Use Case For Handling Dynamic Chaining And Service Indirection

draft-purkayastha-sfc-service-indirection-00

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Motivation

• 5G applications and low latency requirements are forcing service providers to push functions towards the edge of the network (e.g. MEC)

• Handling user mobility and non-deterministic availability of compute and storage resources is challenging

• Requires dynamic and fast switching of service path between Service Functions
  • A.k.a. “Service Indirection”
Current Handling of Service Indirection by SFC

• NSH Control Plane
  • Service Path Identifier (SPI): identifies service path
  • Service Index (SI): identifies the location

• Indirection is handled in following steps
  – Packet arrives at a particular node, contact policy manager
  – Identifies the current classification is incorrect
  – Reclassifies the packet, i.e. change the SPI
  – Inserts the packet in the pipe, possibly towards the SFF
Improving Service Indirection in SFC

• Indirection mechanism in SFC through reclassification makes it suitable to handle dynamic indirection requirements

• Proposed SRR service function provides an additional method to handle dynamic indirection of service requests
  • Without relying on the reclassification mechanism

• Combining these two techniques may provide flexibility and improvement over single method.
Proposed SRR Service Function (1/3)

• Decouples the service consumer and service endpoint

• Desired features:
  • Fast switching, not relying on only DNS based mechanism
  • Direct path mobility, avoiding the use of anchor points
  • Indirect service requests at the network level
  • New methods for forwarding, such as path-based forwarding, direct path routing etc.
Proposed SRR Service Function (2/3)
Proposed SRR Service Function (3/3)

• For Service Consumer (SC) and Service Provider (SP) scenario, if we have SC and [SP1...SPn] (i.e., N virtual instances of the SP)
  • Assume SC is chained to SP1 first
  • Then we need to explicitly re-classify towards SPn with some out-of-band decision about which 'n' to pick

• Benefit of introduction of SRR as an independent SF
  • Decouples Service Consumer (SC) and Service Providers (SP)
  • Single SC may be connected to multiple SPs through this SRR SF
  • Reclassification may not be required, switches traffic flow to any SPs
    • Based on Instantaneous situation, Policy etc.
Proposed Next steps

• Collect feedback from the WG
• Continue extending the use case with more details and requirements
• We will work on this use case and a solution in the H2020 FLAME project with experiments planned for early 2018 and beyond