

IETF 102 - ALTO WG

ALTO-based Broker-assisted Multi-domain Orchestration - 01

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Draft in a nutshell

- ❖ Presents **an inter-domain brokering approach** on top of the per-domain management and orchestration planes.
 - to assist and coordinate the creation of an End-to-End Network Service (E2ENS) spanning over multi-operator multi-domain networks.
- ❖ Design **resorts to the Application-Layer Traffic Optimization (ALTO)** protocol.
 - to provide proper abstractions to discover and adequately represent in confidentiality-preserving fashion the resource and topology information from different administrative domains.
- ❖ The draft introduces **an extension to the ALTO base protocol** for inter-domain resource/service/connectivity information discovery.

Updates from -00

- ❖ Updated Problem Statement and Challenges section.
- ❖ **Removed Property Map Extension section.**
- ❖ **Added section on benefits and open questions in our proposed architecture.**
- ❖ Many minor style and grammar edits.

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Removed Property Map Extension

- ❖ Required extension (**Ver-00**):
 - "Response" Specification: For each property name defined in the resource's "capabilities" list, the corresponding property value **MUST** be encoded as **JSONArray instead of JSONString**.
- ❖ The **required extension** section for the ALTO **Property Map was removed**
 - The current Property Map draft [\[DRAFT-PM\]](#) already **supports property values encoded as JSONArray**:

```
...  
...  
  object {  
    PropertyName -> JSONValue;  
  } EntityProps;
```

Benefits

- ❖ **Avoid the distribution** of topology and resource information in **a peer-to-peer fashion** (MdO-to-MdO).
- ❖ The (abstracted) information and offered resources/services are **maintained in each local MdO**.
- ❖ An **ALTO-based privacy-preserving information model** to provide topology/resource/service info.
- ❖ An **MdO discovery method** to determine the underlying network graph and a potential set of paths before bilateral negotiation between MdOs is started.

Open Issues

- ❖ **What kind of organization** will manage and **support the operation of a broker** entity?
 - **Future deployment of SDN at IXPs** can be used as a trusted third-party platform to support rich business models between different operators [\[DRAFT-HHSFC\]](#)
- ❖ The broker entity **maintains a centralized database** and hence it could a point of failure. How avoid this **single point of failure**?
 - **Local restoration/replication** options may be applied.
- ❖ How is the **fine-grained/coarse-grained information** exchange **handled**?
 - It requires much **more complex database handling** and information exchange with the MdOs depending on the policies.

Next Steps

- ❖ This draft may potentially introduce a **new service to ALTO** (in the context of Multi-domain orchestration scenarios).
 - Use case examples are needed to support the creation of a new ALTO service
- ❖ What is **still missing** in the draft?
 - Identify which issues need further discussion.
 - Problem Statement and Challenges
 - Terminology, etc.
 - Define a more elaborated NFFG object to support extended parameters. (E.g., Monitoring parameters, Resource requirements, etc.)
- ❖ Gather **feedback** from the WG
 - -01 version reviewed by Richard Yang:
 - Comments addressed in -02
- ❖ Interest in adopting the draft in ALTO WG?