An Experiment of SRv6 Service Chaining at Interop Tokyo 2019 ShowNet

draft-upa-srv6-service-chaining-exp-00

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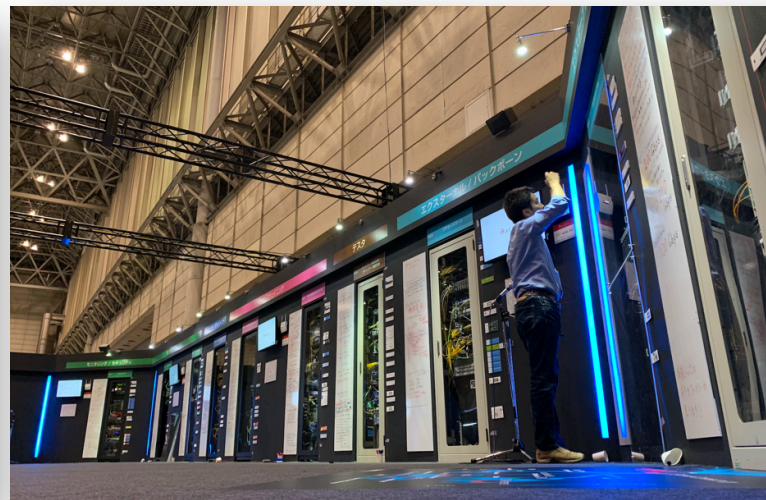
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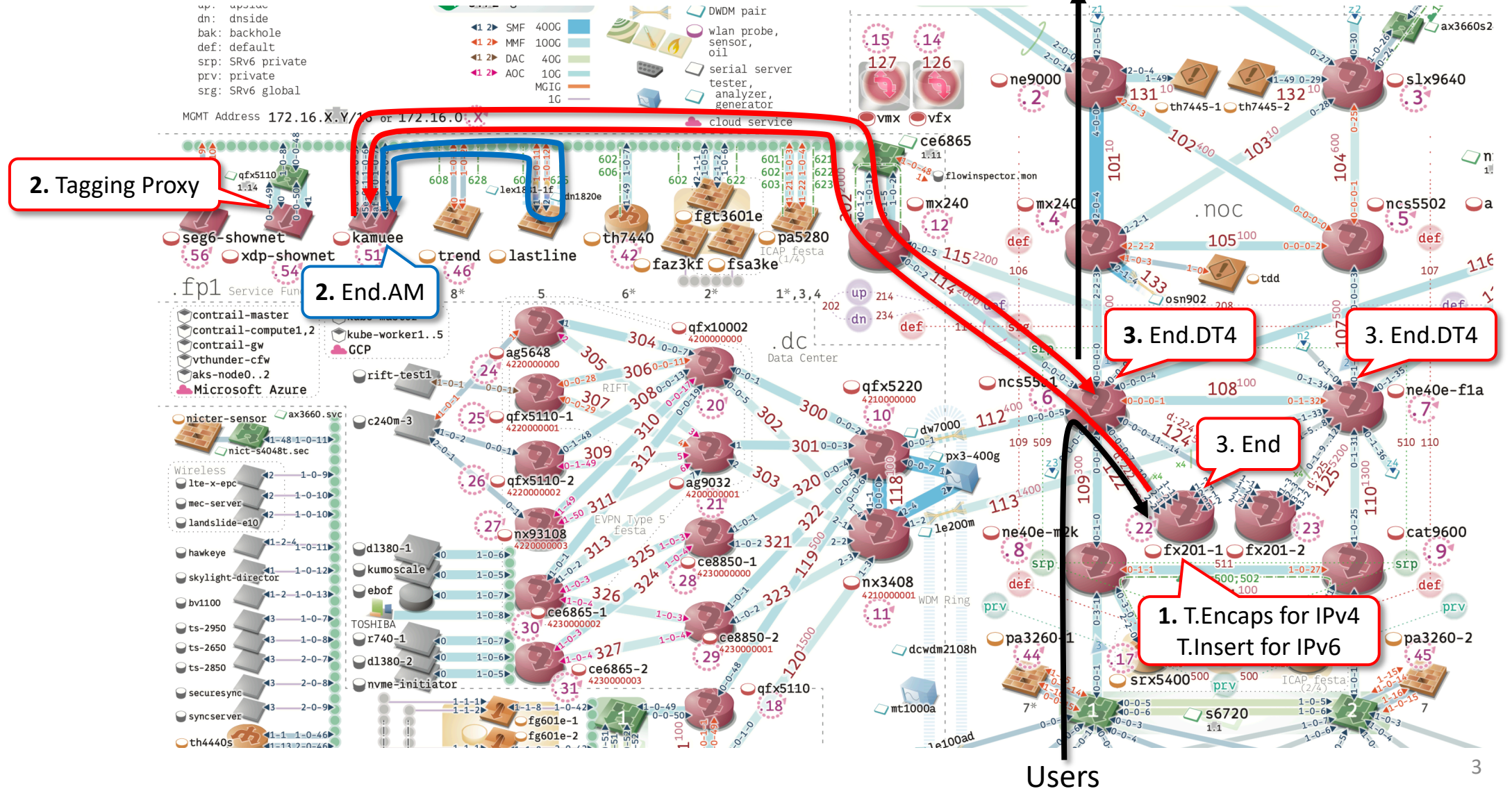
ShowNet at Interop Tokyo

