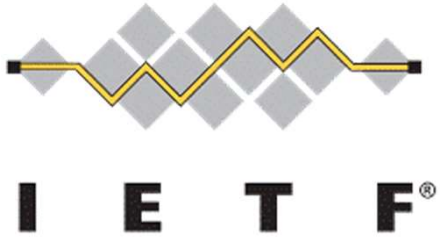

Using ALTO to Determine Service Edge

<draft-contreras-alto-service-edge-00>

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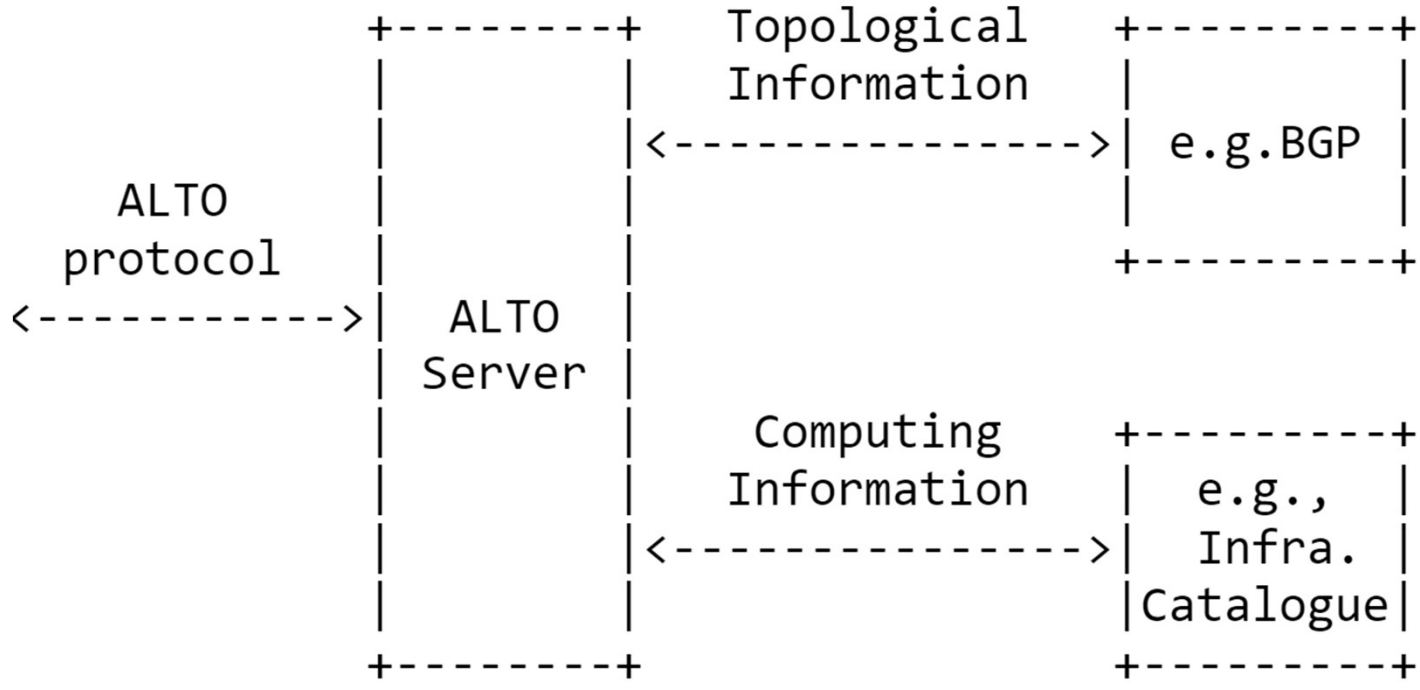
Problem Statement

- Operators are starting to **deploy distributed computing environments** in different parts of the network
  - Different service needs in terms of latency, bandwidth, processing capabilities, etc
- Multiple data centers of **different sizes across the network** (e.g., large, medium, small) **with distinct dimensioning** in terms of CPUs, memory and storage capabilities, as well as bandwidth capacity, and Enhanced Platform Awareness (EPA) capabilities
- Essential for a network operator to have **mechanisms assisting on the decision of which DC to use**
  - Decisions affect both compute and transport network substrates
- **ALTO can assist** on such decisión making processes

