

# draft-ietf-alto-cost-calendar-1 1

updates since IESG review feedback

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ALTO WG

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# IESG review – December 2018

- *Has 2 DISCUSSes. Has enough positions to pass once DISCUSS positions are resolved.*
  - See <https://datatracker.ietf.org/doc/draft-ietf-alto-cost-calendar/>
- “DISCUSS” position at IESG
  - “is a blocking position; the document cannot proceed until any issues are resolved to the satisfaction of the Area Director who issued the DISCUSS.”
    - See <https://www.ietf.org/blog/discuss-criteria-iesg-review/>
- Discuss 1: design-related
  - String format of field "**time-interval-size**" : "**1 hour**", requires cumbersome parsing
  - If actual values change in calendars of long duration, how can the ALTO Client know?
- Discuss 2: Datatracker update not reflecting IPR declaration
  - Solved immediately: “replaces” field in Datatracker updated and IPR shows up respectively
- ➔ This presentation focuses on Discuss 1

# Current draft status: “Active”

- New version v10
  - <https://tools.ietf.org/html/draft-ietf-alto-cost-calendar-10>
  - Submitted to WG, February 7<sup>th</sup> 2019
  - **Addresses all IESG DISCUSS and COMMENTS**
  - Diffs at: <https://tools.ietf.org/rfcdiff?url2=draft-ietf-alto-cost-calendar-10.txt>
- WGLC ended February 25<sup>th</sup>
- New version 11 = current version
  - <https://tools.ietf.org/html/draft-ietf-alto-cost-calendar-11>
  - Submitted February 27<sup>th</sup> 2019
  - Addresses WG review on format issues in JSON examples
- ➔ this presentation focuses on V10

# Updates in V10 - highlights

- Design has been changed to address the 2 DISCUSS issues
  - format of "time-interval-size": the value is now a JSON Number defined in seconds,
  - ALTO Calendars of long duration and changes in their actual values: it is now RECOMMENDED that Calendar-aware Clients and Servers also support the ALTO incremental updates service.
- References to RFCs updated wrt obsolescence upon agreement with WGL and IESG directors
- Many clarification text was added
- Section 4.1.2 has been reorganized
- Editorial updates on ipv6 formats, time zones, units...
- JSON errors hopefully corrected, some typo harmonization started
  - Corrections continued in V11

# Discuss 1: "time-interval-size" format

- §3.1, definition of "time-interval-size«
  - Previous format: **"time-interval-size" : "~~1 hour~~"**,
  - Risk of machine parsing error: why use « unit » : « 3 hour » instead of 2 separate fields for « time unit » and « number of units »?
- **Solution: 2 design changes – section 3.1**
  - **New format: "time-interval-size" : "3600"**,
  - Value of "time-interval-size" now expressed in terms of number of seconds
  - Value is encoded in a JSON Number
  - ALTO servers SHOULD use at least IEEE 754 double-precision floating point [IEEE.754.2008] to store this value
  - Covers all desired duration ranges

