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Schema for representing resources for calendaring and scheduling services draft-cal-resource-schema-02

Abstract

This specification describes a schema for representing 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.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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1. Introduction

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This specification defines a schema for representing resources to ease the discovery and scheduling of resources between any calendar client and server. LDAP and vCard mappings of the schema are described in this document. The Object model chosen is the lowest common denominator to adapt for LDAP.

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2. Conventions Used in This Document

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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] (Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels," March 1997.)**.

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3. General Considerations

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

4. Resource Object

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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 the attributes described in **Section 5 (Resource Attributes)**. The cn attribute, described in **Section 5.1 (Common Name)** MUST be present in any resource object. Additional proprietary attributes may be defined as well, but must begin with "X-". Clients encountering attributes they don't know about must ignore them.

Attributes or Properties required to contact the resource are not included in this specification. LDAP attributes defined in **[RFC4519] (Sciberras, A., "Lightweight Directory Access Protocol (LDAP): Schema for User Applications," June 2006.)** and VCARD properties defined in **vCard Format Specification (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)** [I-D.ietf-vcarddav-vcardrev] can be used to include contact information for the resource.

4.1. LDAP Resource ObjectClass Definition

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In LDAP, a resource object SHOULD be defined as an objectclass with attributes as defined in **Section 5 (Resource Attributes)**. This objectClass MUST be an auxiliary class. Its Superior class is the calEntry objectClass as defined in Section 2.4.3.1 of **[RFC2739] (Small, T., Hennessy, D., and F. Dawson, "Calendar Attributes for vCard and LDAP," January 2000.)**.
Definition of the CalendarResource ObjectClass:

```
        ( 1.3.6.1.1.x.1.1
            NAME 'CalendarResource'
            DESC 'Calendar Resource Object Class'
            SUP calEntry
            AUXILIARY
            MUST (cn)
            MAY (kind $ nickname $ description $ ou $ categories $
                 member $ uniquemember $ accessibilityurl $ capacity $
                 owner $ resourcemanager $ timezoneid $
                 multiplebookings $ maxinstances $
                 bookingwindowstart $ bookingwindowend $
                 vcarduid $ related) )
```

5. Resource Attributes

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5.1. Common Name

TOC

Description:

Full name of the resource. This attribute MUST be defined for a resource object.

ValueType:

String value.

Example value:

Room One

5.1.1. LDAP Attribute Definition

TOC

cn attribute as defined in Section 2.3 of **[RFC4519] (Sciberras, A., "Lightweight Directory Access Protocol (LDAP): Schema for User Applications," June 2006.)**. This attribute MUST be present in a CalendarResource object.

5.1.2. VCard Property Definition

TOC

FN property as defined in Section 7.2.1 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

5.2. Kind

TOC

Description:

The kind of object represented.

ValueType:

Some of the possible values are "Location", "Thing", or "Group".
Location is used for any physical location resource such as room, building, etc.
Thing 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.

Example value:

Location

5.2.1. LDAP Attribute Definition

TOC

Definition of the kind LDAP attribute:

```
          ( 1.3.6.1.1.x.0.1
              NAME 'Kind'
              DESC 'Kind of Object'
              EQUALITY caseIgnoreMatch
              SYNTAX 1.3.6.1.4.1.1466.115.121.1.15
              SINGLE-VALUE )
```

5.2.2. VCard Property Definition

TOC

Property KIND that specifies the kind of object represented, as defined in Section 6.1.5 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

5.3. Unique ID

TOC

Description:

A Unique Identifier.

ValueType:

Single string value.

Example value:

room1-id1

5.3.1. LDAP Attribute Definition

TOC

Definition of the vcarduid LDAP attribute:

```
        ( 1.3.6.1.1.x.0.1
            NAME 'VcardUid'
            DESC 'VCard UniqueID'
            EQUALITY caseExactMatch
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.15
            SINGLE-VALUE )
```

5.3.2. VCard Property Definition

TOC

UID property as defined in Section 6.7.7 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

5.4. Nick Name

TOC

Description:

A short or popular name for the resource.

