vCard representation of resources for calendaring and scheduling services
draft-cal-resource-vcard-00

Abstract

This specification describes the vCard representation of resources for calendaring and scheduling. A resource in the scheduling context is any shared entity that can be scheduled by a calendar user, but does not control its own attendance status.

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1. Introduction

This specification defines the vCard representation of calendaring resources to ease the discovery and scheduling of resources between any calendar client and server.

2. Conventions Used in This Document

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].

3. General Considerations

Data values must have valid representation for the specified value type with respect to escape characters, line folding, and so on.

4. ABNF Format and Cardinality Definitions

Format and cardinality of new vCard properties are defined as described in Section 3.3 of [RFC6350].

5. Resource Object

A resource object definition should contain all information required to find and schedule the right resource. For this, it should contain all, or a set of properties described in Section 6. The Common Name property, described in Section 6.1 MUST be present in any resource object. Additional proprietary properties may be defined as well, but must begin with "X-". Clients encountering properties they don't know about must ignore them.

Properties required to contact the resource are not included in this specification. vCard properties defined in vCard Format Specification [RFC6350] can be used to include contact information for the resource.

6. Resource Properties

6.1. Full Name

Purpose:
Specify full name of the resource.

Value Type:
String value.
vCard Property:
   FN property as defined in Section 6.2.1 of [RFC6350].

Special Notes:
   This property MUST be defined for a resource object.

Default value:
   None

Example value:
   Room One

6.2. Kind

Purpose:
   Define the kind of object represented.

ValueType:
   String value.

vCard Property:
   Property KIND that specifies the kind of object represented, as defined in Section 6.1.4 of [RFC6350].

Special Notes:
   Some of the possible values are "Location", "Individual", "CalendarResource", or "Group".
   Location is used for any physical location resource such as room, building, etc.
   Individual is used for a human resource such as driver, technician, etc.
   CalendarResource, a newly defined value is used for any physical object that can scheduled like projector, printer, etc.
   Group is used to specify a group of resources with a specific skill set. For example: drivers, electricians, etc.

Default value:
   None

Example value:
   Location

6.3. Unique ID

Purpose:
   Specify the Unique Identifier for the object.
ValueType: Single string value.

vCard Property: UID property as defined in Section 6.7.6 of [RFC6350].

Default value: None

Example value: room1-id1

6.4. Nick Name

Purpose: Give a short or popular name for the resource.

ValueType: String value.

vCard Property: NICKNAME property as defined in Section 6.2.3 of [RFC6350].

Default value: None

Example value: TheOne

6.5. Description

Purpose: Specify a description of the resource.

ValueType: String value.

vCard Property: NOTE property as defined in Section 6.7.2 of [RFC6350].

Default value: None

Example value: Room 1 in Building X
6.6. Organizational Unit

Purpose:
List the organizations the resource belongs to.

Value Type:
String value.

vCard Property:
ORG property as defined in Section 6.6.4 of [RFC6350].

Default value:
None

Example value:
EngineeringDepartment

6.7. Categories

Purpose:
List the categories the resource falls under or tags for easy discovery of the resource.

Value Type:
String value. One or more text values separated by a COMMA character.

vCard Property:
CATEGORIES property as defined in Section 6.7.1 of [RFC6350].

Default value:
None

Example value:
Rooms

6.8. Group Member

Purpose:
List the unique resources in a group of resources object.

Value Type:
URI value.

vCard Property:
MEMBER property as defined in Section 6.6.5 of [RFC6350].
Default value:
None

Example value:
http://www.example.com/printer1.html
http://www.example.com/printer2.html

6.9. Restricted Access

Purpose:
Specify if access to the resource restricted?

ValueType:
Boolean value.

Cardinality:
*1

ABNF:
RESTRICTEDACCESS-param = ; no parameter allowed
RESTRICTEDACCESS-value = boolean

Default value:
FALSE.
Absence of this property indicates no access restriction.

Example value:
TRUE

6.10. Admittance Info URL

Purpose:
URL pointing to complete information for accessing the resource.

ValueType:
URI value.

