draft-ietf-alto-cost-calendar-11
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
  - Submitted to WG, February 7th 2019
  - **Addresses all IESG DISCUSS and COMMENTS**
- WGLC ended February 25th
- New version 11 = current version
  - Submitted February 27th 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
"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
            },
            {"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 obsoleted 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 \textit{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, ...
"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", \rightarrow NOW: "3600"
        "number-of-intervals": 24
      },

      // ... calendar attributes for "num-latency", "num-pathbandwidth"...

      {"cost-type-names": "string-service-status",
        "time-interval-size": "2-minute", \rightarrow NOW: "120"
        "number-of-intervals": 30 },
    ]
    "uses": ["my-default-network-map"]
  } // ECM capab
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]
    }
}
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]
    }
  }
}