The vCard Schema For Use In LDAPv3
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Abstract

   The Lightweight Directory Access Protocol (LDAP) [LDAPV3] is gaining
   widespread acceptance as a method for accessing Internet directories.
   Many of the LDAP clients accessing these directories also provide
   support for emitting the directory information in the form of a vCard
   electronic business card object. This memo defines a new X.500 object
   class, called the vCardObject, that extends the X.521 standard
   organizationalPerson and residentialPerson in order to provide a
   unique LDAP schema for accessing Internet directories in terms of
   the vCard attributes.

   The schema defined by this memo should be used when accessing a
   directory via LDAP Version 3 and searching or retrieving directory
   information based on vCard related attributes. The schema describes
   the attribute types and object classes that have a 1-to-one
   correspondence with vCard properties.

   This schema may also be used to define a set of object classes and
   attributes for storing metadata and binding information for a

directory entry that closely follows the vCard object in directories
that support LDAP.

1. **Introduction**

The Lightweight Directory Access Protocol [LDAPV3] defines a standard
protocol for accessing Internet directory services. A common purpose
for such directory services is the collection of directory
information related to people and resources. The vCard Electronic
Business Card Format [VCARD] defines a standard format for exchanging
information about people and resources. These two standards are
linked by their technical foundations on the International
Telecommunications Union Recommendations for The Directory Services
[X500]. However, up to this point a more formal correlation between
the two standards has been missing. This memo links the two standards
by defining the LDAP schema to be used for LDAP-based access to a
directory, when the resultant information is intended to be in the
form of the attributes that make up a vCard object.

The [VCARD] specification defines a relatively flat schema. Each
instance of a vCard is a container for a set of peer attributes,
which vCard calls properties. These attributes describe various
facets of a physical person or resource in terms of their
identification, delivery addressing, telecommunications addressing,
geographical, organizational, explanatory and security properties.
Additionally, non-standardized, implementation-specific attributes
may be present. With minor exceptions, all of the features of the
[VCARD] specification are supported by this schema.

2. **Notation**

The notation used to describe object classes and attribute types in
this memo is the same that is used in [LDAPSYN]. The BNF used in this
memo is the same as in [RFC822].

The use of the terms attribute and property are used interchangeably
in this memo.

The object identifier (OID) used by this schema is rooted at
"1.3.6.1.4.1.2309.1.1.1.1". The Internet Mail Consortium (IMC) is the
authority for the name spaced under this root object identifier.

3. Object Naming

All vCardObject objects must have the formattedName as their naming attribute. This attribute provides the RDN for the object. This attribute is based on the Common Name attribute of [X.500], as defined in [VCARD]. Values should adhere to the guidelines for the Common Name attribute, as specified in [LDAPV3].

In addition, the uniqueID attribute may be present to provide a method for correlating different vCardObject objects that refer to the same physical person or resource, yet contain differing descriptions. For example, a single person or resource might be described by a Canadian-French language-based vCardObject and also an US-English language-based vCardObject. This would be accomplished by

both vCardObjects containing the uniqueID property with the same value.

The uniqueID attribute is also used to refer to the vCardObject corresponding to the physical person or resource in the agent property.

4. Grouping

The [VCARD] specification supports to forms of grouping or collections. The "vCard Grouping" capability permits a vCardObject to be the container for a sequence of one or more vCardObjects. For example a vCardObject describing a work group might consist of the vCardObjects for each member of that work group. The vCard Grouping is not supported by this memo.

The "Property Grouping" capability permits individual attributes within a vCard object to be further grouped by the pre-concatenation of a textual, group label. For example the telephone number and delivery label for a vacation residence might be prefixed with a group label of "VACATION.". Property Grouping is not supported by this memo.

5. Structured Property Values

Some of the attributes defined by the [VCARD] specification consist of multiple components. Structured attribute values are also supported by this schema. The components are separated by either the "$" or "#" character.

