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## Calendar Attributes for vCard and LDAP

### Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

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### Abstract

When scheduling a calendar entity, such as an event, it is a prerequisite that an organizer has the calendar address of each attendee that will be invited to the event. Additionally, access to an attendee's current "busy time" provides an a priori indication of whether the attendee will be free to participate in the event.

In order to meet these challenges, a calendar user agent (CUA) needs a mechanism to locate (URI) individual user's calendar and free/busy time.

This memo defines three mechanisms for obtaining a URI to a user's calendar and free/busy time. These include:

- Manual transfer of the information;
- Personal data exchange using the vCard format; and
- Directory lookup using the LDAP protocol.

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## 1 Calendaring and Scheduling URIs

This memo defines four classes of URIs. URIs are more useful if it is understood what the URIs point to. Here is a brief description:

### 1.1 Free/Busy URI (FBURL)

The free/busy URI is defined to be a transport independent location where a client can obtain information about when a user is busy. At the present time, this URI only points to busy time data. Future revisions of this specification may provide for the extended capability of publishing free time data.

If a calendaring and scheduling client (i.e., CUA) were to retrieve data from this location using FTP or HTTP, it would get back an iCalendar object [4] containing one or more "VFREEBUSY" calendar components. If a MIME transport is being used, the response will be contained within a "text/calendar" MIME body part as specified in the iCalendar specification [4]. For example:

```
BEGIN:VCALENDAR
VERSION:2.0
PRODID:-//hacksw/handcal//NONSGML v1.0//EN
METHOD:PUBLISH
BEGIN:VFREEBUSY
ATTENDEE:MAILTO:jane_doe@host1.com
DTSTART:19971013T050000Z
DTEND:19971124T050000Z
DTSTAMP:19970901T083000Z
FREEBUSY:19971015T133000Z/19971015T180000Z
FREEBUSY:19971015T190000Z/19971015T220000Z
FBURL:http://www.host.com/calendar/busy/jdoe.ifb
END:VFREEBUSY
END:VCALENDAR
```

The amount of busy time data pointed to by the FBURL will generally be pre-determined; for example one month of busy time data. As a guideline, it is recommended that the previous six weeks of busy time data be published at the location associated with the FBURL. If this URI points to a file resource, it is recommended that the file extension be "ifb" to distinguish it from an arbitrary iCalendar object (e.g., with the "ics" file extension).

## 1.2 Calendar Access URI (CAPURI)

The Calendar Access URI is defined to be a protocol independent location from which a calendaring and scheduling client (i.e., CUA) can communicate with a user's entire calendar.

The semantics for using this URI as an access protocol locator are yet to be defined by the IETF CALSCH Working Group. This will be addressed in the "Calendar Access Protocol" specification.

## 1.3 Calendar URI (CALURI)

The Calendar URI is defined to be a protocol independent location from which a calendaring and scheduling client (i.e. CUA) can retrieve an entire copy of a user's calendar. Retrieving data from this URI obtains a published "snapshot" of the user's calendar.

HTTP URI -- If the URI is an HTTP URI, then the content returned with a GET should be a "text/calendar" MIME body part containing one or more iCalendar object.

FTP URI -- If the URI is an FTP URI, then the resource pointed to should be a file with an "ics" file extension containing one or more iCalendar objects.

## 1.4 Default URIs

There are many cases where a user may have more than one calendar. In these cases, a user may have multiple URIs, each URI pointing to a calendar or free/busy data.

To make the case of multiple calendars simpler for clients, the concept of the "default" calendar is introduced. A "default" calendar is one that the user has designated as the calendar that other users should look at when accessing the user's calendar, or retrieving the user's free/busy time.

The default calendar may, in fact, include rolled-up information from all the user's other calendars. The other calendars may only exist for organizational purposes.

## 2 Distribution

These four URIs provide valuable pointers to calendaring and scheduling data that other users need in order to know when to schedule meetings, etc. There are several possibilities on how users can communicate these URIs to other users. The following section outlines how these URIs can be distributed to other users.

## 2.1 Manual Transfer

The simplest way to obtain these URIs is for a user to communicate the URIs using some out-of-band mechanism such as verbally, or in an e-mail message, or by printing these URIs on a paper business card.

When using this mechanism, the user obtains these URIs using an out-of-band mechanism and then enters these URIs into their calendaring software manually.

## 2.2 Personal Data Exchange Using A vCard

A more sophisticated way to obtain these URIs is for users to publish vCards containing these URIs. The vCard object can be transferred between one another. Since many e-mail clients allow a user to automatically include a vCard with every message that the user sends, this provides a simple, transparent way for a user to distribute their calendaring and scheduling URIs.

