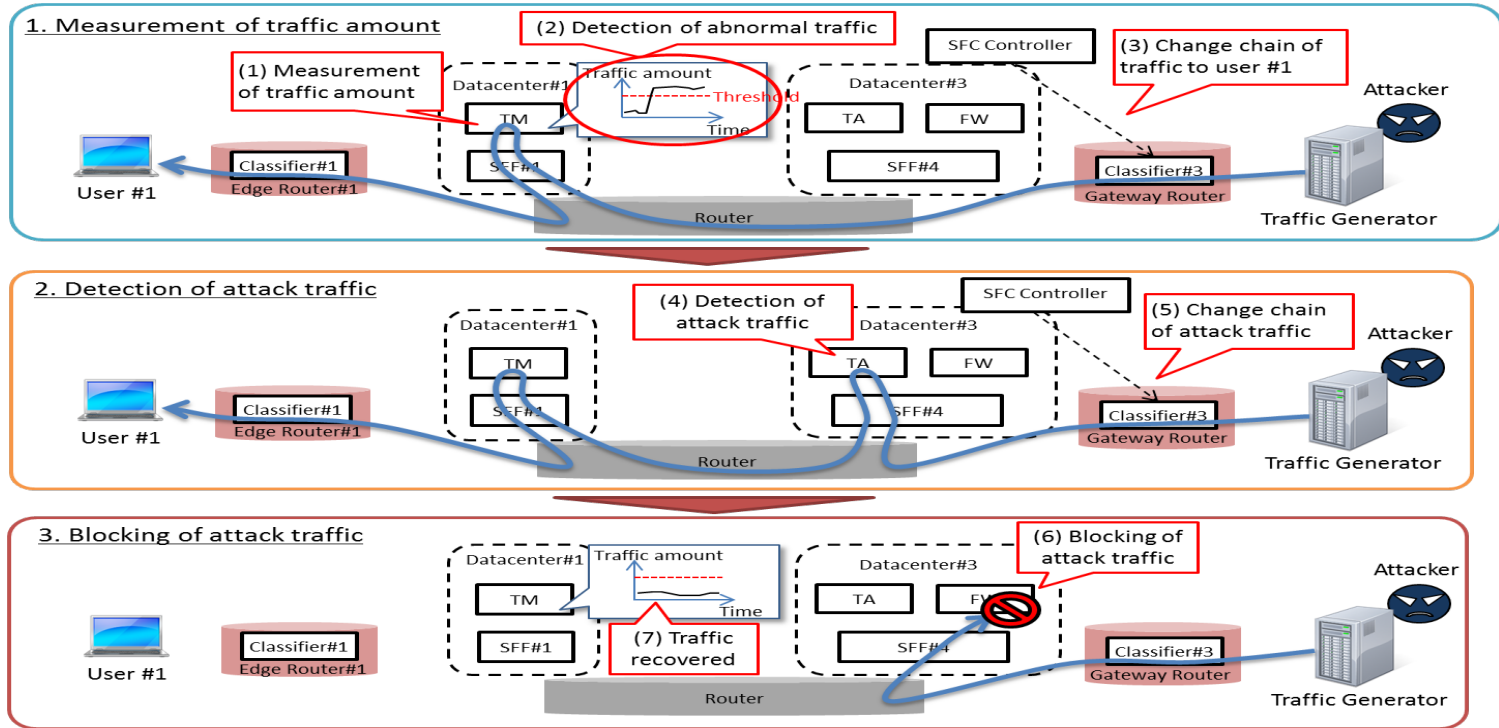
Demo Structure

- NSH and VXLAN-GPE are used as SFC and transport headers
(Ref. [draft-quinn-sfc-network-service-header-03](#))



