Name-Based Service Function Forwarder (nSFF) component within SFC framework


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Recap

• In draft “draft-purkayastha-sfc-service-indirection-02”, a new Service Function, called SRR, was described to handle dynamic chaining at the level of ‘named transactions’

• Forwarding decision made in SRR, when a service request is received, using name based identification of Service End Points (e.g., using URLs as address scheme)

• Received feedback at IETF 101 to consider integration with SFF rather than exposing explicit service function
Main Idea

Integrating the SRR function into the SFF is reflected by extending three main SFC concepts:

• Extend Service Function Path to include ‘name-based interactions’ -> Definition of nSFP
• Extend Network Locator Maps to include ‘name-based next hops’ -> Definition of nNLM
• Extend Service Function Forwarder to act on such name-based information -> Definition of nSFF operations

Backward-compatible to current SFC architecture!

(No changes to the functionalities of SFC nodes and NSH protocol)
Name based Service Function Path (nSFP)

• The realization of “Name based SFP” through extended SFF operations is illustrated using HTTP transactions.
  – URIs are being used to name for a Service Function along the nSFP.
  – Note: SFP operation is not restricted to HTTP (as the protocol) and URIs (as next hop identifier within the SFP).
  – Other identifiers such as an IP address itself can also be used and are interpreted as a ‘name’ in the nSFP.
Name based Network Locator Map (nNLM)

- Network locator map is extended with the ability to consider “name relations” based on URIs as well as high-level transport protocols such as HTTP for packet forwarding.
Name-based Service Function Forwarder (nSFF)

Operational Steps

1. Packet from Classifier @nSFF1, process NSH header to identify next SF by mapping NSH information to appropriate entry in its nNLM (www.foo.com) -> forwards to SF1

2. Packet from SF1, retrieve next hop information from nNLM (www.foo2.com),
   -> Since SF not being locally available, nSFF1 consults the Name Resolver (NR) to determine the suitable routing/forwarding information towards the identified nSFF serving the next hop
   -> forwards to nSFF2

3. Packet from Nsff1 @nSFF2, process NSH header to identify next SF my mapping NSH information to appropriate entry in its nNLM (www.foo2.com) -> forwards to SF2
Next steps

• Collect feedback from the WG
  • On the validity of this extension to SFC, i.e., its scope within the SFC WG, and this solution

• We implemented a first version of this solution in H2020 projects POINT & RIFE, now deployed at city scale in H2020 FLAME project for trials in 2018
  – We will work on aligning this solution fully with this draft