Interop Tokyo 6/12(Wed),13(Thu),14(Fri)
MAKUHARI MESSE [CHIBA JAPAN]

SHOWNET EVOLVE INTO
THE NEXT GENERATION

- One of the largest live demonstration networks
  - Inter-operability tests, experiments, and demonstrations
    - 2019: **SRv6 service chaining**, 400G Ethernet, EVPN Type-5, RIFT, RoCEv2, etc.
  - Providing internet connectivity using the demonstrations for Inteorp exhibitors and visitors
    - over 200 booths and over 155,000 visitors for 3 days

Overview

2. Tagging Proxy

2. End.AM

3. End.DT4

3. End.DT4

3. End

1. T.Encaps for IPv4
T.Insert for IPv6

External

Users

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Devices contributed to the SRv6 Exp

- SRv6-aware devices

Function	Product	Contributor
T.Insert	FX201	Furukawa Electric
T.Encaps	FX201	Furukawa Electric
End (+PSP)	FX201	Furukawa Electric
End.DT4	NCS55A1	Cisco Systems
	NE40E-F1A	Huawei
End.AM	FX201	Furukawa Electric
	Kamuee	NTT Communications
	VPP	FD.io
End.AN	TM VNFS	Trend Micro
Tagging Proxy	Two OSS	Implemented by ShowNet NOC

Devices contributed to the SRv6 Exp

- SRv6-unaware services

Service	Product	Contributor
Security	FortiGate 3601E	Fortinet
	Lastline Defender	Lastline
	PA-5280	Palo Alto Networks
	SRX5400	Juniper Networks
	Thunder 3230S CFW	A10 Networks
CGN	Thunder 7440-11 CFW	A10 Networks

Transparency of SRv6 header

- All the services contributed to ShowNet 2019 transparently delivered IPv6 packets with SRH under End.AM proxies

Services that cannot co-exist with End.AM

- Packets originated from SR-unaware services cannot be de-masqueraded because they do not have masqueraded SRH
  - i.e., Captive Portal
- Variant 2 of masquerading proxy (Caching) defined in ietf-spring-sr-service-programming is needed
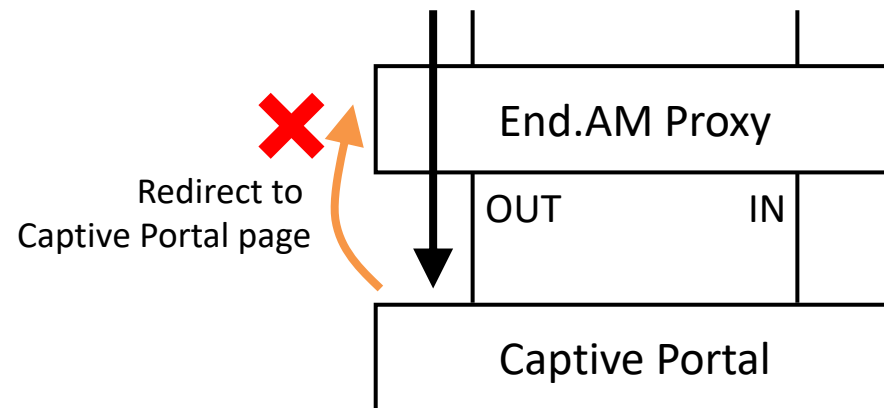
Service liveness detection and conditional advertisement of service segments

- When a service is down, a proxy should stop advertising a corresponding service segment

- Some sort of detection mechanisms are needed, for example, integrating BFD into advertising service segments
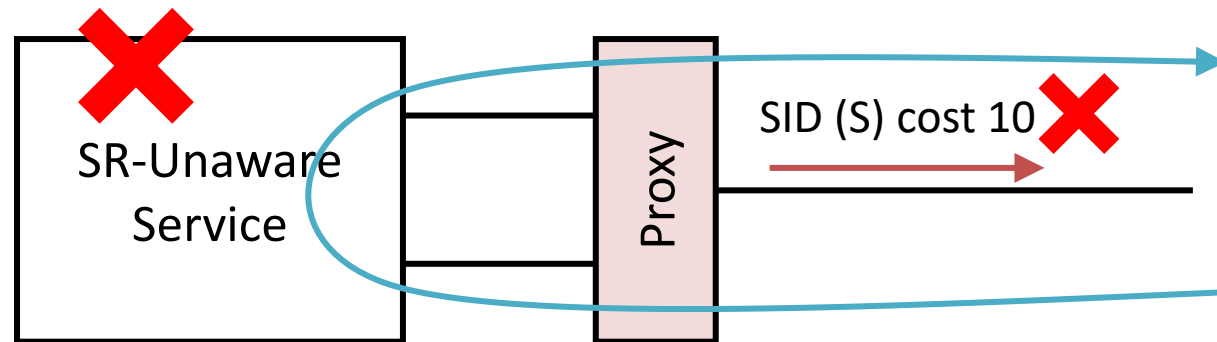
Hop limit Decrement on SRv6 Proxies