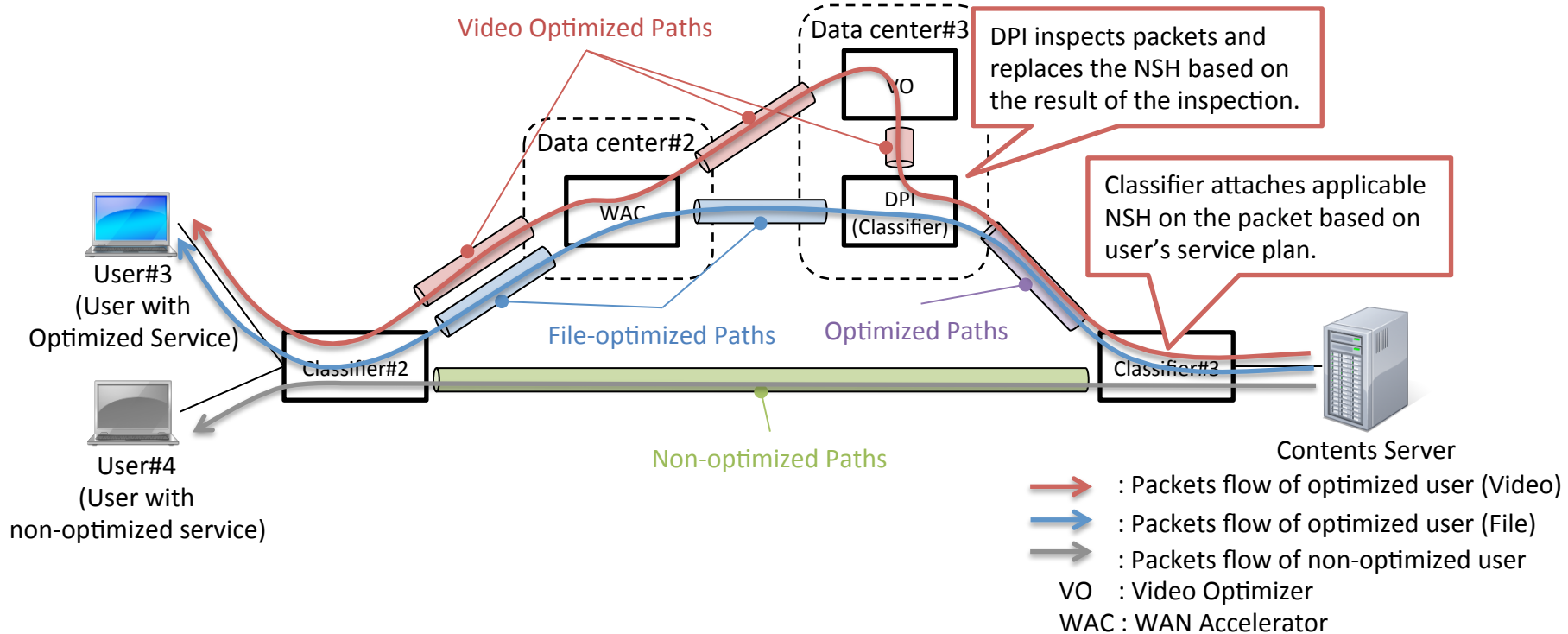
Scenario 1 : Security Service

- Operator defends user from attackers by using appropriate combination of SFs (Traffic Monitor, Traffic Analyzer and Firewall)



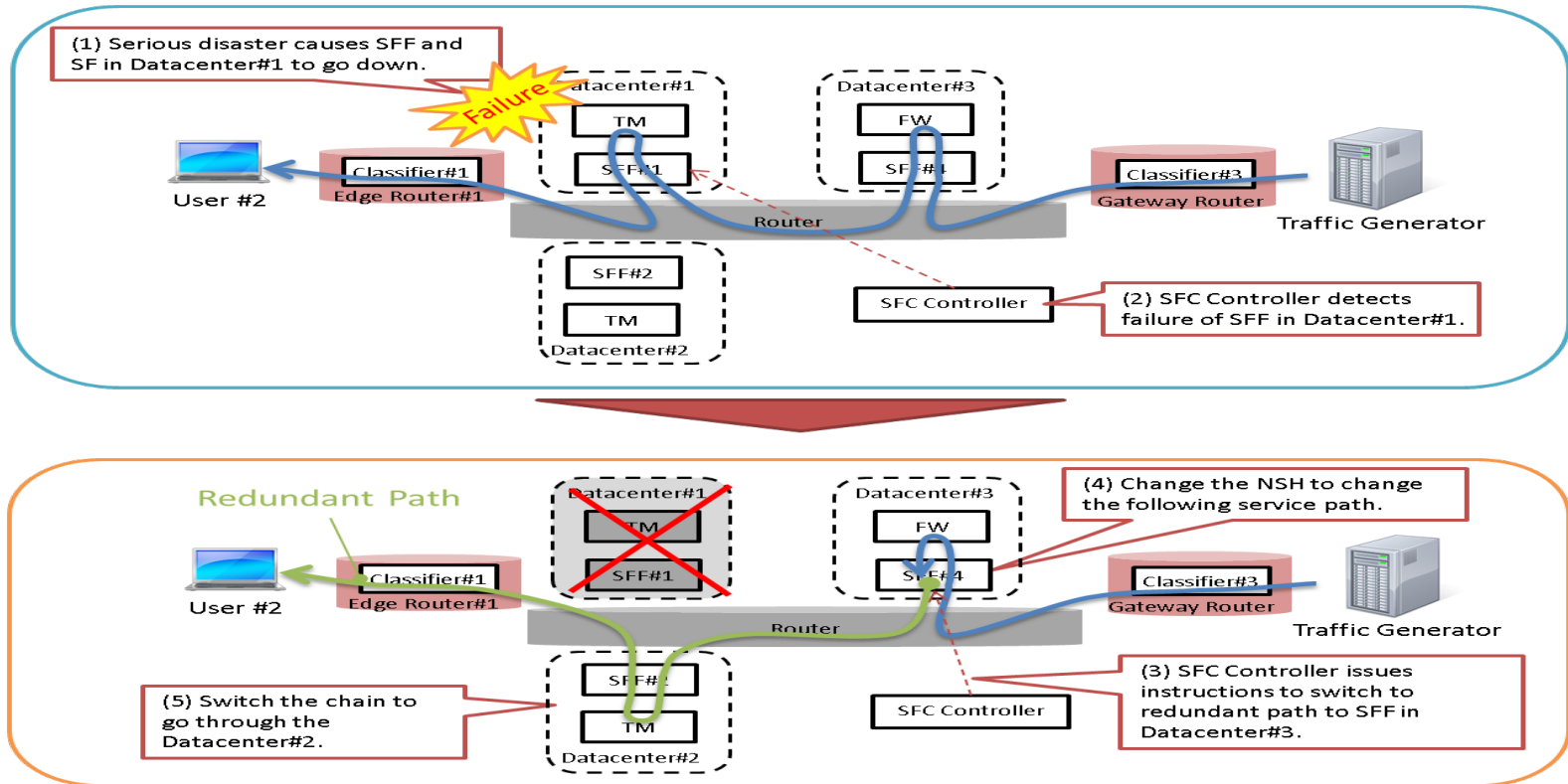
Scenario 2 : Optimal Communication Service