ValueType:

String value.

Example value:

TheOne

5.4.1. LDAP Attribute Definition

TOC

Definition of the nickname LDAP attribute:

```
        ( 1.3.6.1.1.x.0.2
            NAME 'NickName'
            DESC 'Nick Name'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.4.2. VCard Property Definition

TOC

NICKNAME property as defined in Section 7.2.3 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

5.5. Description

TOC

Description:

Description of the resource.

ValueType:

String value.

Example value:

Room 1 in Building X

5.5.1. LDAP Attribute Definition

TOC

description attribute as defined in Section 2.5 of **[RFC4519] (Sciberras, A., "Lightweight Directory Access Protocol (LDAP): Schema for User Applications," June 2006.)**.

5.5.2. VCard Property Definition

TOC

NOTE property as defined in Section 7.7.2 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

5.6. Organizational Unit

TOC

Description:

Organizations the resource belongs to.

ValueType:

String value.

Example value:

EngineeringDepartment

5.6.1. LDAP Attribute Definition

TOC

ou attribute as defined in Section 2.20 of **[RFC4519] (Sciberras, A., "Lightweight Directory Access Protocol (LDAP): Schema for User Applications," June 2006.)**.

5.6.2. VCard Property Definition

TOC

ORG property as defined in Section 7.6.4 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

5.7. Categories

TOC

Description:

Categories the resource falls under or tags for easy discovery of the resource.

ValueType:

String value.

Example value:

Rooms, EngineeringResources

5.7.1. LDAP Attribute Definition

TOC

Definition of the categories LDAP attribute:

```
        ( 1.3.6.1.1.x.0.3
            NAME 'Categories'
            DESC 'Categories'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.7.2. VCard Property Definition

TOC

CATEGORIES property as defined in Section 7.7.1 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

5.8. Group Member

TOC

Description:

List of unique resources in a group of resources object.

ValueType:

URL value.

Example value:

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

5.8.1. LDAP Attribute Definition

TOC

member attribute as defined in Section 2.17 or uniquemember attribute as defined in Section 2.40 of **[RFC4519] (Sciberras, A., "Lightweight Directory Access Protocol (LDAP): Schema for User Applications," June 2006.)**.

5.8.2. VCard Property Definition

TOC

MEMBER property as defined in Section 7.6.5 of
[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.).

5.9. Admittance Info

TOC

Description: Information required to gain access to the resource.

ValueType: Object value.

5.9.1. LDAP ObjectClass Definition

TOC

Definition of the admittanceinfo LDAP objectclass:

```
        ( 1.3.6.1.1.x.1.2
            NAME 'AdmittanceInfo'
            DESC 'Calendar Resource Admittance Info Class'
            SUP CalendarResource
            AUXILIARY
            MAY (admittanceurl $ restricted) )
```

5.9.2. Restricted Access

TOC

Description:

Is access to the resource restricted?

ValueType:

Boolean value.

Example value:

TRUE

5.9.2.1. LDAP Attribute Definition

TOC

Definition of the restricted LDAP attribute:

```
        ( 1.3.6.1.1.x.0.4
            NAME 'Restricted'
            DESC 'Access Restricted'
            EQUALITY booleanMatch
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.7 )
```

5.9.2.2. VCard Property Definition

TOC

Purpose:

To specify if access is restricted or not.

Type value:

A single boolean value.

Cardinality:

(0,1)

ABNF:

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

Example:

RESTRICTEDACCESSS:TRUE

5.9.3. Admittance Info URL

TOC

Description:

URL pointing to complete information for accessing the resource including getting accessibility rights, special entrances, and so on.

ValueType:

URL value.