Cardinality:
*

ABNF:
ADMISSIONINFO-param = "VALUE=uri" / any-param
ADMISSIONINFO-value = uri

Special Notes:
The URL points to information like getting accessibility rights, special entrances, and so on.
Default value:
None

Example value:
http://www.example.com/room1_admittance.html

6.11. Accessibility

Purpose:
Specify special resource accessibility info for the physically disabled.

ValueType:
URI value.

Cardinality:
*

ABNF:
ACCESSIBILITYINFO-param = "VALUE=uri" / any-param
ACCESSIBILITYINFO-value = uri

Default value:
None

Example value:
http://www.example.com/room1_specialaccess.html

6.12. Capacity

Purpose:
Provide information on the capacity of the resource.

ValueType:
Integer.

Cardinality:
*

ABNF:
CAPACITY-param = "VALUE=integer" / any-param
CAPACITY-value = integer

Default value:
None
Example value:
   10

6.13. Inventory List

Purpose:
   List other resources available as part of this resource.

Value Type:
   String value. One or more text values separated by a COMMA
   character (ASCII decimal 44).

Cardinality:
   *

ABNF:
   INVENTORYLIST-param = "VALUE=text" / any-param
   INVENTORYLIST-value = text

Default value:
   None

Example value:
   Printer


Purpose:
   Provide URL pointing to information on other related resources.

Value Type:
   URI value.

Cardinality:
   *

ABNF:
   INVENTORYURL-param = "VALUE=uri" / any-param
   INVENTORYURL-value = uri

Special Notes:
   URL pointing to information on other resources available as part
   of this resource.

Default value:
   None
6.15. Owner

Purpose:
  Pointer to the owners of the resource.

ValueType:
  URI value.

Cardinality:
  *

ABNF:
  RESOURCEOWNER-param = "VALUE=uri" / any-param
  RESOURCEOWNER-value = uri

Special Notes:
  An owner is anyone who has complete authority over the resource,
  from naming to overall availability.

Default value:
  None

Example value:
  http://www.example.com/room1_ownerinfo.html

6.16. Resource Manager

Purpose:
  Pointer to the managers of the resource.

ValueType:
  URI value.

Cardinality:
  *

ABNF:
  RESOURCEMANAGER-param = "VALUE=uri" / any-param
  RESOURCEMANAGER-value = uri

Special Notes:
  A manager is someone responsible for the day-to-day upkeep of the
  resource.
6.17. Calendar URL

Purpose:
Provide the URL to access calendar data of the resource.

ValueType:
URI value.

vCard Property:
Calendar access property CAPURI as defined in Section 2.3.3 of [RFC2739].

Default value:
None

Example value:
http://www.example.com/calendar/home/Room1/calendar/

6.18. FreeBusy URL

Purpose:
Provide the URL to read freebusy information of the resource's calendar.

ValueType:
URI value.

vCard Property:
FBURL property as defined in Section 2.3.1 of [RFC2739] and further explained in Section 6.9.1 of [RFC6350].

Default value:
None

Example value:
http://www.example.com/freebusy/home/Room1/

6.19. Scheduling Address
Purpose:
Specify the scheduling address used for scheduling the resource by a Calendaring and Scheduling service.

ValueType:
String value.

tCard Property:
Scheduling Address property CALADRURI as defined in Section 2.3.2 
[RFC2739] and further explained in Section 6.9.2 of [RFC6350].

Special Notes:
Specify the scheduling address used for scheduling the resource by a Calendaring and Scheduling service. This is the address that would be used by a Scheduling and Calendaring application to schedule the resource. Its value must be a uri string, in most cases a mailto: uri. The EMAIL property value of the resource should be used for scheduling, in the absence of this property.

Default value:
None

Example value:
mailto:room1@example.com

6.20. Time Zone

Purpose:
Specify the timezone identifier for the timezone the resource is in.

ValueType:
String value.

tCard Property:
TimeZone property TZ as defined in Section 6.5.1 of [RFC6350].

Default value:
None

Example value:
America/New_York
6.21. **Multiple Bookings**

**Purpose:**
Number of simultaneous bookings allowed.

**Value Type:**
Integer value.
Value of 0 indicates no limits.

**Cardinality:**
*1

**ABNF:**
MULTIBOOK-param = "VALUE=integer" / any-param
MULTIBOOK-value = integer

**Special Notes:**
Value of 0 indicates no limits. If this property is absent the resource may be booked only for one event at a particular moment.

