JSCalendar: Converting from and to iCalendar
draft-ietf-calext-jscalendar-icalendar-01

Abstract

   This document provides an informational guideline for converting
   JSCalendar from and to iCalendar.

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1. Introduction

1.1. Motivation

   The JSCalendar [draft-ietf-calext-jscalendar] data format is used to
   represent calendar data, and is meant as an alternative to the widely
   deployed iCalendar [RFC5545] data format.

   While new calendaring services and applications might use JSCalendar
   as their main data format to exchange calendaring data, they are
   likely to interoperate with services and clients that just support
   iCalendar. Similarly, existing calendaring data is stored in
   iCalendar format in databases and other calendar stores, and
   providers and users might want to represent this data also in
   JSCalendar. Lastly, some implementations might want to preserve
   custom iCalendar properties, that have no equivalent in JSCalendar
   when converting between these formats.

   To facilitate these use cases, this document provides an
   informational guide how to convert JSCalendar data from and to
   iCalendar.

1.2. Scope and caveats

   JSCalendar and iCalendar have a lot of semantics in common, but they
   are not interchangeable formats:

   o JSCalendar contains a richer data model to express calendar
      information such as event locations and participants; while future
      iCalendar extensions may allow a direct mapping, for now there may
      be no representation directly in iCalendar of some properties and
      these have been marked as implementation specific for mapping.

   o iCalendar may contain arbitrary, non-standardised data with custom
      properties/attributes. Translating these into JSCalendar is
      implementation specific.

   o iCalendar has some obsolete features that have been removed from
      JSCalendar due to not being useful and/or supported in the real
      world (e.g. custom email alerts to send to random people).
      Translating these may lose some of the original fidelity.

   o Implementations may use a custom property to store data that could
      not be mapped directly in either direction in the original or a
      custom format, however this is not interoperable.

   Accordingly, this document does not standardize a canonical
   translation between iCalendar and JSCalendar, and implementations
   MUST NOT make any assumptions how iCalendar data is represented in
   JSCalendar by other systems.

1.3. Notational Conventions

   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
   document are to be interpreted as described in [RFC2119].

2. New iCalendar parameters

2.1. SUBSECOND parameter

   Parameter name: SUBSECOND

   Purpose: This parameter is used to define fractional seconds for
      time values and durations. SUBSECOND MUST NOT be used in date-
      time calculations or comparisons in iCalendar. It is meant to
      preserve time precision on time values and duration with sub-
      second precision, without increasing the time value range within
      iCalendar.

   Description: This parameter MAY be specified on properties of type
      DATE-TIME or DURATION. The integral part of the float value MUST
      be zero. The value MUST NOT be negative. iCalendar
      implementations SHOULD ignore this parameter in date time
      arithmetic. Implementations MUST ignore presence of the SUBSECOND
      parameter on RECURRENCE-ID properties when determining recurrence
      overrides. If present on a RECURRENCE-ID property, its value MUST
      match the SUBSECOND parameter value on the DATE-TIME property that
      defines the reference point for the recurring instances.

   Format Definition:

   This parameter is defined by the following notation:

                                    subsecond-param = float

   Example: DTSTART;SUBSECOND=0.03:20190605T133015

3. JSEvent

   A JSEvent maps to the the iCalendar VEVENT component type [RFC5545].
   The following tables maps the JSEvent-specific properties to
   iCalendar:

   +----------+---+
   | Property | iCalendar counterpart |
   +----------+---+
duration	DURATION property. If the VEVENT contains a DTEND
	property, the this maps to the duration property as
	the time span between DTSTART and DTEND when
	converting the respective time points to the UTC time
	zone. Fractional seconds SHOULD be preserved with the
	SUBSECOND parameter.
   +----------+---+

                    Table 1: Mapping JSEvent properties

4. JSTask

   A JSTask object maps to the iCalendar VTODO component type [RFC5545].
   The following tables maps the JSTask-specific properties to
   iCalendar:

```
+-----------------+---------------------------------------------------+
| Property        | iCalendar counterpart                             |
+-----------------+---------------------------------------------------+
| due             | Maps to the DUE property. See Section 6.1.        |
|                 |                                                   |
| estimatedDuration | ESTIMATED-DURATION property in the RFC draft    |
|                 | [draft-apthorp-ical-tasks], or the DURATION       |
|                 | property otherwise.  Fractional seconds           |
|                 | SHOULD be preserved with the SUBSECOND            |
|                 | parameter.                                        |
|                 |                                                   |
| statusUpdatedAt | COMPLETED property. The JSTask status             |
|                 | property MUST have value "completed".             |
|                 | Fractional seconds SHOULD be preserved with       |
|                 | the SUBSECOND parameter.                          |
|                 |                                                   |
| progress        | PARTSTAT and COMPLETED properties, including      |
|                 | the definitions in the RFC draft                  |
|                 | [draft-apthorp-ical-tasks].                       |
|                 |                                                   |
| status          | STATUS property, including the definitions in     |
|                 | the RFC draft [draft-apthorp-ical-tasks].         |
+-----------------+---------------------------------------------------+
```