Example value:

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

5.9.3.1. LDAP Attribute Definition

TOC

Definition of the admittanceurl LDAP attribute:

```
        ( 1.3.6.1.1.x.0.5
            NAME 'AdmittanceURL'
            DESC 'Cal Resource Admittance Info URL'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.9.3.2. VCard Property Definition

TOC

Purpose:

To specify URL pointing to Admission Information.

Type value:

URI.

Cardinality:

(0,n)

ABNF:

```
ADMISSIONINFO-param = "VALUE=uri" / any-param
ADMISSIONINFO-value = uri
```

Example:

```
ADMISSIONINFO:http://www.example.com/room1_admittance.html
```

5.10. Accessibility

TOC

Description:

Special resource accessibility info for the physically disabled.

ValueType:

URL value.

Example value:

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

5.10.1. LDAP Attribute Definition

TOC

Definition of the accessibilityurl LDAP attribute:

```
        ( 1.3.6.1.1.x.0.6
            NAME 'accessibilityURL'
            DESC 'Cal Resource accessibility Info URL'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.10.2. VCard Property Definition

TOC

Purpose:

To specify URL pointing to Disabled Access Information.

Type value:

URI.

Cardinality:

(0,n)

ABNF:

```
ACCESSIBILITYINFO-param = "VALUE=uri" / any-param
ACCESSIBILITYINFO-value = uri
```

Example:

```
ACCESSIBILITYINFO:http://www.example.com/room1_specialaccess.ht
ml
```

5.11. Capacity

TOC

Description:

Capacity of the resource.

ValueType:

Integer.

Example value:

10

5.11.1. LDAP Attribute Definition

TOC

Definition of the capacity LDAP attribute:

```
        ( 1.3.6.1.1.x.0.7
            NAME 'Capacity'
            DESC 'Cal Resource Capacity'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.27 )
```

5.11.2. VCard Property Definition

TOC

Purpose:

To specify Capacity Information.

Type value:

integer.

Cardinality:

(0,n)

ABNF:

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

Example: CAPACITY:10

5.12. Inventory Info

TOC

Description:

Information on resources available as part of this resource.

ValueType:

Object value.

5.12.1. LDAP ObjectClass Definition

TOC

Definition of the inventoryinfo LDAP attribute:

```
        ( 1.3.6.1.1.x.1.3
            NAME 'InventoryInfo'
            DESC 'Calendar Resource Inventory Info Class'
            SUP CalendarResource
            AUXILIARY
            MAY (inventorylist $ inventoryurl) )
```

5.12.2. Inventory List

TOC

Description:

List of resources available as part of this resource.

ValueType:

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

Example value:

Printer, Projector

5.12.2.1. LDAP Attribute Definition

TOC

Definition of the inventorylist LDAP attribute:

```
        ( 1.3.6.1.1.x.0.8
            NAME 'InventoryList'
            DESC 'Inventory List'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.12.2.2. VCard Property Definition

TOC

Purpose:

List the resources available as part of this resource.

Type value:

One or more text values separated by a COMMA character (ASCII decimal 44).

Cardinality:

(0,n)

ABNF:

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

Example: INVENTORYLIST:projector, phone

5.12.3. Inventory URL

TOC

Description:

A URL pointing to other resource URLs part of this resource.

ValueType:

URL value.

Example value:

http://www.example.com/room1_inventory.html

5.12.3.1. LDAP Attribute Definition

TOC

Definition of the inventoryurl LDAP attribute:

```
        ( 1.3.6.1.1.x.0.9
            NAME 'InventoryURL'
            DESC 'Cal Resource Inventory Info URL'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.12.3.2. VCard Property Definition

TOC

Purpose:

To specify URL pointing to Inventory Information.

Type value:

URI.

Cardinality:

(0,n)

ABNF:

```
INVENTORYURL-param = "VALUE=uri" / any-param
INVENTORYURL-value = uri

Example:
INVENTORYURL:http://www.example.com/room1_inventory.html
```

5.13. Owner Info

TOC

Description:

Complete information on the owners of the resource. An owner is anyone who has complete authority over the resource, from naming to overall availability.

