Updates on ALTO Cost Calendar

draft-randriamasy-alto-cost-calendar-04

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ALTO Cost Calendar in a nutshell

- Target WG work item cost extensions (May 2015)
- Allows applications to schedule their connections or data transfers
- Allows ALTO Clients to schedule their ALTO Calendar requests themselves and thus save time and resources
- Applicable to
  - time-sensitive ALTO metrics
  - applications that do not need immediate transfer

Updates on design-1

- Backwards compatibility with RFC 7285 ALTO Clients and with other extensions
  - Calendar specific capabilities integrated in
    - information resources of IRD
    - "meta" member of ALTO responses to Cost Calendars requests
    - associated to a given information resource and given cost type
- Does not introduce a new mode
- Does not introduce new media types
- **Compatible with all cost-modes**

Updates on design-2

- Backwards compatibility with RFC 7285 ALTO Clients and with other extensions
- Applicable information resources
  - Endpoint Cost Service (ECS),
  - Filtered Cost Map (FCM)
    - For full cost map: use empty SRC & DEST
- Compatible with multi-cost extensions

Updates in IRD extension - § 3.1

- **CalendarAttributes calendar-attributes <1..*>**
  - list of same size as “cost-type-names”

```
object{
  [JSONString    cost-type-name;]
        // OPT: for better readability
  JSONString     calendar-start-mode;
        // takes values in {"request date", "periodic"}
  JSONString     time-interval-size;
        // e.g. "5 minute" , "2 hour"
  JSONNumber     number-of-intervals;
        // >=1
 [JSONBoolean    repeat-indication;]
        // OPT for « periodic » start mode
 } CalendarAttributes;
```

Updates in IRD extension – examples § 3.3

- Calendar capabilities for resources and cost-types in these resources
- For "filtered-cost-map-calendar"

```
{
   "cost-type-names" : "num-pathbandwidth",
   "calendar-start-mode" : "request-date",
   "time-interval-size" : "1 hour",
   "number-of-intervals" : 24
},
```

- For "endpoint-cost-calendar-map"

```
{
   "cost-type-names" : "string-service-status",
   "calendar-start-mode" : "periodic",
   "time-interval-size" : "2 minute",
   "number-of-intervals" : 30,
   "repeat-indication" : true
},
```

Updates on FCM and ECS specifications

- FCM and ECS request must add 1 input parameter
  - `JSONBoolean  calendared<1..*>`
    - //list size = number of requested cost types

- FCM and ECS responses have 1 additional field in « meta »
  - `CalendarResponseAttributes calendar-response-attributes <1..*>;`

```
object{
  JSONString    calendar-start-time;
  JSONString    time-interval-size;
  JSONNumber    number-of-intervals;
  [JSONNumber   repeated;] [OPTIONAL]
  // for «periodic» calendar-start-time: number of calendar iterations with same values
}CalendarResponseAttributes;
```

- Calendared Cost values are JSONArrays of time-dependent JSONValues

Example FCM request - § 4.1.3

```
POST /calendar/costmap/filtered HTTP/1.1
Host: alto.example.com  Content-Length: [TODO]
Content-Type: application/alto-costmapfilter+json
 Accept: application/alto-costmap+json,application/alto-error+json
{
   "cost-type" : {"cost-mode" : “numerical",
                  "cost-metric" : "Availbandwidth"},
   "calendared" : [true],
   "pids" : {
     "srcs" : [ "PID1", "PID2" ],
     "dsts" : [ "PID1", "PID2", "PID3" ]
   }
 }
```

Example FCM response - § 4.1.3

HTTP/1.1 200 OK
Content-Length: [TODO]
Content-Type: application/alto-costmap+json {
"meta" : {
"dependent-vtags" : [...],
"cost-type" : {"cost-mode" : "numerical", "cost-metric" : "Availbandwidth"},
"calendar-response-attributes" : [
"calendar-start-time" : Tue, 1 Jul 2014 13:00:00 GMT,
"time-interval-size" : "2 hour",
"numb-intervals" : 12] },

"cost-map" : {
"PID1": { "PID1": [v1,v2,v3,v4,v5,v6,v7,v8,v9,v10,v11,v12],
"PID2": [v1,v2,v3,v4,v5,v6,v7,v8,v9,v10,v11,v12],
"PID3": [v1,v2,v3,v4,v5,v6,v7,v8,v9,v10,v11,v12] },
"PID2": { "PID1": [v1,v2,v3,v4,v5,v6,v7,v8,v9,v10,v11,v12],
"PID2": [v1,v2,v3,v4,v5,v6,v7,v8,v9,v10,v11,v12],
"PID3": [v1,v2,v3,v4,v5,v6,v7,v8,v9,v10,v11,v12] } } }

Example ECS response « periodic » § 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",
        "numb-intervals" : 24,
        "repeated": 4 }      ], //same calendar values 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]
     }
    }
 }
```

Next steps

- Request adoption as WG item