**Default value:**
1

**Example value:**
1

6.22. **Maximum Instances**

**Purpose:**
Maximum number of instances of an event, the resource can be scheduled for from NOW.

**Value Type:**
Integer value.

**Cardinality:**
*1

**ABNF:**
MAXINSTANCES-param = "VALUE=integer" / any-param
MAXINSTANCES-value = integer

**Special Notes:**
Value of 0 indicates no limits. Value of 1 indicates that no recurring bookings are allowed. If this property is absent there is no limit to the number of instances it may be booked for at any moment.
Default value:
0

Example value:
60

### 6.23. BookingWindow Start

**Purpose:**
Defines how much time in advance the resource can be booked.

**Value Type:**
Duration value.
The format is based on the [ISO.8601.2004] duration representation with designators for the duration of time. The format can represent nominal durations (weeks and days) and accurate durations (hours, minutes, and seconds). The syntax is further defined in Appendix A, "Duration" section of [RFC3339].

**Cardinality:**
*1

**ABNF:**

```
BOOKINGWINDOWSTART-param = "VALUE=text" / any-param
BOOKINGWINDOWSTART-value = text
```

**Special Notes:**
The value of this property is used to calculate the earliest date and time when a resource can be reserved for an event starting on a specific date and time.

If this property value is defined, the resource may be booked for an event at a certain time, only if the current time is equal to or after the date and time calculated by subtracting this value from the event's proposed start time. If this property is absent, then the resource may be booked at any time before the end of the booking window.

Default value:
None

Example value:
P3M

### 6.24. BookingWindow End
Purpose:
Defines how much time in advance the resource booking is closed.

ValueType:
Duration value.
The format is based on the [ISO.8601.2004] duration representation
basic format with designators for the duration of time. The
format can represent nominal durations (weeks and days) and
accurate durations (hours, minutes, and seconds). The syntax is
further defined in Appendix A, "Duration" section of [RFC3339].

Cardinality:
*1

ABNF:
BOOKINGWINDOWEND-param = "VALUE=text" / any-param
BOOKINGWINDOWEND-value = text

Special Notes:
The value of this property is used to calculate the latest date
and time when a resource can be reserved for an event starting on
a specific date and time.
If the current time is equal to or before the value obtained by
subtracting BookingWindowEnd from the start date and time of the
event, then the resource may be booked. If this property is
absent, then the resource may be booked anytime from booking
window start to the start of the event.
BookingWindow Start and End together provide the window of time a
resource can be booked, relative to the start time of the event.

If BookingWindowStart = BwS,
BookingWindowEnd = BwE,
Current Time = CT and
Event Start Time = ST,
a resource can be booked at a certain time only if
CT is equal to or after (ST - BwS)
and CT is equal to or before (ST - BwE)

Default value:
None

Example value:
P5D
6.25. **Auto schedule**

**Purpose:**
Specify if the resource is automatically scheduled with no approval process.

**ValueType:**
Integer value.

**Auto Schedule Values Table:**

<table>
<thead>
<tr>
<th>Auto schedule value</th>
<th>Scheduling action</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>no auto scheduling</td>
</tr>
<tr>
<td>1</td>
<td>auto accept invitations, if no conflict</td>
</tr>
<tr>
<td>2</td>
<td>auto decline invitations that result in a conflict</td>
</tr>
<tr>
<td>3</td>
<td>auto accept and auto decline based on booking</td>
</tr>
<tr>
<td>4</td>
<td>auto accept all invitations</td>
</tr>
<tr>
<td>5</td>
<td>auto decline all invitations</td>
</tr>
</tbody>
</table>

**Cardinality:**
*1

**ABNF:**

```
AUTOSCHEDULE-param = "VALUE=integer" / any-param
AUTOSCHEDULE-value = integer
```

**Default value:**
If the property is absent, resource bookings are auto accepted, if it does not result in a booking conflict and auto declined if it does.

**Default value:**
3

**Example value:**
0

6.26. **Approval Info URL**
Purpose:
Provide the URL pointing to complete information on scheduling request approval process for the resource.

ValueType:
URI value.