ValueType:

URL value.

Example value:

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

5.13.1. LDAP Attribute Definition

TOC

owner attribute as defined in Section 2.21 of **[RFC4519] (Sciberras, A., "Lightweight Directory Access Protocol (LDAP): Schema for User Applications," June 2006.)**.

5.13.2. VCard Property Definition

TOC

Purpose:

To specify URL pointing to Resource Owner Information.

Type value:

URI.

Cardinality:

(0,n)

ABNF:

```
RESOURCEOWNERINFO-param = "VALUE=uri" / any-param
RESOURCEOWNERINFO-value = uri
```

Example:

```
RESOURCEOWNERINFO:http://www.example.com/room1_owner.vcf
```

5.14. Resource Manager Info

TOC

Description:

Information on the managers of the resource. A manager is someone responsible for the day-to-day up keep of the resource.

ValueType:

URL value.

Example value:

http://www.example.com/room1_managerinfo.html

5.14.1. LDAP Attribute Definition

TOC

Definition of the resourcemanager LDAP attribute:

```
        ( 1.3.6.1.1.x.0.10
            NAME 'ResourceManager'
            DESC 'Cal Resource Manager Info'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.12 )
```

5.14.2. VCard Property Definition

TOC

Purpose:

To specify URL pointing to Resource Manager Information.

Type value:

URI.

Cardinality:

(0,n)

ABNF:

```
RESOURCEMANAGERINFO-param = "VALUE=uri" / any-param
RESOURCEMANAGERINFO-value = uri
```

Example:

```
RESOURCEMANAGERINFO:http://www.example.com/room1_manager.vc
f
```

5.15. Calendar URL

TOC

Description:

URL to access calendar data of the resource.

ValueType:

URL value.

Example value:

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

5.15.1. LDAP Attribute Definition

TOC

Calendar access attribute calCAPURI as defined in Section 2.4.4.3 and calOtherCAPURIs as defined in Section 2.4.4.7 of **[RFC2739] (Small, T., Hennessy, D., and F. Dawson, "Calendar Attributes for vCard and LDAP," January 2000.)** respectively.

5.15.2. VCard Property Definition

TOC

Calendar access property CAPURI as defined in Section 2.3.3 of **[RFC2739] (Small, T., Hennessy, D., and F. Dawson, "Calendar Attributes for vCard and LDAP," January 2000.)**.

5.16. FreeBusy URL

TOC

Description:

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

ValueType:

URL value.

Example value:

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

5.16.1. LDAP Attribute Definition

TOC

Calendar access attribute calFBURL as defined in Section 2.4.4.2 and calOtherFBURLs as defined in Section 2.4.4.6 of **[RFC2739] (Small, T., Hennessy, D., and F. Dawson, "Calendar Attributes for vCard and LDAP," January 2000.)** respectively.

5.16.2. VCard Property Definition

TOC

FBURL attribute as defined in Section 2.3.1 of **[RFC2739] (Small, T., Hennessy, D., and F. Dawson, "Calendar Attributes for vCard and LDAP," January 2000.)** and further explained in Section 7.9.1 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

5.17. Scheduling Address

TOC

Description:

Address used for scheduling the resource by a Calendaring and Scheduling service.

ValueType:

String value.

Example value:

mailto:room1@example.com

5.17.1. LDAP Attribute Definition

TOC

Scheduling Address attribute calCalAdrURI as defined in Section 2.4.4.4 and calOtherCalAdrURIs as defined in Section 2.4.4.8 of **[RFC2739] (Small, T., Hennessy, D., and F. Dawson, "Calendar Attributes for vCard and LDAP," January 2000.)** respectively. 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 mail attribute value of the resource should be used for scheduling, in the absence of this attribute.

5.17.2. VCard Property Definition

TOC

Scheduling Address property CALADRURI as defined in Section 2.3.2 **[RFC2739] (Small, T., Hennessy, D., and F. Dawson, "Calendar Attributes for vCard and LDAP," January 2000.)** and further explained in Section 7.9.2 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**. 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 attribute.

