# Updates on ALTO Cost Calendar

draft-randriamasy-alto-cost-calendar-03

Sabine Randriamasy

Y. Richard Yang

Qin Wu

Lingli Deng

Nico Schwan

March 26, 2015 @ IETF 92 – Dallas TX

# ALTO Cost Calendar in a nutshell

- Target WG work item cost extensions (May 2015)
- Allows applications to carefully 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
- Applicable service information resources
  - Endpoint Cost Service (ECS),
  - Cost Map (CM)
  - Filtered Cost Map (FCM)

  if the CM or FCM size is manageable

# ***Current*** extensions for ALTO Cost Calendar

- Calendar costs values encoded as an array of N time dependent values.
  - Example: a diurnal cost value pattern encoded in 12 values each applicable to an interval of 2 hours.
- Adds fields in the IRD capabilities on the properties of the N time intervals
  - example: *num-intervals : 12, time-interval-size : 2hours*
- Conveys these properties in the "meta" of ALTO Server responses, together with calendar attribute values on the start date and repetitiveness of the calendar.
  - Example: *"repeat" : 4*
    - if the current calendar values are valid for 4 days after its start date.
- The current draft assumes values in the Numerical Mode.

# Updates since V01 presented at IETF90

- Updated and clarified calendar attributes (Section 4.2)
  - Attribute «repeat» now reflects the valididty period of a Calendar
- Updated the examples according to new attribute names (Sections 4.3.1, 4.4.1)

  **Example 4.4.1: scheduling both connections and Calendar requests**
  - daily 'routingcost' calendars having 24 time-intervals of 1hour
  - 3 different calendar patterns in a week
    - C1: Monday, Tuesday, Wednesday, Thursday *(working days)*
    - C2: Saturday, Sunday *(week-end)*
    - C3: Friday *(event, maintenance outage, national holiday, …)*
  - Client request done on Tuesday July 1st at 13:40
  - Current calendar valid from Tuesday to Thursday July 3rd included
    - *repeat* = 4
- We need the WG feedback on these proposals

# Example: calendar IRD and query

```
POST /endpointcost/calendar/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" : "calendar", "cost-metric" : "routingcost"},
    "endpoints" : {
       "srcs": [ "ipv4:192.0.2.2" ],
       "dsts": [
          "ipv4:192.0.2.89",
          "ipv4:198.51.100.34",
          "ipv4:203.0.113.45"
       ]
    }
 }
```

## IRD attributes

```
"calendar-routing": {
   "cost-mode"  : "calendar",
   "cost-metric": "routingcost",
   "description": {
      "time-interval-size" : "1 hour",
      "numb-intervals" : 24,
      "repeat: 4" ➔ to be removed
    }
}
```

# Example: *current* calendar response

```
HTTP/1.1 200 OK
Content-Length: [TODO]
Content-Type: application/alto-endpointcost+json
{
  "meta" : {
    "calendar-start-time" : "Tue, 1 Jul 2014 00:00:00 GMT",
    "time-interval-size" : "1 hour",
    "numb-intervals" : 24,
    "repeat" : 3
  },
  "cost-type" : {"cost-mode" : "calendar", "cost-metric" :
    "routingcost"},
  "endpoint-cost-calendar-map" : {
    "ipv4:192.0.2.2": {
      "ipv4:192.0.2.89"    : [... Array of 24 values],
      "ipv4:198.51.100.34" : [... Array of 24 values],
      "ipv4:203.0.113.45"  : [... Array of 24 values]
    }
  }
}
```

The client knows that the calendar values are the same until Thursday

➔Its next calendar query, if needed, will be on Friday

**DISCUSSION:**
**Do we really need this?**

# Proposal: “instant” calendar response

```
HTTP/1.1 200 OK
Content-Length: [TODO]
Content-Type: application/alto-endpointcost+json
{
  "meta" : {
    "calendar-start-time" : “Tue, 1 Jul 2014 13:00:00 GMT",
    "time-interval-size" : "1 hour",
    "numb-intervals" : 1 to 24,
    "repeat" : 3
  },
  "cost-type" : {"cost-mode" : "calendar", "cost-metric" :
    "routingcost"},
  "endpoint-cost-calendar-map" : {
    "ipv4:192.0.2.2": {
      "ipv4:192.0.2.89"    : [... Array of MAX 24 values],
      "ipv4:198.51.100.34" : [... Array of MAX 24 values],
      "ipv4:203.0.113.45"  : [... Array of MAX 24 values]
    }
  }
}
```

Request placed at 13:40

**24** values provided for the next 24 hours

OR

**MAX 24** values, until start time of next calendar (11 values)

# Discussion

- What level of anticipation does a calendar support?
  - Currently we want the values over the next period of time: 24h, 60secs, 7 days, …
    - + a sense of accuracy reflected by interval length
  - Do we need to save Client requests?
    - i.e. Is this a minor concern?