Cardinality:
*

ABNF:
APPROVALINFO-param = "VALUE=uri" / any-param
APPROVALINFO-value = uri

Default value:
None

Example value:
http://www.example.com/room1_approval.html

6.27. Scheduling Admin Contact

Purpose:
Provide the contact information for the scheduling approvers, if approval required.

ValueType:
URI value.

Cardinality:
*

ABNF:
SCHEDADMIN-param = "VALUE=uri" / any-param
SCHEDADMIN-value = uri

Default value:
None

Example value:
http://www.example.com/SchedAdmin1.vcf

6.28. Nocost

Purpose:
Specify if there is a cost associated with using the resource.
ValueType:
  Boolean value.

Cardinality:
  *1

ABNF:
  NOCOST-param = ; no parameter allowed
  NOCOST-value = boolean

Special Notes:
  If this property is absent, it indicates that the resource may be booked free of cost.

Default value:
  TRUE

Example value:
  TRUE

6.29. Cost URL

Purpose:
  Provide the URL pointing to complete pricing information for usage of the resource.

ValueType:
  URI value.

Cardinality:
  *

ABNF:
  COSTINFO-param = "VALUE=uri" / any-param
  COSTINFO-value = uri

Default value:
  None

Example value:
  http://www.example.com/cost.html

6.30. Related

Purpose:
  Specify a relationship with another resource.
Value Type:
  URI value.

vCard Property:
  The property RELATED as defined in Section 6.6.6 of [RFC6350].

Default value:
  None

Example value:
  http://www.example.com/printer1.html

7.  Examples

7.1.  Location Resource

BEGIN:VCARD
VERSION:4.0
UID:urn:uuid:room1-id
KIND: location
FN: Room One
ORG: Engineering
NICKNAME: The One
NOTE: Room 1 in Engineering Building X
CATEGORIES: rooms, engineering_resources
RESTRICTEDACCESS: TRUE
ADMISSIONINFO: http://www.example.com/room1_admittance.html
ACCESSIBILITYINFO: http://www.example.com/room1_specialaccess.html
CAPACITY: 100
INVENTORYLIST: phone, projector
INVENTORYURL: http://www.example.com/room1_inventory.html
RESOURCEOWNER: http://www.example.com/ResOwner1.vcf
RESOURCEMANAGER: http://www.example.com/ResManager1.vcf
CAPURI: http://www.example.com/calendar/home/Room1/calendar/
FBURL: http://www.example.com/freebusy/home/Room1/
CALADRURI: mailto:room1@example.com
TZ: America/Los_Angeles
MULTIBOOK: 1
MAXINSTANCES: 10
BOOKINGWINDOWSTART: P3M
BOOKINGWINDOWEND: P3D
AUTOSCHEDULE: 3
APPROVALINFO: http://www.example.com/room1_approval.html
SCHEDADMIN: http://www.example.com/SchedAdmin1.vcf
NOCOST: FALSE
COSTINFO: http://www.example.com/cost.html
END:VCARD
7.2. Role Resources Group

BEGIN:VCARD
VERSION:4.0
UID:urn:uuid:driverXPool-id
KIND: group
FN: Driver X Pool
ORG: Transportation
NICKNAME: The X Group
NOTE: Drivers in the Transportation department driver pool X
CATEGORIES: drivers
MEMBER:urn:uuid:driver1-id
MEMBER:urn:uuid:driver2-id
MEMBER:urn:uuid:driver3-id
RESOURCEOWNER: http://www.example.com/DriversManager.vcf
FBURL: http://www.example.com/freebusy/home/DriversX/
CALADRURI: mailto:driversX@example.com
TZ: America/Los_Angeles
MULTIBOOK: 3
MAXINSTANCES: 10
BOOKINGWINDOWSTART: P3M
BOOKINGWINDOWEND: P3D
AUTOSCHEDULE: 3
APPROVALINFO: http://www.example.com/driversX_approval.html
SCHEDADMIN: http://www.example.com/DriversX_SchedAdmin.vcf
NOCOST: FALSE
COSTINFO: http://www.example.com/driversXcost.html
END:VCARD

8. Security Considerations

As this document only defines schema for representing resource information for calendaring and scheduling and does not refer to the actual storage mechanism itself, or the calendaring and scheduling protocol, no special security considerations are required as part of this document.

