

draft-ietf-alto-cost-calendar-03

Updates since IETF99

December 18th, 2017 @ IETF-ALTO-interim

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Updates since IETF99

- Previously
 - draft-ietf-alto-cost-calendar-02
 - Updated July 3rd 2017
- Collected WG feedback
- Diffs between v02 and v03
 - Design updates
 - "calendar-attributes" occurrences
 - Member 'calendared<1..*>' in ALTO requests
 - Clarifications
 - Re-wording and clean-up,

Design updates – IRD resources

- Section 3.1 Calendar attributes in the IRD resources capabilities
 - WAS: ALTO client SHOULD ignore any calendar capabilities on this "cost-type-name" for this resource entry
 - Too restrictive
 - NOW: for a given cost type, "calendar-attributes" SHOULD appear only once. Additional ones beyond first in the list SHOULD be ignored by the Client

Design updates – FCM requests

- Section 4.1.1 Calendar extensions in Filtered Cost Map requests
- Input request field: JSONBoolean calendared<1..*>
 - WAS: This field MUST NOT be specified if member "calendar-attributes" is not present for this information resource
 - Too restrictive
 - NOW:
 - This field SHOULD NOT be specified if no member "calendar-attributes" is specified in this information resource.
 - ADDED: If a value of field 'calendared<1..*>' is true for a cost type name for which no calendar attributes have been specified: a Calendar-aware Server will return a response with a single cost value as specified in RFC 7285.
 - no text on legacy Server reaction as the latter will ignore this field

Design updates – FCM requests

- Section 4.1.2 Calendar extensions in Filtered Cost Map responses
 - [JSONString cost-type-names <1..*>;] mandatory in responses to Multi-Cost ALTO requests
 - In decription of "cost-type-names «
 - ADDED: “This field MUST appear in responses to Multi-Cost ALTO requests.”

Clarification text 1/3

- Section 2.1: ALTO Cost Calendar information features
 - On time interval size format:
 - WAS: “applicable time interval for each calendar value: combining numbers and time units to reflect for example: 1 hour, 2 minutes, 10 seconds, 1 week, 1 month”
 - NOW "applicable time interval size... combining a number and a time unit to reflect..."

Clarification text 2/3

- Section 3.1. Calendar attributes in the IRD resources capabilities
 - After paragraph 3 on multiple occurrences of calendar attributes in IRD for a cost type name in a resource entry
 - ADDED: clarification on minimal time granularity
 - “An ALTO Client should assume that the time interval size specified in the IRD is the smallest possible one that the ALTO Server can provide. The Client can aggregate cost values on its own if it needs a larger granularity.”

Clarification text 3/3

- Section 3.1. Calendar attributes in the IRD resources capabilities
 - "time-interval-size" value format in CalendarAttributes:
 - Added text on format specification for unambiguous parsing
 - A "time-interval-size" value contains 2 entities separated by exactly one whitespace: a JSONNumber and a string representing a time unit and taking values in {second, minute, hour, day, week, month, year}

Corrections

- Section 3.3. Example IRD with ALTO Cost Calendars
 - "media-type" and "accepts" fields
 - in ECS resources:
 - removed "uses": ["my-default-network-map"]

Typos and harmonization

- Started harmonization based on
 - AD recommendations
 - RFC 8189 editor recommendations

Discussions beyond this draft

- Consider ALTO Calendar for link metrics?
 - e.g. Availbandwidth
 - see <https://tools.ietf.org/wg/alto/draft-ietf-alto-performance-metrics/>
- Consider ALTO Calendars for EP Properties ? E.G.

Thanks

- To Dawn Chan and Jensen Zhang for your review.

Thank you

Back-up slides

ALTO Cost Calendar in a nutshell

- ALTO Calendar: allows deciding where to connect *and when*
 - Array of time-dependent cost values for a given metric,
 - Set of attributes describing time scope of the calendar
- Allows Delay tolerant applications to schedule their connections
 - Optimal time for data transfers
- Allows ALTO Clients to schedule their Calendar requests
 - ALTO servers may save transactions on repeated value arrays
- Applicable to
 - time-sensitive ALTO metrics
 - Filtered Cost Map (FCM)
 - for full Cost Map: use empty SRC & DEST
 - Endpoint Cost Map (ECM)
- Addresses target WG item: cost extensions (May 2014)

ALTO Calendar design

- Backwards compatibility with legacy Clients and Multi-Cost Map
 - Calendars associated to ALTO information resources
 - Calendar attributes specified in
 - IRD information resources of IRD
 - "meta" member of ALTO Server responses
- Does not introduce a new mode
- Does not introduce new media types
- Compatible with **all** cost-modes
 - numerical, string, ...

ALTO Calendar v02- example IRD - §3.3

```
"endpoint-cost-calendar-map" : {  
  "uri" : "http://custom.alto.example.com/calendar/endpointcost/calendar/lookup",  
  "media-types" : [ "application/alto-endpointcost+json" ],  
  "accepts" : [ "application/alto-endpointcostparams+json" ],  
  "capabilities" : {  
    "cost-constraints" : true,  
    "cost-type-names" : [ "num-routingcost", "num-latency",  
                        "num-pathbandwidth", "string-service-status" ],  
    "calendar-attributes" : [  
      {"cost-type-names" : "num-routingcost",  
       "time-interval-size" : "1 hour",  
       "number-of-intervals" : 24  
      },  
  
      // ... calendar attributes for "num-latency", "num-pathbandwidth" ...  
  
      {"cost-type-names" : "string-service-status",  
       "time-interval-size" : "2 minute",  
       "number-of-intervals" : 30  
      },  
    ],  
  ]  
  "uses": [ "my-default-network-map" ]  
} // ECM capab
```

Calendar-aware clients understand text in blue. Legacy ALTO clients ignore it

ALTO Calendar v05- example ECM - § 4.2.3

POST /calendar/endpointcost/lookup HTTP/1.1

Host: alto.example.com Content-Length: [TODO]

Content-Type: application/alto-endpointcostparams+json

Accept: application/alto-endpointcost+json,application/alto-error+json

```
{  "cost-type" : {"cost-mode" : "numerical", "cost-metric" : "routingcost"},
  "calendared" : [true],
  "endpoints" : {
    "srcs": [ "ipv4:192.0.2.2" ],
    "dsts": [
      "ipv4:192.0.2.89",
      "ipv4:198.51.100.34",
      "ipv4:203.0.113.45"    ]
  }
}
```

ALTO Calendar v05- examples ECM - §4.2.3

HTTP/1.1 200 OK

Content-Length: [TODO]

Content-Type: application/alto-endpointcost+json

```
{ "meta" : {  
  "cost-type" : {"cost-mode" : "numerical", "cost-metric" : "routingcost"},  
  "calendar-response-attributes" : [  
    { "calendar-start-time" : Mon, 30 Jun 2014 00:00:00 GMT,  
      "time-interval-size" : "1 hour",  
      "number-of-intervals" : 24,  
      "repeated": 4 }    ], // means: same value array for Monday, Tuesday, Wednesday, Thursday  
  ] // end meta  
  
  "endpoint-cost-map" : {  
    "ipv4:192.0.2.2" : {  
      "ipv4:192.0.2.89" : [v1, v2, ... v24],  
      "ipv4:198.51.100.34" : [v1, v2, ... v24],  
      "ipv4:203.0.113.45" : [v1, v2, ... v24]  
    }  
  }  
}
```