Alternative Handling of Dynamic Chaining and Service Indirection

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Recap

- "SRR Service Function" handles dynamic chaining
  - Decouples Service Consumer (SC) and Service Providers (SP)
  - Creates chain when a service request is received using name based identification of Service End Points

- Use of HTTP as Application layer transport
  - Extension to SFC framework, utilize URLs as addressing scheme, i.e. name based addressing
  - SRR uses "Name-based" relationship to route towards specific instances of a Service Function
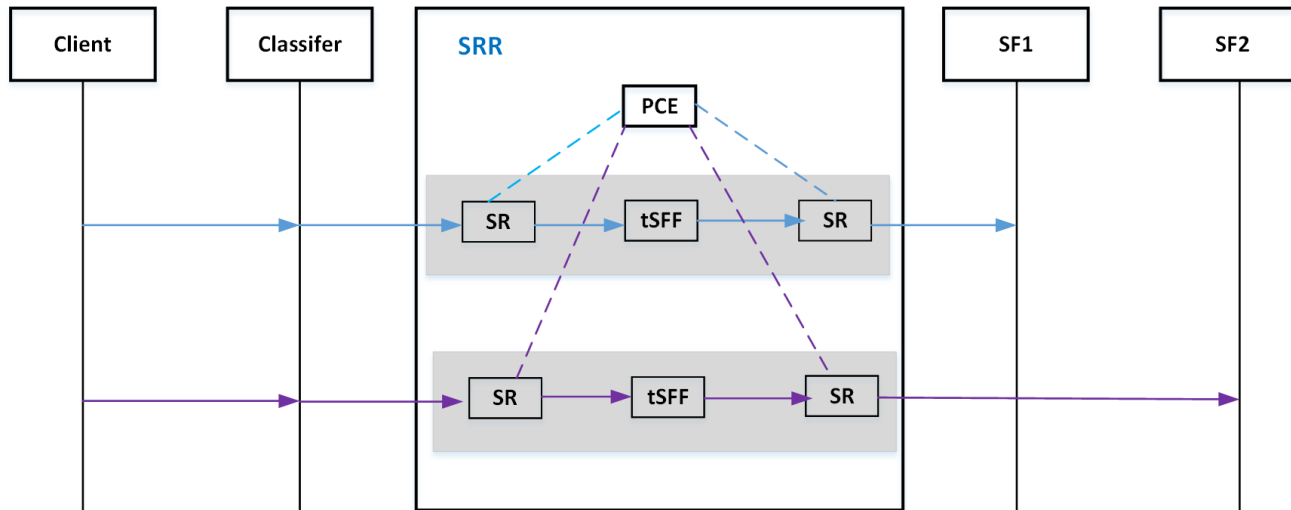
Recap

- Is NSH encapsulation utilized for forwarding between SFs? Is the SRR function embedded within the SFF ?
  - NSH is used, but expose the SRR function explicitly. The SRR function can be interpreted as an extension of the SFF, which in case of name-based hop information will act similar to the SRR
  - The level of abstraction for SFPs raised to that of name-based chains rather than address-based ones.
- How "name-based" hop is referenced in the data plane? Is the plan to use NSH?
  - Use the NSH <path-id, index> as the lookup to find the next name in the path and then resolve the name to an IP endpoint (with an extended SFP definition that includes the name-based entry)
  - Alternative to DNS resolution, where the endpoint will have a given FQDN and the request is being forwarded over an L2 network using path forwarding, not IP routing

Summary of updates

- New use case : Third party cloud service provider and deployment of Micro Data Centers
  - Reiterates the need for flexible and dynamic chaining

- Clarification of flexible and dynamic chaining
  - Triggers : Load balancing, user and service mobility, Self optimization due to network issues such as congestion
  - Static binding of SFC to Late binding of SFC as network condition changes frequently

- What is HTTP as a transport and how it helps to achieve flexible and late binding of SFC?

Third Party Cloud Service Provider

- Many specific localized use cases require onsite data centers.

  - Emergence of real estate owners willing to deploy edge cloud resources.

  - Turning to deploy micro data center over L2 at the edge of network

  - Single Internet Point Of Presence to Multiple Point Of Presence

- Service is composed out of these multiple POP deployment of MDC, where data exchange and collaboration is expected among these MDCs

Flexible and dynamic chaining

- Service composition over many MDCs may be impacted due to
  - Load variation in the network, service end points being migrated, Mobility of user, Network operational issues such as congestion, fault
- To maintain same level of service continuity to end users, SFC should support
  - Flexible chaining: Chains defined statically at the time of service creation is not desired
    - Ability to create the chain at run time is desirable, late binding of service function chain
  - Dynamic chaining: As network condition, user location changes, the bindings need to be redefined frequently
    - Even after being defined at run time

HTTP as a Transport

- HTTP is used as an example "Named Service"
  - Solution applies to any other named service, even IP

- What is meant by "HTTP as a Transport"?
  - HTTP is the common transport for name-based (URI) E2E communication across the web.
  - In the context of SFC and SF, HTTP requests and response are considered as the "Service Request (SR)".
  - The routing and indirection of SRs are abstracted at HTTP level.

HTTP as a Transport

- How it helps in realizing Flexible and Dynamic chaining?
  - HTTP requests, such as GET, PUT and POST can be routed based on the URI associated with the request
    - URI is the name of a resource or the invocation point
  - If Service Functions (SF) could be identified using URI or name
    - HTTP requests to an SF would be routed or directed using name based routing.
    - HTTP becomes an application layer transport service
  - By updating the naming relationship, service requests can be redirected easily

Next steps

- Collect feedback from the WG
  - On the validity of this solution and its   scope within the SFC WG

- We will work on this solution in the H2020 FLAME project with experiments planned this year.