Role of ALTO

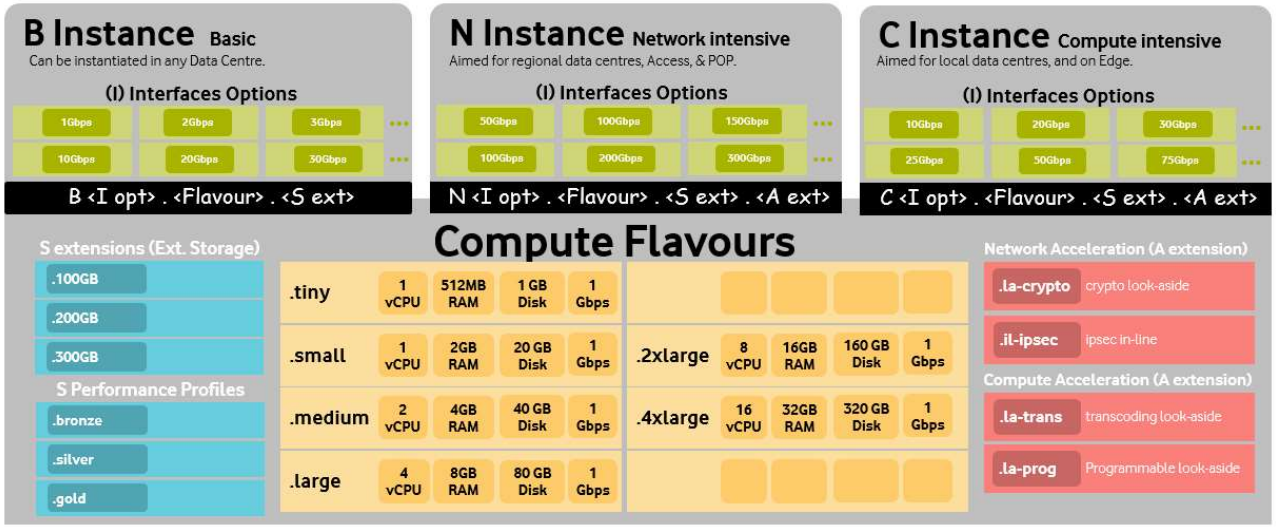
- ALTO can **assist in the selection of the more convenient edge** combining transport network information.



Expressing Computing Needs

- Computing needs are typically **structured by bundling CPU, RAM and storage units** as quotas, instances or flavors
  - E.g., Amazon Web Services, Microsoft Azure
- Same approach followed by the Common Network Function Virtualisation Infrastructure Telecom Taskforce (CNTT)
- Flavors or instances can be characterized by:
  - **Type of instance (T):** the types of instances are characterized as B (Basic), N (Network Intensive), and C (Compute Intensive)
  - **Interface option (I):** it refers to the interface bandwidth
  - **Compute flavor (F):** it refers to a certain combination of virtual CPU, RAM, disk, and bandwidth for the management interface
  - **Optional storage extension (S):** to request additional storage capacity
  - **Optional hardware acceleration characteristics (A):** to request specific acceleration capabilities for improving the performance of the infrastructure

Mapping to Property Map



https://cntt-n.github.io/CNTT/doc/ref_model/chapters/chapter04.html

Flavor Name	Type of instance (T)	Interface Option (I)	Compute flavor (F) {CPU, RAM, disk and bandwidth}	S.	A.
Small-1	Basic	{1, 2, 3, 4, 5, 6, 7, 8, 9 Gbps}	{1,512 MB,1 GB,1 Gbps}	...	...
Small-2	Network Intensive	{1, 2, 3, 4, 5, 6, 7, 8, 9 Gbps}	{1,512 MB,1 GB,1 Gbps}	...	...
Medium-1	Network Intensive	{25, 50, 75, 100, 125, 150 Gbps}	{2,4 GB,40 GB,1 Gbps}	...	...
Large-1	Compute Intensive	{50, 100, 150, 200, 250, 300 Gbps}	{4,8 GB,80 GB,1 Gbps}	...	...
Large-2	Compute Intensive	{100, 200, 300, 400, 500, 600 Gbps}	{8,16 GB,160 GB,1 Gbps}	...	...
...	...	...	...	...	...

Association of Compute Capabilities to Network Topology

- (At least) **Three potential** solutions to be explored:
  - Leverage on (and possibly extend) [I-D.ietf-teas-sf-aware-topo-model]
  - Extend BGP-LS [RFC7752]
  - Combine information from the infrastructure profiles catalogue with topological information by leveraging on the IP prefixes allocated to the gateway providing connectivity to the NFVI PoP.

Next Steps

- Elaborate more on mapping to property maps.
- Explore the alternatives for the association of compute capabilities to network topology.
- Collect interest from ALTO Working Group.
- Document advances for IETF#107