Network and Computing Exposure

draft-contreras-alto-service-edge-05
draft-lcsr-alto-service-functions-01

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draft-contreras-alto-service-edge-07
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draft-lcsr-alto-service-functions-02
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Relationship among drafts

**draft-contreras-alto-ietf-nef**

Overarching document describing the role of ALTO as IETF Network Exposure Function, including existing (i.e., as WG documents or RFCs) and proposed/future capabilities

**draft-contreras-alto-service-edge**

Document describing ALTO as the element to combine compute and network information to determine the more convenient Edge or Compute facility to deploy an application

**draft-lcsr-alto-service-functions**

Document describing ALTO as the element to combine service function(s) and network information to retrieve path characteristics to reach a specific SF or for the interconnection paths among a sequence of SFs

**Others …**
Problem statement
• Multiple (heterogenous) DC - Data Centers across the network featuring resources (CPUs, memory, storage, bandwidth, etc)
• Identify the suitable DC to deploy a given application considering both compute and transport information

Solution
• Leverage the ALTO protocol (+ext) to assist on the selection of the “best” edge, combining both network & compute info.
  • Optionally complemented with other inputs such as performance metrics, etc

Updates in version -06
• Two use cases describes to support the discussion based on real operational situations: (1) Open Abstraction for Edge Computing, (2) Optimized placement of microservice components
• Added Jordi as co-author
  • Further use cases to be added
Problem statement

• Network services formed by means of the concatenation of several atomic service functions (SF), resulting in a connected graph of functions
• Identify suitable path characteristics in the chain

Solution

• Leverage on ALTO protocol (+ext) to assist on the identification of “best” chains, combining both network & SF info.
  • Optionally complemented with other inputs such as performance metrics, etc
• Extensions foreseen for [I-D.ietf-alto-path-vector], [I-D.ietf-alto-unified-props-new] and mechanisms for collecting SF information

Updates in version -02

• Reference to [I-D.ldbc-cats-framework] as additional case to motivate this work
• Added reference to [RFC9015], [I-D.xu-lsr-isis-service-function-adv] and [I-D.xu-lsr-ospf-service-function-adv] as a mean for retrieving SF information

Current version -02
• Related with Compute Aware Networking discussion, being ALTO an off-path solution
draft-lcsr-alto-service-functions

Some ALTO information of interest
(examples)

Assuming that application endpoints are located in PIDs

• Path characteristics, from a PID, to any instance of a service function type.
• Path characteristics, from a PID, to a specific instance of a service function type.
• Path characteristics among any instance of a service function type X to any other instance of a service function type Y.
• Path characteristics among a specific instance of a service function type X to any other instance of a service function type Y.
• Path characteristics, from a PID, to a chain of service functions.
• Path characteristics, from a PID, to a chain of specific instances of service functions.
• etc
Network and Computing Exposure Summary

• ALTO provides value to this problem space as an off-path solution

• Exposure towards applications is crucial
  • For applications to get by themselves combined information of networking and compute (then deciding instead of delegating decisions)
  • For orchestrators or managers to instantiate functions or applications in the network with information about expected behavior

• Not all the needs of exposing combined compute and network information are the ones related to traffic steering ...
  ... but in that case ALTO also could feed network elements/controllers to take such steering decisions