

# Multipart Extension for ALTO

draft-zhang-alto-multipart-02

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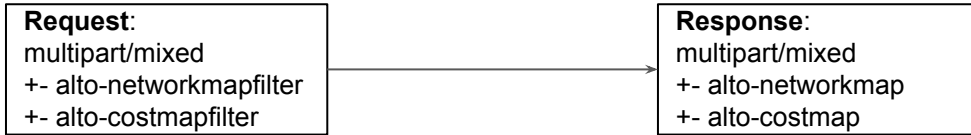
# Overview of Updates for ALTO Multipart Extension

- Goal of the latest revision (-02):
  - Clarify the motivation to use "multipart" in ALTO
  - Clarify the compatibility issue and solution
- Updates since the last ALTO interim meeting (revision -01):
  - Made terms consistent with [RFC2045], [RFC2046], and [RFC2387].
  - Update protocol specification and examples to follow the latest WG drafts.
  - Extended design space for ALTO multipart extension.
  - Discussed the compatibility issue and proposed the basic solution.

# Design Space: 3 Cases to Apply Multipart in ALTO

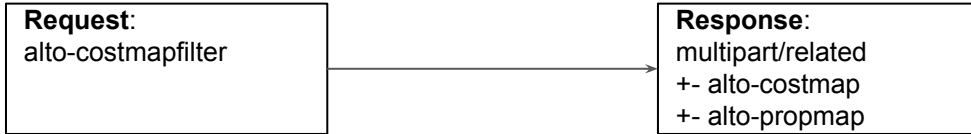
- **Case 1: Multipart Request and Multipart Response**

- **Example:** batch query for data consistency



- **Case 2: Single Request and Fixed-Layout Multipart Response**

- **Example:** path vector query



- **Case 3: Single Request and Flexible-Layout Multipart Response**

- **Example:** general multiple resource query (proposed in revision -00 and -01)

# Example for Case 1

```
"default-networkmap": {  
  "uri": "http://alto.example.com/networkmap/default",  
  "media-type": "application/alto-networkmap+json"  
},  
"filt-netmap": {  
  "uri": "http://alto.example.com/filter/networkmap",  
  "media-type": "application/alto-networkmap+json",  
  "accepts": "application/alto-networkmapfilter+json",  
  "uses": [ "default-networkmap" ]  
},  
"filt-costmap": {  
  "uri": "http://alto.example.com/filter/costmap",  
  "media-type": "application/alto-costmap+json",  
  "accepts": "application/alto-costmapfilter+json",  
  "uses": [ "default-costmap" ],  
  "capabilities": ...  
},  
"multipart-batch": {  
  "uri": "http://alto.example.com/query/batch",  
  "media-type": "multipart/mixed",  
  "accepts": "multipart/mixed",  
  "uses": [ "filt-netmap", "filt-costmap" ]  
}
```

IRD

POST /query/batch

Content-Type: multipart/mixed;boundary=case1

Accepts: multipart/mixed

--case1

Content-Type: application/alto-networkmapfilter+json

<network-map-filter>

--case1

Content-Type: application/alto-costmapfilter+json

<cost-map-filter>

--case1--

Content-Type: multipart/mixed;boundary=case1

Response

--case1

Content-Type: application/alto-networkmap+json

<network-map-obj>

--case1

Content-Type: application/alto-costmap+json

<cost-map-obj>

--case1--

# Example for Case 2

For Case 2, IRD MUST export the layout of the multipart response message.

```
"multipart-pv": {  
  "uri": "http://alto.example.com/query/pv",  
  "media-type": "multipart/related;type=application/alto-costmap+json",  
  "accepts": "application/alto-costmapfilter+json",  
  "capabilities": {  
    "cost-type-names": [ "pv-bw" ],  
    "multipart-layout": [  
      {  
        "resource-id": "pv-costmap",  
        "media-type": "application/alto-costmap+json"  
      },  
      {  
        "resource-id": "pv-nepmap",  
        "media-type": "application/alto-propmap+json"  
      }  
    ]  
  }  
}
```

media type for root part

capabilities for root part

layout of the multipart response message:

- the first part is a cost map;
- the second part is a property map.

# Compatible with Incremental Update

- [I-D.ietf-alto-incr-update-sse] allows the client to subscribe multiple resources in a batch. No need extra support to allow the Multipart resource subscription.
- For Case 2 and Case 3:
  - The client subscribe the Multipart resource.
  - The server returns the full multipart message via SSE, and automatically subscribes the whole multipart tree.
  - Once data updated, the server publishes the update for each node in the tree individually.

# Next Steps

- Add concrete motivating examples to show the workflow and benefit of ALTO multipart extension
- Call for reviews

# Backup Slides



# Quick Updates

- The document is still in the very early stage.
- Updates since IETF 102:
  - Update text and terms
  - Clarify the requirements for the query languages and programs
  - Update the protocol errors
  - Add some security considerations