6. **Property Parameters**

The [VCARD] specification allows attribute values to be qualified
with "property parameters". For example, "home" and "office"
telephone numbers can be distinguished by the property parameters
"TYPE=HOME" and "TYPE=OFFICE" being applied to the respective home
and office telephone number values. Property parameters are supported
using attribute description options, as defined in [LDAPV3].

6.1 Property Value Types

The [VCARD] specification provides for the optional specification of
the attribute value data type as a property parameter. The data type
of all attributes defined by this schema are implicitly defined by
their attribute type description. The property value parameter type
is not further supported by this schema.

6.2 Encoding Options

The default encoding or format for vCardObject attribute values is
8bit textual data. The encoding may be overridden for an individual
property value by the specification of an encoding option on the
attribute description. These options allow for the return of the
attribute value in a format other than the default textual format.

These options may be specified only on the logo, photo and sound
attributes defined by this schema.

An encoding option is based on the following BNF:

        Encodeoption   = ["encoding-"] binaryencode / b64encode

        Binaryencode   = "binary"   ;As defined by [LDAPV3]

        b64encode   = "base64"   ;As defined by [RFC2045]

6.2.1 Binary Encoding

The "binary" option is as described in [LDAPV3].

6.2.2 Base-64 Encoding

The "base64" option overrides the default format for attribute values
so that they are transferred as 7-bit text, thus making it safe to

carry over restricted transports. [RFC2045] defines the encoding of
this format.

6.3 **Language Option**

The language used in the vCardObject attribute values may be
explicitly specified for an individual property value by the
specification of a language option on the attribute description. The
language is specified as a string consistent with [RFC1766]. This
option may be specified on any attribute defined by this schema.

The language option is based on the following BNF:

        langoption   = "language-" langtype

        langtype   = <A language string as defined in RFC 1766>

For example, "comment;language-us-eng" for a Comment attribute
description whose textual value is written in US English.

6.4 **Image Format Option**

This option specifies the image image format for the photo and logo
attributes value. The image format option must be specified only on
the photo and logo attribute. These attributes must specify this
option in order to specify the graphic image format of the photo or
logo value.

The image format option is based on the following BNF:

        imageoption   = "format-" formattype

        formattype   = <Any AINA registered image format subtype>

For example, "photo;format-jpeg" for a Photo attribute description
for a value in a JPEG image format.

6.5 **Delivery Type Option**

This option specifies the characteristics of delivery address and
delivery label attributes value. The delivery type option may be
specified only in the deliveryAddress or deliveryLabel attributes.

The delivery address type option is based on the following BNF:

```
       deliveroption   = (["dom"]        ;An domestic delivery
                       / ["intl"])     ;An international delivery
                         ["postal"]    ;A postal delivery
                         ["parcel"]    ;A parcel delivery
                         ["home"]      ;A residential delivery
                         ["work"]      ;A business delivery
                         ["pref"]      ;A preferred delivery
```

For example, "adr;dom;postal;parcel;home" for an attribute
description for a domestic delivery address for a residence that is
used for postal and parcel service delivery.

6.6 Telephone Type Option

This option specifies the characteristics of telephone number
attribute value. The telephone type option may be specified only in
the telephoneNumber attribute.

The telephone type option is based on the following BNF:

```
       teleoption      = ["home"]       ;A residential number
                         ["work"]       ;A business number
                         ["voice"]      ;A voice number
                         ["fax"]        ;A facsimile number
                         ["msg"]        ;A number with voice mail
                       ( ["cell"]       ;An analog cellular number
                       / ["pager"]      ;A pager number
                       / ["pcs"]        ;A digital PCS number
                       / ["bbs"]        ;A bulletin board system number
                       / ["modem"]      ;A number with a MODEM attached
                       / ["car"]        ;A car cellular number
                       / ["isdn"]       ;An ISDN SPID
                       / ["video"])     ;A video conferencing number
                         ["pref"]       ;A preferred number
```

For example, "tel;pref;work;voice;msg" for a Telephone Number
property which is preferred over other telephone numbers for work. In
addition, the telephone number is a voice line with voice mail
support.