- Classifier at edge node classifies packet based on IP and DPI changes the following path based on the application



Scenario 3 : Redundant Chain

- Switching to a redundant path by only changing NSH



3. Issues in Implementation

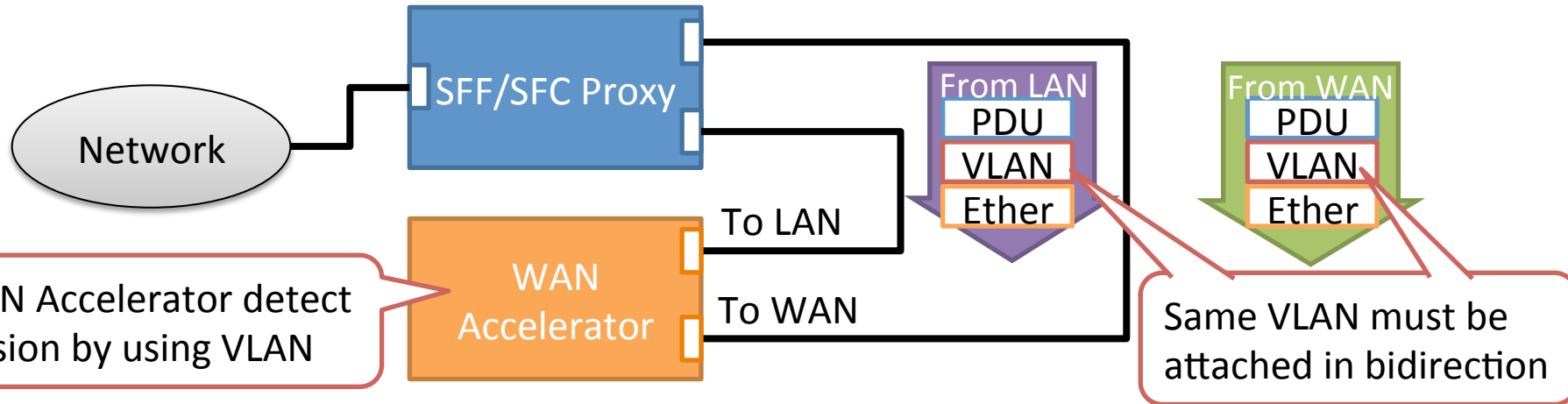
- Report the knowledge gained from this testing
 - SFC Aspect
 - SF Aspect
 - Management Aspect

SFC Aspect

- There were no serious issues in the forwarding-plane with SFC header
 - SPI needs to be uniquely assigned in the entire network, and so centralized control may be feasible.
 - > Hierarchical approach will be required for using SFC in large networks.
- (Ref. [draft-homma-sfc-forwarding-methods-analysis-01](#))

SF Aspect

- There are various types of SFs and their connection methods are different, and SFC proxy will be required to be flexible
-> A document describing guidelines for SFC proxy may be required. (Ref. [draft-song-sfc-legacy-sf-mapping-04](#))



Management Aspect

- It was hard to detect failure points because packets traverse various places.
 - > Some OAM functions for confirming connection will be required. (Ref. [draft-aldrin-sfc-oam-framework](#))

4. Future Work

- This testing is specific to the demo, and so flexibility factor or mechanisms for edge cases were not considered
 - Co-operation with control functions (e.g. ODL, Openflow, PCRF)
 - Redundancy mechanism
- Some SFC components were implemented as software, and so throughput can be examined
- Generalizing SFC
 - > Accelerate SFs to adopt the new SFC header

We had submitted this demo as a PoC to ETSI NFV

Thank you for your attention!

Contact

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