5.18. Time Zone

TOC

Description:

TimeZone Identifier for the timezone the resource is in.

ValueType:

String value.

Example value:

America/New_York

5.18.1. LDAP Attribute Definition

TOC

Definition of the timezoneid LDAP attribute:

```
        ( 1.3.6.1.1.x.0.11
            NAME 'TimeZoneID'
            DESC 'Cal Time Zone ID'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.18.2. VCard Property Definition

TOC

TimeZone property TZ as defined in Section 7.5.1 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

5.19. Multiple Bookings

TOC

Description:

Number of simultaneous bookings allowed.

ValueType:

Integer value.
Value of 0 indicates no limits.

Example value:

1

5.19.1. LDAP Attribute Definition

TOC

Definition of the multiplebookings LDAP attribute:

```
        ( 1.3.6.1.1.x.0.12
            NAME 'Multiplebookings'
            DESC 'Cal Num Bookings Allowed'
            EQUALITY integerMatch
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.27 )
```

5.19.2. VCard Property Definition

TOC

Purpose:

To specify number of simultaneous bookings allowed.

Type value:

integer.

Cardinality:

(0,1)

ABNF:

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

Example:

```
MULTIBOOK:10
```

5.20. Maximum Instances

TOC

Description:

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

ValueType:

Integer value.
Value of 0 indicates no limits.

Example value:

60

5.20.1. LDAP Attribute Definition

TOC

Definition of the maxinstances LDAP attribute:

```
        ( 1.3.6.1.1.x.0.13
            NAME 'MaxInstances'
            DESC 'Cal Maximum Instances allowed'
            EQUALITY integerMatch
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.27 )
```

5.20.2. VCard Property Definition

TOC

Purpose:

To specify maximum number of instances of an event, the resource can be scheduled for from NOW.

Type value:

integer.

Cardinality:

(0,1)

ABNF:

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

Example:

```
MAXINSTANCES:10
```

5.21. BookingWindow Start

TOC

Description:

Defines how much time in advance the resource can be booked. That is, what is the earliest opportunity for booking a resource for a given date and time.
The value is added to the current time to determine the start of the booking window. The resource may be booked only for any time after the start of the booking window. If this property is absent the resource may be booked at any time before the booking window end.

ValueType: Duration value. The format is based on the **[ISO.8601.2004] (International Organization for Standardization, "Data elements and interchange formats -- Information interchange -- Representation of dates and times," 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).

Example value:

P3M

5.21.1. LDAP Attribute Definition

TOC

Definition of the bookingwindowstart LDAP attribute:

```
        ( 1.3.6.1.1.x.0.14
            NAME 'BookingWindowStart'
            DESC 'Cal Booking Window Start'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.21.2. VCard Property Definition

TOC

Purpose:

To specify how much time in advance the resource can be booked.

Type value:

duration. The format is based on the **[ISO.8601.2004] (International Organization for Standardization, "Data elements and interchange formats -- Information interchange -- Representation of dates and times," 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).

Cardinality:

(0,1)

ABNF:

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

Example:

```
BOOKINGSTART:P3M
```

5.22. BookingWindow End

TOC

Description:

Defines how much time in advance the resource booking is closed. That is, what is the latest opportunity for booking a resource for a given date or time.
BookingWindow Start and End together provide the window of time a resource can be booked relative to the current time.

ValueType: Duration value. The format is based on the **[ISO.8601.2004] (International Organization for Standardization, "Data elements and interchange formats -- Information interchange -- Representation of dates and times," 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).