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6.7 Electronic Mail Type Option

This option specifies the characteristics of electronic mail
attribute value. The electronic mail type option may be specified
only in the electronicMail attribute.

The electronic mail type option is based on the following BNF:

```
    emailoption     = (["internet"] ;An internet email address
                    / ["x400"]      ;A X.400 OR address
                    / ["video"]     ;A video conferencing number
                    / [word] )      ;Any other email address type
                      ["pref"]      ;A preferred number

    word            = 1*char        ;A word
```

For example, "email;internet" for an attribute description with a
value that is an Internet, [RFC822](RFC822) address format.

6.8 Sound Format Type Option

This option specifies the format of the sound attribute value. The
sound format type option may be specified only in the sound
attribute.

The sound format type option is based on the following BNF:

```
    soundoption     = <Any AINA registered sound format subtype>
```

For example, "sound;basic" for a Sound attribute description whose
value is single channel audio encoded using 8bit ISDN mu-law [PCM] at
a sample rate of 8000 Hz.

7. Object Definitions

The following object classes are defined by this schema. LDAP servers
should recognize the object classes listed in this section as values
of the objectClass attribute.

7.1 Top

This object class is the same as that defined in [LDAPX500].

```
(2.5.6.0
    NAME 'top'
    ABSTRACT MUST objectClass)
```

7.2 Alias

This object class is the same as that defined in [LDAPX500].

```
(2.5.6.1
    NAME 'alias'
```

```
          SUP top STRUCTURAL MUST aliasedObjectName)
```

7.3 VCard Object

The vCardObject is a container for collecting together attributes
describing a person or resource.

```
(1.3.6.1.4.1.2309.1.1.1.1.1
      NAME 'vCardObject'
      SUP top STRUCTURAL MUST formattedName
      MAY (structuredName $ photograph $ birthDate $ uid $
deliveryAddress $
      deliveryLabel $ telephoneNumber $ eMail $ mailer $ timeZone $
      globalPosition $ title $ role $ logo $ agent $ orgNameUnit $
comment $
      revision $ sound $ url $ version $ key)
```

8. Attribute Type Definitions

These attribute type descriptions are defined as follows. LDAP
servers should recognize the attribute types defined in this section.

8.1 Identification Attributes

8.1.1 Formatted Name

This attribute specifies the formatted text of the distinguished name
associated with the vCardObject. This is the text that should be used
to display the distinguish name. It may contain desired honorific
prefixes, suffixes, titles, etc. This attribute corresponds to the
[vCard] "FN" property. Implementations conforming to this memo must
support this attribute. In addition, every directory entry must
contain this attribute.

```
(1.3.6.1.4.1.2309.1.1.1.1.2 NAME 'formattedName'
      DESC 'formatted name text'
      EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
      SYNTAX 'vCardString{255}' SINGLE-VALUE)
```

8.1.2 StructuredName

This attribute specifies the structured text components of the name
associated with the vCardObject. This attribute corresponds to the
[vCard] "N" property. The attribute value consists of the Family
Name, Given Names, Additional Names, Honorific Prefixes and Honorific

Suffixes. The components are separated by "$" or "#" characters.

```
(1.3.6.1.4.1.2309.1.1.1.1.3 NAME 'structuredName'
     DESC 'structured name components'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
     SYNTAX 'vCardName{255}' SINGLE-VALUE)
```

8.1.3 Photograph

This attribute specifies a photograph associated with the
vCardObject. This attribute corresponds to the [vCard] "PHOTO"
property.

```
(1.3.6.1.4.1.2309.1.1.1.1.4 NAME 'photograph'
     DESC 'photograph'
     SYNTAX 'vCardImage' SINGLE-VALUE)
```

8.1.4 BirthDate

This attribute specifies the birthdate associated with the
vCardObject. This attribute corresponds to the [vCard] "BDAY"
property.

```
(1.3.6.1.4.1.2309.1.1.1.1.5 NAME 'birthDate'
     DESC 'birthdate'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
     SYNTAX 'vCardDate' SINGLE-VALUE)
```