                    Table 2: Mapping JSTask properties

5. JSGroup

   A JSGroup maps to a iCalendar VCALENDAR containing VEVENT or VTODO
   components.

```
+----------+--------------------------------------------------------+
| Property | iCalendar counterpart                                  |
+----------+--------------------------------------------------------+
| entries  | VEVENT and VTODO components embedded in a VCALENDAR     |
|          | component.                                             |
|          |                                                        |
| source   | SOURCE property.                                       |
+----------+--------------------------------------------------------+
```

                    Table 3: Mapping JSGroup properties

6. Common properties

   This section contains recommendations how to map JSCalendar from and
   to iCalendar. It lists all common JSCalendar object properties in
   alphabetical order.

Property	iCalendar counterpart
@type	Determined by the iCalendar component type: "jsevent" for VEVENT, "jstask" for VTODO, "jsgroup" for VCALENDAR.
alerts	Each entry maps to a VALARM component. The action property maps to iCalendar ACTION, where both iCalendar "DISPLAY" and "AUDIO" values map to the "display" action. An EMAIL value maps to a JSCalendar "email" action. _relativeTo_ and _offset_ map to the TRIGGER property.
categories	CONCEPT property, defined in [draft-ietf-calext-ical-relations].
color	COLOR property, as specified in [RFC7986].
created	CREATED property. Fractional seconds SHOULD be preserved with the SUBSECOND parameter.
description	DESCRIPTION property.
descriptionContentType	Implementation-specific.
excluded	EXDATE property. Fractional seconds SHOULD be preserved with the SUBSECOND parameter.
freeBusyStatus	TRANSP property.
invitedBy	Implementation-specific.
keywords	CATEGORIES property, as specified in [RFC7986].
links	ATTACH ([RFC5545]), URL or IMAGE ([RFC7986]) properties with URI value types map to the the Link _href_. The FMTTYPE parameter maps to _type_, the SIZE parameter to _size_. Mapping other properties is implementation-specific.

locale	LANGUAGE parameter of the SUMMARY or DESCRIPTION property.
localizations	Implementation-specific.
locations	See Section 6.2.
method	METHOD property of the embedding VCALENDAR.
participants	See Section 6.3.
priority	PRIORITY property.
privacy	CLASS property.
prodId	PRODID property.
recurrenceOverrides	RDATE and EXDATE properties, and any VEVENT or VTODO instances with a recurrence-id and same UID as the mapped main object. If the DTSTART property defines a SUBSECOND parameter, but the RECURRENCE-ID of a recurrence instance does not, then use the SUBSECOND parameter value of DTSTART to determine the recurrence override time stamp.
recurrenceRule	RRULE property. For all-day calendar objects, map the _until_ property value to an iCalendar DATE (effectively removing the time component). To convert a DATE-typed UNTIL from iCalendar, set the time components of the LocalDateTime value to "23:59:59". If the iCalendar UNTIL value is a UTC date time, convert it to the local time in the JSCalendar calendar object time zone. To convert to iCalendar where the DTSTART or DUE property is of type DATE, omit the time component of the LocalDateTime value.
relatedTo	RELATED-TO property.
replyTo	An iCalendar ORGANIZER with a mailto: URI mapped to the "imip" method, or any other URI mapped to the "other" method. Mapping multiple methods is

	implementation-specific.
sequence	SEQUENCE property.
showWithoutTime	Implementation-specific.
start	Maps to the DTSTART property. See Section 6.1.
status	STATUS property.
timeZone	Maps to the TZID parameter. See Section 6.1.
timeZones	Each entry in the property maps to a VTIMEZONE in the embedding VCALENDAR component.
title	SUMMARY property.
uid	UID property.
updated	DTSTAMP and LAST-MODIFIED properties. Fractional seconds SHOULD be preserved with the SUBSECOND parameter.
useDefaultAlerts	Implementation-specific.
virtualLocations	See Section 6.2.

Table 4: Translation between JSCalendar and iCalendar

6.1. Time properties and types

   iCalendar defines two different time types, DATE and DATE-TIME, where
   the latter may occur in three forms (with local time, with UTC time,
   with local time and time zone reference). In contrast, JSCalendar
   does not define a distinct type for dates, and date times are defined
   with the LocalDateTime type only.