9. IANA Considerations

9.1. VCard Property and Value Registration

The following new VCard Properties need to be registered by IANA.
New VCard Properties Table:

<table>
<thead>
<tr>
<th>VCard Property Name</th>
<th>VCard Property Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESTRICTEDACCESS</td>
<td>Section 6.9</td>
</tr>
<tr>
<td>ADMISSIONINFO</td>
<td>Section 6.10</td>
</tr>
<tr>
<td>ACCESSIBILITYINFO</td>
<td>Section 6.11</td>
</tr>
<tr>
<td>CAPACITY</td>
<td>Section 6.12</td>
</tr>
<tr>
<td>INVENTORYLIST</td>
<td>Section 6.13</td>
</tr>
<tr>
<td>INVENTORYURL</td>
<td>Section 6.14</td>
</tr>
<tr>
<td>RESOURCEOWNER</td>
<td>Section 6.15</td>
</tr>
<tr>
<td>RESOURCEMANAGER</td>
<td>Section 6.16</td>
</tr>
<tr>
<td>MAXINSTANCE</td>
<td>Section 6.22</td>
</tr>
<tr>
<td>BOOKINGWINDOWSTART</td>
<td>Section 6.23</td>
</tr>
<tr>
<td>BOOKINGWINDOWEND</td>
<td>Section 6.24</td>
</tr>
<tr>
<td>AUTOSCHEDULE</td>
<td>Section 6.25</td>
</tr>
<tr>
<td>APPROVALINFO</td>
<td>Section 6.26</td>
</tr>
<tr>
<td>SCHEDADMIN</td>
<td>Section 6.27</td>
</tr>
<tr>
<td>NOCOST</td>
<td>Section 6.28</td>
</tr>
<tr>
<td>COSTINFO</td>
<td>Section 6.29</td>
</tr>
</tbody>
</table>

The following new VCard Property Values need to be registered by IANA.

New VCard Property Values Table:

<table>
<thead>
<tr>
<th>VCard Property</th>
<th>Additional VCard Property</th>
<th>Value</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIND</td>
<td>calendarresource</td>
<td></td>
<td>Section 6.2</td>
</tr>
</tbody>
</table>

10. Recommendations for Calendaring Systems

While this document does not mandate how each of the defined property values must be used by calendaring systems, here are some recommendations:

1. BookingWindow Start (Section 6.23), Booking Window End (Section 6.24), and Multiple Bookings (Section 6.21) information should be used in freebusy calculations. A query for a time slot that falls outside the booking window or one that already has the maximum allowed number of simultaneous bookings, must be returned as BUSY_UNAVAILABLE.
2. Calendaring systems that support the auto schedule (Section 6.25) property, should automatically mark the attendee PARTSTAT for a resource as ACCEPTED, if its auto schedule value is TRUE and the scheduling is successful. If owner approval is required, the PARTSTAT could be automatically marked as TENTATIVE.

3. Information like Capacity (Section 6.12) can be used by calendaring systems to warn end users if the number of attendees exceed the capacity value.

Individual calendar servers may regard the values of these properties set in a directory server or a different database as advisory and could further limit what it allows.

11. Acknowledgments

This specification is a result of discussions that took place within the Calendaring and Scheduling Consortium's Resource Technical Committee. The authors thank the participants of that group, and specifically the following individuals for contributing their ideas and support: Arnaud Quillaud, Adam Lewenberg, Andrew Laurence, Guy Stalnaker, Mimi Mugler, Dave Thewlis, Bernard Desruisseaux, Alain Petit, Andrew Sciberras, and Jason Miller.

12. Normative References


Authors' Addresses

Ciny Joy
Oracle Corporation
4210 Network Circle
Santa Clara, CA  95054
USA

EMail: ciny.joy@oracle.com
URI:  http://www.oracle.com/

Cyrus Daboo
Apple Inc.
1 Infinite Loop
Cupertino, CA  95014
USA

EMail: cyrus@daboo.name
URI:  http://www.apple.com/

Michael Douglass
Rensselaer Polytechnic Institute
110 8th Street
Troy, NY  12180
USA

EMail: douglm@rpi.edu
URI:  http://www.rpi.edu/