Example value:

P5D

5.22.1. LDAP Attribute Definition

TOC

Definition of the bookingwindowend LDAP attribute:

```
        ( 1.3.6.1.1.x.0.15
            NAME 'BookingWindowEnd'
            DESC 'Cal Booking Window End'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.22.2. VCard Property Definition

TOC

Purpose:

To specify how much time in advance the resource booking is closed.

Type value:

duration. The format is based on the **[ISO.8601.2004] (International Organization for Standardization, "Data elements and interchange formats -- Information interchange -- Representation of dates and times," 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).

Cardinality:

(0,1)

ABNF:

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

Example:

```
BOOKINGEND:P5D
```

5.23. Scheduling Approval Info

TOC

Description:

Information regarding approval of a scheduling request to the resource.

ValueType:

Object value.

5.23.1. LDAP ObjectClass Definition

TOC

Definition of the schedapprovalinfo LDAP objectclass:

```
        ( 1.3.6.1.1.x.1.4
            NAME 'SchedApprovalInfo'
            DESC 'Calendar Sched Approval Class'
            SUP CalendarResource
            AUXILIARY
            MAY (autoschedule $ approvalinfourl $ schedadmin) )
```

5.23.2. Auto schedule

TOC

Description:

No approval required. Automatically scheduled.

ValueType:

Boolean value.

Example value:

TRUE

5.23.2.1. LDAP Attribute Definition

TOC

Definition of the autoschedule LDAP attribute:

```
        ( 1.3.6.1.1.x.0.16
            NAME 'Autoschedule'
            DESC 'Cal Scheduling no approval required'
            EQUALITY booleanMatch
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.7 )
```

5.23.2.2. VCard Property Definition

TOC

Purpose:

To specify if invitations should be automatically scheduled.

Type value:

Boolean.

Cardinality:

(0,1)

ABNF:

```
AUTOSCHEDULE-param = "VALUE=boolean" / any-param
AUTOSCHEDULE-value = "TRUE" / "FALSE"
```

Example:

```
AUTOSCHEDULE:TRUE
```

5.23.3. Approval Info URL

TOC

Description:

URL pointing to complete information on scheduling request approval process for the resource.

ValueType:

URL value.

Example value:

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

5.23.3.1. LDAP Attribute Definition

TOC

Definition of the approvalinfourl LDAP attribute:

```
        ( 1.3.6.1.1.x.0.17
            NAME 'ApprovalInfoURL'
            DESC 'Cal Sched Approval Info'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.23.3.2. VCard Property Definition

TOC

Purpose:

To specify URL pointing to Scheduling Approval Information.

Type value:

URI.

Cardinality:

(0,n)

ABNF:

```
APPROVALINFO-param = "VALUE=uri" / any-param
APPROVALINFO-value = uri
```

Example:

```
APPROVALINFO:http://www.example.com/room1_approval.html
```

5.23.4. Scheduling Admin Contact

TOC

Description:

Contact information for the scheduling approvers, if approval required.

ValueType:

URL value.

Example value:

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

5.23.4.1. LDAP Attribute Definition

TOC

Definition of the schedadmin LDAP attribute:

```
        ( 1.3.6.1.1.x.0.18
            NAME 'SchedAdmin'
            DESC 'Cal Sched Admin Info'
            EQUALITY caseIgnoreIA5Match
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.12 )
```

5.23.4.2. VCard Property Definition

TOC

Purpose:

To specify URL pointing to Scheduling Manager Information.

Type value:

URI.

Cardinality:

(0,n)

ABNF:

```
SCHEDADMININFO-param = "VALUE=uri" / any-param
SCHEDADMININFO-value = uri
```

Example:

```
SCHEDADMININFO:http://www.example.com/SchedAdmin1.vcf
```

5.24. Cost

TOC

Description:

Scheduling costs for this resource.

ValueType:

Object value.

5.24.1. LDAP ObjectClass Definition

TOC

Definition of the cost LDAP objectclass:

```
        ( 1.3.6.1.1.x.1.5
            NAME 'CalendarResourceCost'
            DESC 'Calendar Resource Cost Object Class'
            SUP CalendarResource
            AUXILIARY
            MAY (nocost $ costurl)
```

5.24.2. Nocost

TOC

Description:

No cost for using the resource. Can be used for a resource scheduling query.