   A JSCalendar time maps to the iCalendar DATE type if all of the
   following criteria apply:

   o The "start" ("due") property value has zero time, or is not set.

   o The "duration" ("estimatedDuration") property value has zero time,
      or is a multiple of days or weeks, or is not set.

o The "timeZone" property value is null, or is not set.

For all other cases, the time maps to an iCalendar DATE-TIME:

o With local time and time zone reference, if the "timeZone"
   property value is set and does not equal "Etc/UTC".

o With UTC time, if the "timeZone" property value equals "Etc/UTC".

o With local time, if the "timeZone" property value is null or not
   set.

Fractional seconds SHOULD be preserved with the SUBSECOND parameter.

6.2. Locations

The iCalendar counterpart for JSCalendar Location objects is the
iCalendar [RFC5545] LOCATION property, or implementation-specific.

```
+-------------+-------------------------------+
| Property    | iCalendar counterpart         |
+-------------+-------------------------------+
| coordinates | GEO property.                 |
|             |                               |
| description | Implementation-specific.      |
|             |                               |
| linkIds     | Implementation-specific.      |
|             |                               |
| name        | LOCATION property value.      |
|             |                               |
| rel         | Implementation-specific.      |
|             |                               |
| timeZone    | Implementation-specific.      |
|             |                               |
| uri         | The LOCATION ALTREP parameter.|
+-------------+-------------------------------+
```

Table 5: Mapping Location properties

The iCalendar counterpart for JSCalendar VirtualLocation objects is
the iCalendar [RFC7986] CONFERENCE property.

```
            +-------------+----------------------------+
            | Property    | iCalendar counterpart      |
            +-------------+----------------------------+
            | description | Implementation-specific.   |
            |             |                            |
            | name        | LABEL parameter.           |
            |             |                            |
            | uri         | CONFERENCE property value. |
            +-------------+----------------------------+
```

               Table 6: Mapping virtualLocation properties

6.3. Participants

   The following table outlines translation of JSCalendar participants.
   An iCalendar ORGANIZER maps to both the replyTo property and a
   participant with role "owner". If an ATTENDEE with the same CAL-
   ADDRESS value exists, then it maps to the same participant as the
   ORGANIZER participant. Other participants map to ATTENDEEs.

```
+-------------------+--------------------------------------------+
| Property          | iCalendar counterpart                      |
+-------------------+--------------------------------------------+
| attendance        | ROLE parameter values REQ-PARTICIPANT, OPT-|
|                   | PARTICIPANT and NON-PARTICIPANT.           |
|                   |                                            |
| delegatedFrom     | DELEGATED-FROM parameter                   |
|                   |                                            |
| delegatedTo       | DELEGATED-TO parameter                     |
|                   |                                            |
| email             | EMAIL parameter, if defined. Otherwise the |
|                   | CAL-ADDRESS property value, if it is a     |
|                   | mailto: URI.                               |
|                   |                                            |
| expectReply       | RSVP parameter                             |
|                   |                                            |
| kind              | CUTYPE parameter                           |
|                   |                                            |
| linkIds           | Implementation-specific.                   |
|                   |                                            |
| locationId        | Implementation-specific.                   |
|                   |                                            |
| memberOf          | MEMBER parameter                           |
|                   |                                            |
| name              | CN parameter                               |
|                   |                                            |
| participationStatus | PARTSTAT parameter                       |
|                   |                                            |
| roles             | ROLE parameter.                            |
|                   |                                            |
| scheduleSequence  | SEQUENCE property of the participant's     |
|                   | latest iMIP message                        |
|                   |                                            |
| scheduleUpdated   | DTSTAMP property of the participant's      |
|                   | latest iMIP message                        |
|                   |                                            |
| sendTo            | A CAL-ADDRESS with a mailto: URI maps to   |
|                   | the JSCalendar "imip" method, any other URI|
|                   | to the "other" method. Mapping multiple    |
|                   | methods is implementation-specific.        |
+-------------------+--------------------------------------------+
```

Table 7: Mapping Participant properties

7. Custom properties

   Mapping custom or unknown properties between JSCalendar and iCalendar
   is implementation-specific. Implementations might use vendor-
   extension properties, which could also serve as basis for discussion
   for a JSCalendar standard extension. Alternatively, an
   implementation could preserve iCalendar properties and components in
   JSCalendar by use of a vendor-extension property formatted as jCal
   [RFC7265] data.

8. Security Considerations

   The same security considerations as for
   [draft-ietf-calext-jscalendar] apply.

9. IANA Considerations

   None.

10. Acknowledgments

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   valuable contributions. This specification originated from the work
   of the API technical committee of CalConnect, the Calendaring and
   Scheduling Consortium.

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