8.1.5 Unique Identifier

This attribute specifies a globally unique identifier associated with
the vCardObject. This attribute corresponds to the [vCard] "UID"
property. A person or resource may be represented by more than one
vCardObject. For example, entries in different languages. This
attribute is used to correlate the vCardObjects that refer to the
same physical person or resource.

```
(1.3.6.1.4.1.2309.1.1.1.1.6 NAME 'uid'
     DESC 'unique identifier'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
```

```
     SYNTAX 'vCardString{255}' SINGLE-VALUE)
```

8.2 Delivery Addressing Attributes

8.2.1 DeliveryAddress

   This attribute specifies the structured text components of the
   deliver address associated with the vCardObject. This attribute
   corresponds to the [vCard] "ADR" property. The attribute value
   consists of the Extended Address, Post Office Box, Street Address,
   Locality or City, Region or State or Province, Postal Code and
   Country Name. If the address option indicates that the value is an
   international address, then the country component must be present.
   The components are separated by "$" or "#" characters.

```
   (1.3.6.1.4.1.2309.1.1.1.1.7 NAME 'deliveryAddress'
        DESC 'structured delivery address components'
        EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
        SYNTAX 'vCardAddress{255}' SINGLE-VALUE)
```

8.2.2 DeliveryLabel

   This attribute specifies the text for the delivery label associated
   with the vCardObject. This attribute corresponds to the [vCard]
   "LABEL" property. If the address option indicates that the value is
   an international address, then the country name must be present.

```
   (1.3.6.1.4.1.2309.1.1.1.1.8 NAME ' deliveryLabel'
        DESC 'delivery label'
        EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
        SYNTAX 'vCardMultiLineString{1023}' SINGLE-VALUE)
```

8.2.3 TelephoneNumber

   This attributes specifies a telephone number associated with the
   vCardObject. This attribute corresponds to the [vCard] "TEL"
   property. The value should be specified in it's international form.

```
   (1.3.6.1.4.1.2309.1.1.1.1.9 NAME 'telephoneNumber'
        DESC 'telephone number'
        EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
        SYNTAX 'vCardTelephone{32}' SINGLE-VALUE)
```

8.2.4 ElectronicMail

This attribute specifies an electronic mail or messaging address
associated with the vCardObject. This attribute corresponds to the
[vCard] "EMAIL" property.

```
1.3.6.1.4.1.2309.1.1.1.1.10 NAME 'eMail'
     DESC 'electronic mail address'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
     SYNTAX 'vCardString{255}' SINGLE-VALUE)
```

8.2.5 Mailer

This attribute specifies the type of electronic mail software that is
used by the person or resource associated described by the
vCardObject. This attribute corresponds to the [vCard] "MAILER"
property.

```
(1.3.6.1.4.1.2309.1.1.1.1.11 NAME 'mailer'
     DESC 'electronic mail mailer'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
     SYNTAX 'vCardString{255}' SINGLE-VALUE)
```

8.3 Geographical Attributes

8.3.1 TimeZone

This attribute specifies the UTC offset for the nominal standard zone
of the locale for the person or resource described by the
vCardObject. This attribute corresponds to the [vCard] "TZ" property.

```
(1.3.6.1.4.1.2309.1.1.1.1.12 NAME 'timeZone'
     DESC 'standard utc offset'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
     SYNTAX 'vCardTimeZone' SINGLE-VALUE)
```

8.3.2 GeoPosition

This attribute specifies the longitude and latitude form of the
global positioning information of the person or resource described by
the vCardObject. This attribute corresponds to the [vCard] "GEO"
property.

```
(1.3.6.1.4.1.2309.1.1.1.1.13 NAME 'globalPosition'
```

```
        DESC 'global positioning information'
        EQUALITY vcCardFloatMatch SUBSTR caseIgnoreSubstringMatch
        SYNTAX 'vCardPosition' SINGLE-VALUE)
```