# ALTO Calendar - 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" → NOW: "3600"
        "number-of-intervals" : 24
      },
      // ... calendar attributes for "num-latency", "num-pathbandwidth" ...
      {"cost-type-names" : "string-service-status",
        "time-interval-size" : ""2 minute" → NOW: "120"
        "number-of-intervals" : 30 },
    ]
  "uses": [ "my-default-network-map" ]
} // ECM capab
```

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

## Discuss 1: on “repeated” Calendars – review text

- §4.1.2, last paragraph – about attribute « repeated » that allows the Client to use the same Calendar as many times as its values are repeated
  - « This implies that if an ALTO server delivers a calendar with a long duration, it cannot make changes to the metrics in that calendar,
  - or if it does make them it cannot expect the client to learn about those changes. Is that the intent?
  - If so, it seems to contradict language in the security considerations (§6) that future events may change and that the client should ensure information updates.
  - (The operational considerations [§7] also say the client does not need to query again during the calendar duration.) »

# Discuss 1: “repeated” Calendars - Solution

- Section 2 « Overview of ALTO Cost Calendars »
    - Now explains that a Calendar can be used as a time table, but time tables do not predict unexpected incidents
    - → ***It is RECOMMENDED that Servers providing Calendars also provide the «ALTO Incremental Updates » Service and that Calendar-aware Clients use it.***
  - Repeated this text in
    - Section 6 Security + Section 7 Operational
  - In section 4.1.2: added a last paragraph explaining that
    - A Server may update a « repeated » Calendar once the repetition period has elapsed or upon unexpected changes
    - This change can be retrieved with the Incremental Updates Service
    - This text also addresses another comment on how to deal with « infinite » Calendar repetitions
-



# Discuss 2

- « This document replaces [draft-randriamasy-alto-cost-calendar], but this information is not reflected in the datatracker.
- Individual draft has an IPR declaration attached to it [1], but the failure to link the two documents has resulted in the IPR indication not carrying over.
- The direct effect is that the IETF Last Call [2] explicitly says that "No IPR declarations have been submitted directly on this I-D.«
- **Solved**
  - Datatracker has been updated IPR now reflects correctly

# Updated RFC references

- JSON Format now follows RFC 8259
  - JSON Format used in RFC 7285 was following RFC 7159, now obsolete by RFC 8259
  - RFC 8259 normatively requires UTF-8 for text encoding to improve interoperability
  - Upon WG discussion,
    - the Calendar draft thus uses RFC 8259 and
    - the ALTO WG should identify extensions tied to UTF-{16,32} encodings or encoding not supported by RFC 8259
- Reference time zone in UTC as per RFC 7231
  - Updated section 4 – paragraph 2

# Section 4.1.2 reorganized for clarification

- 4.1.2 "Calendar extensions in Filtered Cost Map responses" updated among others
  - To distinguish response members sent by and to multi-cost aware Servers/Clients
  - Whether they are Calendar aware or not
  - To relate Calendar attributes between FCM responses and IRD resources specifications

# Updates on examples – formats - errors

- JSON errors
  - JSON parsing needed
- Addresses in the IPv6 space in 2000::/3
  - used addresses from the 2001:db8::/32 documentation prefix instead
- Many valuable guidance on clearer wording

# IESG feedback on changes proposed in V10

- *Adam Roach – AD Applications and Real-Time Area (art)*
  - *no objection w. COMMENT → agreed on updates*
- *Suresh Krishnan – AD Internet Area (int)*
  - *no objection w. COMMENT → agreed on updates*
- *Spencer Dawkins - AD Transport Area (tsv)*
  - *no objection w. COMMENT → agreed on updates*
- *Ben Campbell - AD Applications and Real-Time Area (art)*
  - *has a DISCUSS and COMMENT → feedback expected*
- *Alissa Cooper – IETF and IESG chair - General Area*
  - *No objection w. COMMENT → agreed on updates*
- *Alvaro Retana – AD Routing Area (rtg)*
  - *has a DISCUSS and COMMENT → agreed on updates*
- *Benjamin Kaduk – AD Security Area (sec)*
  - *No objection w. COMMENT → agreed on updates*

# Conclusion

- Great thanks for the received feedback and guidance
  - To all reviewers
- Next steps
  - New revision upon WGL feedback
  - AD feedback
  - Second IESG review

# Back-up

# IESG review – ballot positions

- *Adam Roach – AD Applications and Real-Time Area (art)*
  - *no objection w. COMMENT*
- *Suresh Krishnan – AD Internet Area (int)*
  - *no objection w. COMMENT*
- *Spencer Dawkins - AD Transport Area (tsv)*
  - *no objection w. COMMENT*
- ***Ben Campbell - AD Applications and Real-Time Area (art)***
  - ***has a DISCUSS and COMMENT***
- *Alissa Cooper – IETF and IESG chair - General Area*
  - *No objection w. COMMENT*
- ***Alvaro Retana – AD Routing Area (rtg)***
  - ***has a DISCUSS and COMMENT***
- *Benjamin Kaduk – AD Security Area (sec)*
  - *No objection w. COMMENT*



# 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, → NOW: "3600"  
        "number-of-intervals" : 24  
      },  
      // ... calendar attributes for "num-latency", "num-pathbandwidth" ...  
      {"cost-type-names" : "string-service-status",  
        "time-interval-size" : "2 minute, → NOW: "120"  
        "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, → NOW: "3600"  
      "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]  
    }  
  }  
}
```