ValueType:

Boolean value.

Example value:

TRUE

5.24.2.1. LDAP Attribute Definition

TOC

Definition of the nocost LDAP attribute:

```
        ( 1.3.6.1.1.x.0.19
            NAME 'Nocost'
            DESC 'Free or Priced resource'
            EQUALITY booleanMatch
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.7 )
```

5.24.2.2. VCard Property Definition

TOC

Purpose:

To specify if resource usage is free.

Type value:

A single boolean value.

Cardinality:

(0,1)

ABNF:

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

Example:

NOCOST:TRUE

5.24.3. Cost URL

TOC

Description:

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

ValueType:

URL value.

Example value:

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

5.24.3.1. LDAP Attribute Definition

TOC

Definition of the costurl LDAP attribute:

```
          ( 1.3.6.1.1.x.0.20
              NAME 'CostURL'
              DESC 'Cal Resource Cost Info'
              EQUALITY caseIgnoreIA5Match
              SYNTAX 1.3.6.1.4.1.1466.115.121.1.26 )
```

5.24.3.2. VCard Property Definition

TOC

Purpose:

To specify URL pointing Resource Scheduling Cost Information.

Type value:

URI.

Cardinality:

(0,n)

ABNF:

```
COSTINFO-param = "VALUE=uri" / any-param
COSTINFO-value = uri
```

Example:

```
COSTINFO:http://www.example.com/cost.html
```

5.25. Related

TOC

Description:

Specify a relationship with another resource.

ValueType:

URL value.

Example value:

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

5.25.1. LDAP Attribute Definition

TOC

Definition of the related LDAP attribute:

```
        ( 1.3.6.1.1.x.0.21
            NAME 'Related'
            DESC 'Related URL'
      EQUALITY uniqueMemberMatch
            SYNTAX 1.3.6.1.4.1.1466.115.121.1.34 )
```

5.25.2. VCard Property Definition

TOC

The property RELATED as defined in Section 6.6.6 of **[I-D.ietf-vcarddav-vcardrev] (Perreault, S. and P. Resnick, "vCard Format Specification," August 2010.)**.

---

6. Examples

TOC

6.1. LDAP Examples

TOC

6.1.1. Location Resource

TOC

```
dn: cn=Room One,ou=Engineering,dc=example,dc=com
objectclass: top
objectclass: calendarresource
objectclass: admittanceinfo
objectclass: inventoryinfo
objectclass: schedapprovalinfo
objectclass: calendarresourcecost
kind: location
vcarduid: room1-id
cn: Room One
ou: Engineering
nickname: The One
description: Room 1 in Engineering Building X
categories: rooms
categories: engineering_resources
restricted: TRUE
admittanceurl: http://www.example.com/room1_admittance.html
accessibilityurl: http://www.example.com/room1_specialaccess.html
capacity: 100
inventorylist:phone, projector
inventoryurl: http://www.example.com/room1_inventory.html
owner: cn=RoomOwner,ou=Engineering,dc=example,dc=com
resourcemanager: cn=RoomOwner,ou=Engineering,dc=example,dc=com
calcapuri: http://www.example.com/calendar/home/Room1/calendar/
calfburl: http://www.example.com/freebusy/home/Room1/
calcaladruri: mailto:room1@example.com
timezoneid: America/Los_Angeles
multiplebookings: 1
maxinstances: 10
bookingwindowstart:P3M
bookingwindowend: P3D
autoschedule: FALSE
approvalinfourl: http://www.example.com/room1_approval.html
schedadmin: cn=RoomOwner,ou=Engineering,dc=example,dc=com
nocost: FALSE
costurl: http://www.example.com/cost.html
```