8.4 **Organizational Attributes**

8.4.1 **Title**

   This attribute specifies the job title, functional position or
   function of the person or resource described by the vCardObject. This
   attribute corresponds to the [vCard] "TITLE" property.

```
   (1.3.6.1.4.1.2309.1.1.1.1.14 NAME 'title'
        DESC 'title'
        EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
        SYNTAX 'vCardString{255}' SINGLE-VALUE)
```

8.4.2 **Role**

   The attribute specifies the role, occupation or business category of
   the person or resource described by the vCardObject. This attribute
   corresponds to the [vCard] "ROLE" property.

```
   (1.3.6.1.4.1.2309.1.1.1.1.15 NAME 'role'
        DESC 'role'
        EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
        SYNTAX 'vCardString{255}' SINGLE-VALUE)
```

8.4.3 **Logo**

   This attribute specifies a graphical image of a logo associated with
   the vCardObject. This attribute corresponds to the [vCard] "LOGO"
   property.

```
   (1.3.6.1.4.1.2309.1.1.1.1.16 NAME 'logo'
        DESC 'logo'
        SYNTAX 'vCardImage' SINGLE-VALUE)
```

8.4.4 **Agent**

   This attribute specifies the globally unique identifier of another
   vCardObject that describes a person or resource that will act on

behalf of the person or resource described by this vCardObject. This
attribute corresponds to the [vCard] "AGENT" property.

```
(1.3.6.1.4.1.2309.1.1.1.1.17 NAME 'agent'
     DESC 'agent'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
     SYNTAX 'vCardString{255}' SINGLE-VALUE)
```

8.4.5 OrgNameUnits

This attribute specifies the text components of the organizational
name and units of the person or resource associated with the
vCardObject. This attribute corresponds to the [vCard] "ORG"
property. The attribute value consists of the organizational name
followed by any organizational units. The components are separated by
"$" or "#" characters.

```
(1.3.6.1.4.1.2309.1.1.1.1.18 NAME 'orgNameUnits'
     DESC 'organizational name and units'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
     SYNTAX 'vCardOrgNameUnit{255} SINGLE-VALUE)
```

8.5 Explanatory Attributes

8.5.1 Comment

This attribute specifies a textual comment or note associated with
the vCardObject. This attribute corresponds to the [vCard] "NOTE"
property.

```
(1.3.6.1.4.1.2309.1.1.1.1.19 NAME 'comment
     DESC 'comment or note'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
     SYNTAX 'vCardMultiLineString{1023}' SINGLE-VALUE)
```

8.5.2 LastRevision

The attribute specifies the date and time that the vCardObject was
last revised. This attribute corresponds to the [vCard] "REV"
property.

```
(1.3.6.1.4.1.2309.1.1.1.1.20 NAME 'revision'
     DESC 'date and time of last revision'
     EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
     SYNTAX 'vCardDateTime' SINGLE-VALUE)
```

8.5.3 Sound

This attribute specifies a digital sound content that annotates some
aspect of the person or resource described by the vCardObject. This
attribute corresponds to the [vCard] "SOUND" property.

    (1.3.6.1.4.1.2309.1.1.1.1.21 NAME 'sound'
         DESC 'sound'
         SYNTAX 'vCardSound' SINGLE-VALUE)

8.5.4 URL

This attribute specifies a uniform resource locator (URL) associated
with the vCardObject. This attribute corresponds to the [vCard] "URL"
property. This URL will allow subsequent access to the directory
containing the vCardObject. The URL may be in the format defined for
a LDAP URL by [LDAPURL].

    (1.3.6.1.4.1.2309.1.1.1.1.22 NAME 'url'
         DESC 'url'
         EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
         SYNTAX 'vCardString{255}' SINGLE-VALUE)

8.5.5 Version

This attribute specifies the version of [VCARD] represented by the
schema used in the vCardObject. This attribute corresponds to the
[vCard] "VERSION" property.