- How to support Cost calendars with values in other Cost Modes than ‘Numerical’?
  - e.g. ‘string’, ‘boolean’…

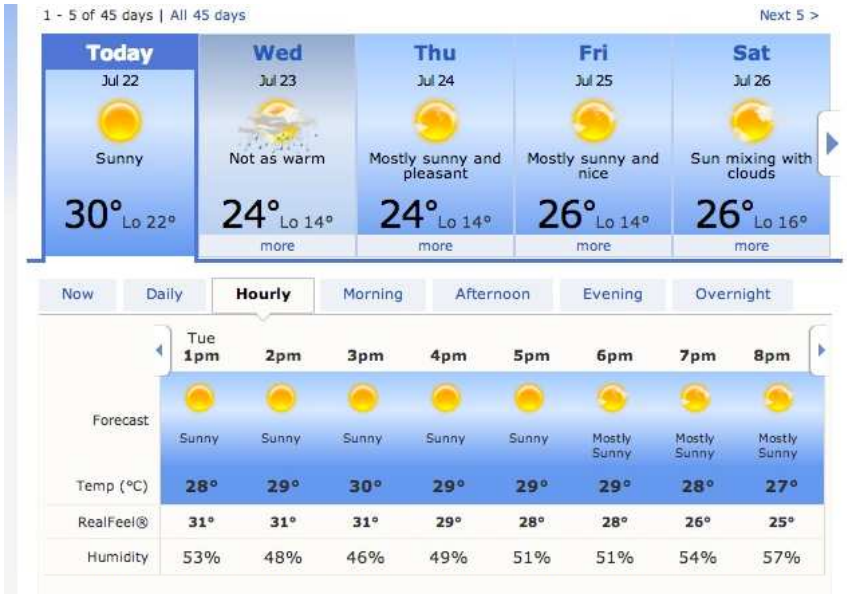
# Next steps

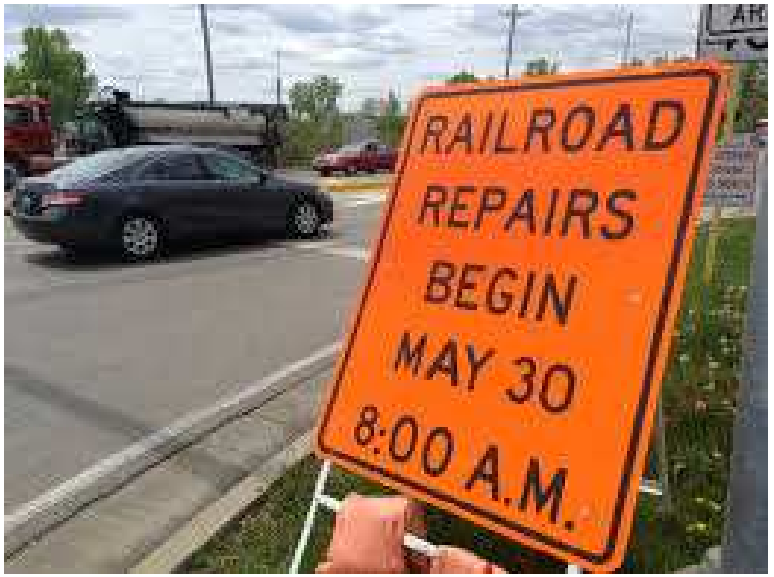
- Request adoption as WG item
- In next version
  - Naming attributes in compliance with existing schemes ? (Section 4.2, 4.4), e.g.:
    - "calendar-start-time“ ➔“start”
    - "time-interval-size“ ➔ "interval"
    - "num-interval" ➔ "count"
  - Update attributes in IRD
    - Move calendar attributes in IRD from *meta* to information resource *capabilities*
  - Shrink the motivating use cases section
  - Fully specify transaction for all applicable information services
  - Move use cases section after transaction specifications

# Back-up

# Recall: Provide  Path Cost Metrics in Time

- Prediction is based on many factors such as past history/planned future events/policy



# THANK YOU