6.1.2. Role Resources Group

TOC

```
dn: cn=Drivers X,ou=Transportation,dc=example,dc=com
objectclass: top
objectclass: groupOfuniqueNames
objectclass: calendarresource
objectclass: schedapprovalinfo
objectclass: calendarresourcecost
kind: group
vcarduid: driversX-id
cn: Driver One
ou: Transportation
nickname: The X
description: Drivers in the Transportation department driver pool X
categories: drivers
uniquemember: cn=Driver1,ou=Transportation,dc=example,dc=com
uniquemember: cn=Driver2,ou=Transportation,dc=example,dc=com
uniquemember: cn=Driver3,ou=Transportation,dc=example,dc=com
owner: cn=Transportation_Manager,ou=Transportation,dc=example,dc=com
calfburl: http://www.example.com/freebusy/home/DriversX/
calcaladruri: mailto:driversX@example.com
timezoneid: America/Los_Angeles
multiplebookings: 3
maxinstances: 10
bookingwindowstart:P3M
bookingwindowend: P3D
autoschedule: FALSE
approvalinfourl: http://www.example.com/driversX_approval.html
schedadmin: cn=TransportationManager,ou=Transportation,dc=example,dc=com
nocost: FALSE
costurl: http://www.example.com/driversXcost.html
```

6.2. VCard Examples

TOC

6.2.1. Location Resource

TOC

```
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
CATEGORIES: 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
RESOURCEOWNERINFO: http://www.example.com/ResOwner1.vcf
RESOURCEMANAGERINFO: 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
BOOKINGSTART:P3M
BOOKINGEND: P3D
AUTOSCHEDULE: FALSE
APPROVALINFO: http://www.example.com/room1_approval.html
SCHEDADMININFO: http://www.example.com/SchedAdmin1.vcf
NOCOST: FALSE
COSTINFO: http://www.example.com/cost.html
END:VCARD
```

6.2.2. Role Resources Group

TOC

```
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
RESOURCEOWNERINFO: 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
BOOKINGSTART:P3M
BOOKINGEND: P3D
AUTOSCHEDULE: FALSE
APPROVALINFO: http://www.example.com/driversX_approval.html
SCHEDADMININFO: http://www.example.com/DriversX_SchedAdmin.vcf
NOCOST: FALSE
COSTINFO: http://www.example.com/driversXcost.html
END:VCARD
```

---

7. Security Considerations

TOC

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.

8. IANA Considerations

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A new IANA token 'resource', that can be used as a value representing a Resource in a VCard, as defined in **Section 5.2.2 (VCard Property Definition)** needs to be registered. In addition, the following new VCard Properties need to be registered by IANA.

New VCard Properties Table:

VCard Property Name	VCard Property Definition
RESTRICTEDACCESS	**Section 5.9.2.2 (VCard Property Definition)**
ADMISSIONINFO	**Section 5.9.3.2 (VCard Property Definition)**
ACCESSIBILITYINFO	**Section 5.10.2 (VCard Property Definition)**
CAPACITY	**Section 5.11.2 (VCard Property Definition)**
INVENTORYLIST	**Section 5.12.2.2 (VCard Property Definition)**
INVENTORYURL	**Section 5.12.3.2 (VCard Property Definition)**
RESOURCEOWNER	**Section 5.13.2 (VCard Property Definition)**
RESOURCEMANAGER	**Section 5.14.2 (VCard Property Definition)**
MAXINSTANCE	**Section 5.20.2 (VCard Property Definition)**
BOOKINGSTART	**Section 5.21.2 (VCard Property Definition)**
BOOKINGEND	**Section 5.22.2 (VCard Property Definition)**
AUTOSCHEDULE	**Section 5.23.2.2 (VCard Property Definition)**
APPROVALINFO	**Section 5.23.3.2 (VCard Property Definition)**
APPROVERINFO	**Section 5.23.4.2 (VCard Property Definition)**
NOCOST	**Section 5.24.2.2 (VCard Property Definition)**
COSTINFO	**Section 5.24.3.2 (VCard Property Definition)**

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10. Normative References

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