    (1.3.6.1.4.1.2309.1.1.1.1.23 NAME 'version'
         DESC 'agent'
         EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
         SYNTAX 'vCardString{255}' SINGLE-VALUE)

8.6 Security Attributes

8.6.1 PublicKey

The attribute specifies a public key or authentication certificate
associated with the vCardObject. This attribute corresponds to the
[vCard] "KEY" property. If the value of the attribute is a public
key, then the value is encoded in the vCardString syntax. If the
value of the attribute is a certificate, then the binary option must
be specified and the value is an octet-string.

    (1.3.6.1.4.1.2309.1.1.1.1.24 NAME 'key'

```
        DESC 'key or certificate'
        EQUALITY caseIgnoreMatch SUBSTR caseIgnoreSubstringMatch
        SYNTAX 'vCardString{255}' SINGLE-VALUE)
```

9. Syntax Definitions

The following syntax descriptions are defined by this schema. New
syntax definitions were defined by this memo in order to assure an

unambiguous rendering of the directory information in a syntax
consistent with the [VCARD]. Reuse of existing syntax definitions
from either X.500 or other person schemas would not guarantee
delivery of the directory information in a syntax consistent with
[VCARD]. For example, the existing date/time syntax is not consistent
with ISO 8601 or the emerging Internet date/time specification. The
directory string syntax does not convey the form of the multi-line
label text.

Servers should recognize all the syntax definitions described in this
memo.

9.1 VCardString

Values with the vCardString syntax are encoded in the [UTF8] form.
Servers and clients must be prepared to receive encodings of
arbitrary Unicode characters. Values with the vCardString syntax are
encoded according to the following BNF:

```
    string  = *char

    char    = <Any character in [UTF8]>
```

(1.3.6.1.4.1.2309.1.1.1.1.25 DESC 'vCardString')

9.2 vCardName

Values with the vCardName syntax are encoded as if they were
vCardString types. The value is structured text consisting of the
family name component, the given names component, the other names
component, honorific prefix components and honorific suffix
components. The value is encoded according to the following BNF:

```
    name    = family delim given [delim other [delim prefix
              [delim sufix]]]
```

```
      space   = 1*" "
      delim   = "$" / "#"
      family  = 1*char
      given   = 1*char
      other   = 1*char / 1*char [space other]
      prefix  = 1*char / 1*char [space prefix]
      suffix  = 1*char / 1*char [space suffix]
```

   (1.3.6.1.4.1.2309.1.1.1.1.26 DESC 'vCardName')

9.3 vCardImage

   Values with the vCardImage syntax are encoded as graphical images in
   the format specified by the image type option. This can be any IANA
   registered graphical image format. These binary data formats must
   either be passed as a binary object using the binary encoding option
   or as packed binary text data when the base64 encoding option is
   specified.

   (1.3.6.1.4.1.2309.1.1.1.1.27 DESC 'vCardImage')

9.4 vCardDate

   Values with the vCardDate syntax are encoded as if they were
   vCardString types. The values are text represenations of the calendar
   date as specified in ISO 8601 and by the following BNF:

```
      date            = fulldate

      digit           = <any [UTF8] decimal digit>    ;0-9
      date-fullyear   = 4digit
      date-month      = 2digit          ;01-12
      date-mday       = 2digit          ;01-28, 01-29, 01-30, 01-31
                                        ;based on month/year
      full-date       = date-fullyear date-month date-mday
```

   For example, the following represents July 14, 1997:

      19970714

   (1.3.6.1.4.1.2309.1.1.1.1.28 DESC 'vCardDate')

9.5 vCardDateTime

   Values with the vCardDateTime syntax are encoded as if they were

vCardString types. The value is the text represenations of the
calendar date and time of day as specified in ISO 8601 and by the
following BNF:

```
date-time       = date "T" time ;As specified above and below

digit           =<any [UTF8] decimal digit>     ;0-9
time-hour       = 2digit         ;00-23
time-minute     = 2digit         ;00-59
time-second     = 2digit         ;00-59
time-numzone    = ("+" / "-") time-hour time-minute
time-zone       = "Z" / time-numzone
full-time       = time-hour time-minute time-second [time-zone]

time    = fulltime
```