On the receiving end, an e-mail client that provides an integrated vCard database can provide a way to lookup calendaring URIs for users whose vCards are stored locally.

## 2.3 vCard Schema Extensions

Since the vCard [3] specification doesn't specify how to encode calendaring URIs in a vCard, this section is provided as an extension to vCard which specifies how to encode calendaring URIs within a vCard.

Inside a vCard object, four new properties are defined: "CALURI", "CAPURI", "CALADRURI", and "FBURL", as defined above.

Any vCard can have one or more of these properties, each representing a calendar or free/busy time that is associated with the user.

One of these properties can be designated as the "default" by adding the "PREF" parameter.

Here is a simple example of a vCard containing a "FBURL" and a "CALURI".

```
BEGIN:VCARD
VERSION:3.0
N:Dun;Alec
FN:Alec Dun
ORG:Microsoft Corporation
ADR;WORK;POSTAL;PARCEL;;;One Microsoft Way;
  Redmond;WA;98052-6399;USA
TEL;WORK;MSG:+1-206-936-4544
TEL;WORK;FAX:+1-206-936-7329
EMAIL;INTERNET:user@host1.com
CALADRURI;PREF:mailto:user@host1.com
CALURI;PREF:http://cal.host1.com/user/cal.ics
FBURL;PREF:http://cal.host1.com/user/fb.ifb
CALURI:http://cal.company.com/projectA/pjtA.ics
FBURL:http://cal.company.com/projectA/pjtAfb.ifb
END:VCARD
```

### 2.3.1 FBURL Property IANA Registration

To: ietf-mime-directory@imc.org

Subject: Registration of FBURL type for text/directory MIME type vCard profile.

Type name: FBURL

Type purpose: To specify the URI for a user's busy time in a vCard object.

Type encoding: 8bit

Type value: A single URI value.

Type special notes: Where multiple FBURL properties are specified, the default FBURL property is indicated with the PREF parameter. The FTP or HTTP type of URI points to an iCalendar object associated with a snapshot of the last six weeks of the user's busy time data. If the iCalendar object is represented as a file or document, it's file type should be "ifb".

Intended usage: Refer to section 1.1.

Type examples:

FBURL;PREF:http://www.host1.com/busy/janedoe  
FBURL:FTP://ftp.host.com/busy/project-a.ifb

### 2.3.2 CALADRURI Property IANA Registration

To: ietf-mime-directory@imc.org

Subject: Registration of CALADRURI type for application/directory  
MIME type vCard profile.

Type name: CALADRURI

Type purpose: To specify the location to which an event request  
should be sent for the user.

Type encoding: 8bit

Type value: A single URI value.

Type special notes: Where multiple CALADRURI properties are  
specified, the default CALADRURI property is indicated with the PREF  
parameter.

Intended usage: Refer to section 1.2.

Type examples:

CALADRURI;PREF:mailto:janedoe@host.com

### 2.3.3 CAPURI Property IANA Registration

To: ietf-mime-directory@imc.org

Subject: Registration of CAPURI type for application/directory MIME type vCard profile.

Type name: CAPURI

Type purpose: To specify a protocol independent location from which a calendaring and scheduling client (i.e., CUA) can communicate with a user's entire calendar.

Type encoding: 8bit

Type value: A single URI value.

Type special notes: Where multiple CAPURI properties are specified, the default CAPURI property is indicated with the PREF parameter.

Intended usage: Refer to section 1.3.

### 2.3.4 CALURI Property IANA Registration

To: ietf-mime-directory@imc.org

Subject: Registration of CALURI type for text/directory MIME type vCard profile.

Type name: CALURI

Type purpose: To specify the URI for a user's calendar in a vCard object.

Type encoding: 8bit

Type value type: A single URI value.

Type special notes: Where multiple CALURI properties are specified, the default CALURI property is indicated with the PREF parameter. The property should contain a URI pointing to an iCalendar object associated with a snapshot of the user's calendar store. If the iCalendar object is represented as a file or document, it's file type should be "ics".

Intended usage: Refer to section 1.4.

Type examples:

```
CALURI;PREF:http://cal.host1.com/calA
CALURI:ftp://ftp.host1.com/calA.ics
```

## 2.4 Directory Lookup Using The LDAP v3 Protocol

Another way to obtain these URIs is to look them up in a directory using the LDAP protocol [1].

If a user's URIs can be found using directory lookup (i.e., searching for one of the LDAP schema extensions defined below), they should, in general, be considered "more up-to-date" than URIs in any vCards that are stored locally.