- An implementation decrements hop limit on masquerading

- An implementation does not decrement hop limit on masquerading

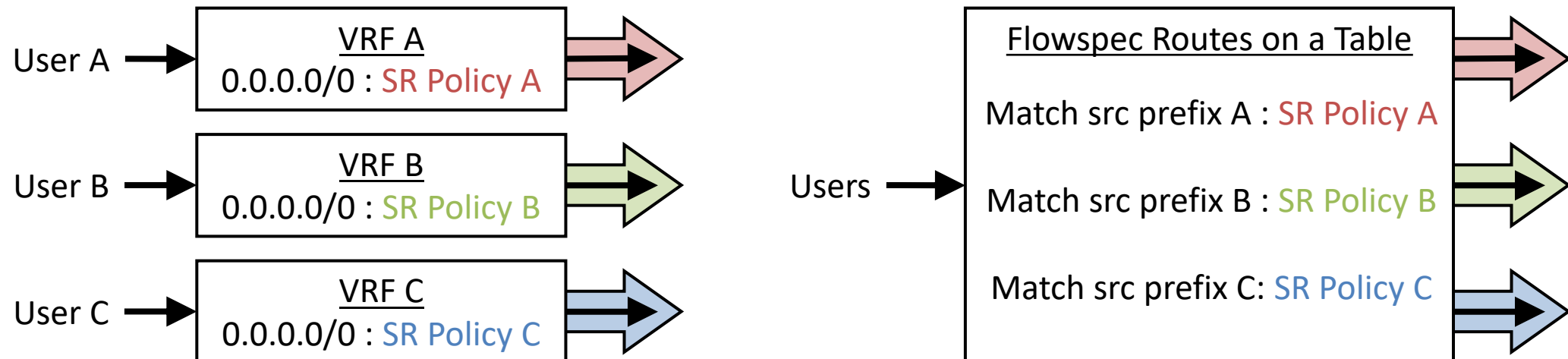- Former is correct as mentioned in the ML
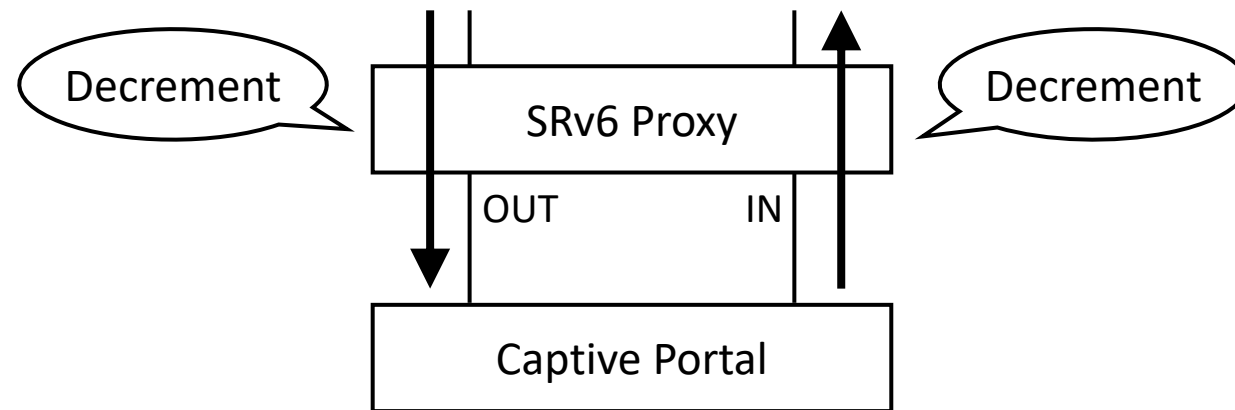
Control Plane Capabilities

- We configured all the SRv6 functions manually
  - It was possible, but it was very hard…

- We hope the functionalities in the drafts would be implemented
  - draft-ietf-idr-segment-routing-te-policy
  - draft-dawra-idr-bgp-ls-sr-service-segments

Match Condition for Applying SRv6 Functions

- The devices applied SRv6 functions as results of longest prefix match
- In service chaining, transit behaviors need to be associated with default routes
  - because packets from users would have arbitrary destinations
- VRF is a candidate. On the other hand, we suggest there is another candidate
  - e.g., BGP Flowspec

User A → [VRF A / 0.0.0.0/0 : SR Policy A] →

User B → [VRF B / 0.0.0.0/0 : SR Policy B] →

User C → [VRF C / 0.0.0.0/0 : SR Policy C] →

Users → [Flowspec Routes on a Table

Match src prefix A : SR Policy A

Match src prefix B : SR Policy B

Match src prefix C: SR Policy C]

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Thanks!

- We hope lessons learned from Interop Tokyo would help the community
- And, we would like to thank contributors of ShowNet 2019