   (1.3.6.1.4.1.2309.1.1.1.1.29 DESC 'vCardDateTime')

9.6 vCardAddress

   Values with the vCardAddress syntax are encoded as if they were
   vCardString types. The value is structured text consisting of the
   extended component, post office box component, street address
   component, locality component, region component, postal code
   component and country component. If the address option includes
   indicates that the value is an international address, then the
   country component must be present. The syntax is specified by the
   following BNF:

```
address = [extcomp] delim [pobcomp] delim [stcomp] delim
          [loccomp] delim [regcomp] delim [codcomp]
          [delim ctrcomp]

delim   = "$" / "#"
space   = *" "
char    = <Any character in [UTF8]>
phrase  = 1*char / 1*char *(space 1*char)
extcomp = phrase         ;Extended address
pobcomp = phrase         ;Post Office Box
stcomp  = phrase         ;Street address
loccomp = phrase         ;Locality or city name
regcomp = phrase         ;Region, state or province name
codcomp = phrase         ;Postal code
ctrcomp = phrase         ;Country name or code
```

```
     (1.3.6.1.4.1.2309.1.1.1.1.30 DESC 'vCardAddress')
```

9.7 vCardMultiLineString

Value with the vCardMultiLineString syntax are encoded as if they
were vCardString types. The value may consist of multiple lines of
text as defined in [VCARD]. However, the multiple line values are
specified in this syntax by the following BNF:

```
     char    = <Any character in [UTF8]>
     space   = 1*" "
     delim   = "$" / "#"
     linetext        = 1*char *(space 1*char)
     multiline       = 1*linetext
```

```
     (1.3.6.1.4.1.2309.1.1.1.1.31 DESC 'vCardMultiLineString')
```

9.8 vCardTimeZone

Values with the vCardTimeZone syntax are encoded as if they were
vCardString types. The value is the text represenations of the UTC
offset specified in ISO 8601 and by the following BNF:

```
     time-numzone    = ("+" / "-") time-hour time-minute

     digit           =<any [UTF8] decimal digit>      ;0-9

time-hour    = 2DIGIT        ;00-23time-minute        = 2DIGIT
      ;00-59
```

```
     (1.3.6.1.4.1.2309.1.1.1.1.32 DESC 'vCardTimeZone')
```

9.9 vCardTelephone

Values with the vCardTelephone syntax are encoded as if they were
vCardString types. Telephone numbers are recommended to be in
international form.

```
     (1.3.6.1.4.1.2309.1.1.1.1.33 DESC 'vCardTelephone')
```

9.10 vCardPosition

Values with the vCardPosition syntax are encoded as if they were
vCardString types. The value is structured text consisting of the
floating point longitude global position followed by the latitude
global position and by the following BNF:

```
position        = float delim float

delim           = "$" / "#"
digit           = <any [UTF8] decimal digit>    ;0-9
float           = ["+" / "-"] *DIGIT ["." *DIGIT]
```

(1.3.6.1.4.1.2309.1.1.1.1.34 DESC 'vCardPosition')

9.11 vCardOrgNameUnit

Values with the vCardOrgNameUnit syntax are encoded as if they were
vCardString types. The value is structured text consisting of the
organizational name component followed by any organization unit
names. The value is encoded according to the following BNF:

```
organ   = orgname [orgunit]

delim   = "$" / "#"
orgname = 1*char
orgunit = delim 1*char [orgunit]
```

(1.3.6.1.4.1.2309.1.1.1.1.35 DESC 'vCardOrgNameUnit')

9.12 vCardSound

Values with the vCardSound syntax are encoded as digital audio in the
format specified by the sound type option. This can be any IANA
registered digital audio format. This binary data must either be
passed as a binary object using the binary encoding option or as
packed binary text data when the base64 encoding option is specified.

(1.3.6.1.4.1.2309.1.1.1.1.36 DESC 'vCardSound')

10. Matching Rule Definitions

The vCardObject data is primarily encoded as textual information.
Therefore, only the following matching rules from [LDAPSYN] are
required by this schema.

```
caseIgnoreMatch
caseIgnoreSubstringMatch
```

Servers should allow all matching rules listed in this section to be used in the extensibleMatch. In general, these servers should allow matching rules to be used with all attribute types known to the server, when the assertion syntax of the matching rule is the same at the value syntax of the attribute.