### 2.4.1 LDAP Schema Extensions

In order to encode the calendaring URIs in the directory, the following are defined:

- One object class:
  - calEntry
- Eight attributes:
  - calCalURI
  - calFBURL
  - calCAPURI
  - calCalAdrURI
  - calOtherCalURIs
  - calOtherFBURLs
  - calOtherCAPURIs
  - calOtherCalAdrURIs

The calCalURI contains the URI to a snapshot of the user's entire default calendar. The calFBURL contains the URI to the user's default busy time data. The calCAPURI represents contains a URI that can be used to communicate with the user's calendar. The calCalAdrURI contains a URI that points to the location to which event requests should be sent for that user.

The `calOtherCalURIs` is a multi-valued property containing URIs to snapshots of other calendars that the user may have. The `calOtherFBURLs` is a multi-valued property containing URIs to other free/busy data that the user may have. The `calOtherCAPURIs` attribute is a multi-valued property containing URIs to other calendars that the user may have. The `calOtherCalAdrURIs` attribute is a multi-valued property containing URIs to other locations that a user may want event requests sent to.

There is no predetermined order to the values in either multi-valued property.

#### 2.4.2 Notation

The notation used in this memo is the same as that used in [2].

#### 2.4.3 Object Definitions

##### 2.4.3.1 `calEntry`

The Calendar Entry is a class derived from "TOP" [2], which contains the four calendaring attributes.

```
(1.2.840.113556.1.5.87
  NAME 'calEntry'
  TOP
  AUXILIARY
  MAY (calCalURI calFBURL calOtherCalURIs calOtherFBURLs calCAPURI
    calOtherCAPURLs)
)
```

#### 2.4.4 Attribute Definitions

##### 2.4.4.1 `calCalURI`

```
(1.2.840.113556.1.4.478
  NAME 'calCalURI'
  EQUALITY caseIgnoreMatch
  SUBSTRING caseIgnoreMatch
  SYNTAX 'IA5String'
  USAGE userApplications
)
```

##### 2.4.4.2 `calFBURL`

```
(1.2.840.113556.1.4.479
  NAME 'calFBURL'
  EQUALITY caseIgnoreMatch
```

```
    SUBSTRING caseIgnoreMatch
    SYNTAX 'IA5String'
    USAGE userApplications
)
```

#### 2.4.4.3 calCAPURI

```
(1.2.840.113556.1.4.480
  NAME 'calCAPURI'
  EQUALITY caseIgnoreMatch
  SUBSTRING caseIgnoreMatch
  SYNTAX 'IA5String'
  USAGE userApplications
)
```

#### 2.4.4.4 calCalAdrURI

```
(1.2.840.113556.1.4.481
  NAME 'calCalAdrURI'
  EQUALITY caseIgnoreMatch
  SUBSTRING caseIgnoreMatch
  SYNTAX 'IA5String'
  USAGE userApplications
)
```

#### 2.4.4.5 calOtherCalURIs

```
(1.2.840.113556.1.4.482
  NAME 'calOtherCalURIs'
  EQUALITY caseIgnoreMatch
  SUBSTRING caseIgnoreMatch
  SYNTAX 'IA5String'
  MULTI-VALUE
  USAGE userApplications
)
```

#### 2.4.4.6 calOtherFBURLs

```
(1.2.840.113556.1.4.483
  NAME 'calOtherFBURLs'
  EQUALITY caseIgnoreMatch
  SUBSTRING caseIgnoreMatch
  SYNTAX 'IA5String'
  MULTI-VALUE
  USAGE userApplications
)
```

#### 2.4.4.7 calOtherCAPURIs

```
(1.2.840.113556.1.4.484
  NAME 'calOtherCAPURIs'
  EQUALITY caseIgnoreMatch
  SUBSTRING caseIgnoreMatch
  SYNTAX 'IA5String'
  MULTI-VALUE
  USAGE userApplications
)
```

#### 2.4.4.8 calOtherCalAdrURIs

```
(1.2.840.113556.1.4.485
  NAME 'calOtherCalAdrURIs'
  EQUALITY caseIgnoreMatch
  SUBSTRING caseIgnoreMatch
  SYNTAX 'IA5String'
  MULTI-VALUE
  USAGE userApplications
)
```

### 3 IANA Considerations

This memo defines IANA registered extensions to the attributes defined by LDAP [1] and vCard [3].

IANA registration proposals for vCard are to be emailed to the registration agent for the "text/directory" MIME content-type, <MAILTO: ietf-mime-directory@imc.org> using the format defined in [3].