Servers may implement additional matching rules.

For all these rules, the assertion syntax is the same as the value syntax.

When performing the caseIgnoreMatch and caseIgnoreSubstringMatch, multiple adjoining whitespace characters are treated the same, as an individual space, and leading and trailing whitespace is ignored.

11. Example Usage

The following is an example of LDAP URL query to get the formatted name and work telephone number for anyone in the USA named Smith.

```
ldap:///c=US?formattedName,telephoneNumber;work??(formattedName=
Smith*)
```

The following is an example of a vCardObject using the LDIF format of [LDIF].

```
dn: formattedName = John Smith
objectClass: top
objectClass: vCardObject
formattedName: John Smith
structuredName: Smith$John
uid: 19970708T113000-ds01@host.com-10373AFBC38391
deliveryAddress;work;postal: MS101$PO Box 1234$1024 B
St.$Columbia$MO$65201$USA
deliveryLabel;work;parcel:1024 B St.$Columbia, MO 65201$USA
telephoneNumber;work;msg;voice;pref: +1-314-555-1234
telephoneNumber;work;voice:+1-314-555-1236
telephoneNumber;work;fax:+1-314-555-9876
eMail: john.smith@host1.com
title: V.P. Engineering
orgNameUnits: TigerSoft$MidWest Region$MSG$Financial Services
version: 2.1
```

12. Security Considerations

In addition to the security considerations specified in [LDAPV3] the

following considerations should be reviewed by implementors of this
memo.

12.1 Disclosure

Attributes of directory entries are used to provide descriptive
information about the real-word objects they represent, which be
people or resources. Most countries have privacy laws regarding the
publication of information about people.

12.2 Security Concerns

The [VCARD] specification provides a robust schema for representing
information about people or resources. Publication of this
information in Internet directories providing LDAP support for this
schema may provide an inadvertent means for unauthorized use of the
information once it has been retrieved. Care should be taken in
managing both the access of directories containing personal data.

In addition, the flexible nature of the vCard format may facilitate
the spoofing of a person or resource or other such fraudulent
activities by an untrusted individual. Care should be taken to
authenticate the originator of any vCard based personal data.

13. Acknowledgments

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heavily influenced by the early contributions of Roland Alden, Gary
Hand, Pat Megowan and others who helped draft the original
specification.

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Bruce Greenblatt, Frode Hernes, Paul Hoffman, Tim Howes, Burton Lee,
Chris Newman, Dave Mease, Vinod Seraphin, Richard Shusterman, and
Mark Wahl.

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[US-ASCII] Coded Character Set--7-bit American Standard Code for Information Interchange, ANSI X3.4-1986.

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15. Author's Address

The following address information is provided in the IETF vCard, Electronic Business Card, format.

```
BEGIN:VCARD
VERSION:2.1
FN:Frank Dawson
ORG:Lotus Development Corporation
ADR;WORK;POSTAL;PARCEL:;;6544 Battleford Drive;Raleigh;
 NC;27613-3502;USA
TEL;WORK;MSG:+1-919-676-9512
TEL;WORK;FAX:+1-919-676-9564
EMAIL;INTERNET;WORK;PREF:Frank_Dawson@Lotus.com
EMAIL;INTERNET:fdawson@earthlink.net
URL:http://home.earthlink.net/~fdawson
END:VCARD

BEGIN:VCARD
VERSION:2.1
FN:Mike O'Brien
ORG:Iris Associates
ADR;WORK;POSTAL;PARCEL:;; One Technology Park Drive;Westford;
 MA; 01886;USA
TEL;WORK;MSG:+1-508-692-9265
TEL;WORK;FAX:+1-919-692-7365
EMAIL;INTERNET;WORK:MOBrien@iris.com
END:VCARD
```

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