### 4 Security Considerations

Standard vCard and LDAP security rules and support apply for the extensions described in this document, and there are no special security issues for these extensions.

Please note, though, that LDAP servers may permit anonymous clients to refresh entries which they did not create. Servers are also permitted to control a refresh access to an entry by requiring clients to bind before issuing a RefreshRequest. This will have implications on the server performance and scalability.

Please also note, though, that vCard objects may have been created by an entity other than that represented by the vCard. Recipients should be certain of the source that generated the vCard.

Also, care should be taken in making use of information obtained from directory servers that has been supplied by client, as it may now be out of date. In many networks, for example, IP addresses are automatically assigned when a host connects to the network, and may be reassigned if that host later disconnects. An IP address obtained from the directory may no longer be assigned to the host that placed the address in the directory. This issue is not specific to LDAP or dynamic directories.

## 5 Acknowledgments

The authors wish to acknowledge the work of Alec Dun, who acted as an author for the early drafts of this memo. In addition, this document received input from the various participants in the IETF CALSCH Working Group discussions.

## 6 Authors' Addresses

The following address information is provided in a vCard v3.0 [3], Electronic Business Card, format.

```
BEGIN:VCARD
VERSION:3.0
N:Small;Tony
FN:Tony Small
ORG:XpertSite.Com
ADR;TYPE=WORK,POSTAL,PARCEL;;;4700 42nd Ave. SW, Suite 440;
  Seattle;WA;98116;USA
TEL;TYPE=WORK,MSG:+1-206-937-9972
TEL;TYPE=WORK,FAX:+1-206-936-7329
EMAIL;TYPE=INTERNET:tony@xpertsite.com
CALADRURI:MAILTO:tony@xpertsite.com
END:VCARD
```

```
BEGIN:VCARD
VERSION:3.0
N:Hennessy;Denis
FN:Denis Hennessy
ORG:ISOCOR
ADR;TYPE=WORK,POSTAL,PARCEL;;;42-47 Lower Mount St;
  Dublin 2;Ireland
TEL;TYPE=WORK,MSG:+353-1-676-0366
TEL;TYPE=WORK,FAX:+353-1-676-0856
EMAIL;TYPE=INTERNET:denis.hennessy@isocor.com
CALADRURI:MAILTO:denis.hennessy@isocor.com
END:VCARD
```

```
BEGIN:VCARD
VERSION:3.0
N:Dawson;Frank
FN:Frank Dawson
ORG:Lotus Development Corporation
ADR;TYPE=WORK,POSTAL,PARCEL;;;6544 Battleford Drive;
  Raleigh;NC;27613-3502;USA
TEL;TYPE=WORK,PREF:+1-617-693-8728
TEL;TYPE=WORK,MSG:+1-919-676-9515
TEL;TYPE=FAX:+1-617-693-8728
EMAIL;TYPE=INTERNET,PREF:Frank_Dawson@Lotus.com
EMAIL;TYPE=INTERNET:fdawson@earthlink.net
CALADRURI;TYPE=PREF:MAILTO:Frank_Dawson@Lotus.com
CALADRURI:MAILTO:fdawson@earthlink.net
URL:http://home.earthlink.net/~fdawson
END:VCARD
```

This memo is a result of the work of the Internet Engineering Task Force Calendaring and scheduling Working Group. The chairman of that working group is:

```
BEGIN:VCARD
VERSION:3.0
N:Egen;Pat
FN:Pat Egen
ORG:Engan Consulting
ADR;TYPE=WORK;;;803 Creek Overlook;Chattanooga;TN;37415;USA
TEL;TYPE=WORK,VOICE:423.875.2652
TEL;TYPE=WORK,FAX:423.875.2017
EMAIL:pregen@egenconsulting.com
URL:http://www.egenconsulting.com
CALADRURI:MAILTO:pregen@egenconsulting.com
END:VCARD
```

## 7 Bibliography

- [1] Wahl, M., Howes, T. and S. Kille, "Lightweight Directory Access Protocol (v3)", RFC 2251, December 1997.
- [2] Wahl, M., Coulbeck, A., Howes, T. and S. Kille, "Lightweight Directory Access Protocol (v3): Attribute Syntax Definitions", RFC 2252, December 1997.
- [3] Dawson, F. and T. Howes, "vCard MIME Directory Profile", RFC 2426, September 1998.
- [4] Dawson, F. and D. Stenerson, "Internet Calendaring and Scheduling Core Object Specification (iCalendar)", RFC 2445, November 1997.
- [5] Dawson, F. and S. Mansour, "iCalendar Message-Based Interopability Protocol (iMIP)", RFC 2447, November 1997.

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