SIP Call-Info Parameters for Rich Call Data

Abstract

This document describes a usage of the SIP Call-Info header field that incorporates Rich Call Data (RCD) associated with the identity of the calling party in order to provide to the called party a description of the caller or details about the reason for the call. RCD includes information about the caller beyond the telephone number such as a calling name, or a logo, photo, or jCard object representing the caller, which can help the called party decide whether to answer the phone. The elements defined for this purpose are intended to be extensible in order to accommodate related information about calls and to be compatible and complimentary with the STIR/PASSporT RCD framework.

This document defines a new parameter ('call-reason') for the SIP Call-Info header field and also a new token ("rcd-jcard") for the 'purpose' parameter of the Call-Info header field. It also provides guidance on the use of the Call-Info 'purpose' parameter token, "icon".

Status of This Memo

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

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at https://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on 27 September 2024.

Table of Contents

1. Introduction

Signaling protocols in telephone networks have long supported the
delivery of a 'calling name' from the originating side to the
terminating side, though in practice, the terminating side is often
left to derive a name from the calling-party number by consulting a
local address book or an external database. SIP [RFC3261] similarly
can carry a 'display-name' in the From header field value from the
originating to terminating side, though it is an unsecured field
that is not commonly trusted and is often replaced or ignored. The
same can be considered true of information in the Call-Info header
field in SIP.

To allow calling parties to initiate, and called parties to receive,
a more comprehensive, deterministic, and extensible Rich Call Data
(RCD) for incoming calls, this document defines a new parameter
('call-reason') for the SIP Call-Info header field [RFC3261] and
also a new token ("rcd-jcard") for the 'purpose' parameter of the
Call-Info header field. For this document and depending on the
policies of the communications system, a calling party could be
either the end user device (e.g., a SIP user agent (UA)) or a
network service as part of a telephone service provider. Similarly,
a called party could be an end user device or the network telephone
service provider acting on behalf of the recipient of the call.

Used on its own, this specification assumes that the called party UA
can trust the SIP network or the SIP provider to assign, deliver,
and protect the correct RCD information as an end-to-end security
policy. However, as is true in many interconnected communications
services, this end-to-end trust cannot be guaranteed. Therefore, the
recommended approach is that the entity inserting the Call-Info
header field should also sign the caller information via STIR-
defined protocol tools [RFC7340] for SIP [RFC8224] and specifically

through the use of RCD or the "rcd" PASSporT defined in
[I-D.ietf-stir-passport-rcd].

Alternatively, this specification can be utilized in conjunction
with the protocols defined in [I-D.ietf-stir-passport-rcd] as part
of the communications signaling path, specifically in the trusted
UNI device interface at the terminating side as part of an
authenticated, network-to-device, trusted signaling where a device
may not have the ability to verify the "rcd" PASSporT, but it can
receive the RCD information from the Call-Info header field as
defined in this specification.

[RFC7852] provides a means of carrying additional data about callers
for the purposes of emergency services (especially Section 4.4
(Owner/Subscriber Information) of [RFC7852]). This specification
provides an overlapping functionality for non-emergency cases.
Rather than overloading its "EmergencyCallData" Call-Info 'purpose'
parameter value, this document defines a separate 'purpose'
parameter for the more generic delivery of information via jCard
[RFC7095]. This document borrows from [RFC7852] the capability to
carry a data structure as a body, through the use of the "cid" URI
scheme [RFC2392].

2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and
"OPTIONAL" in this document are to be interpreted as described in
BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all
capitals, as shown here.

3. Overview

In this document, we provide a framework for the use of Call-Info
header field to carry RCD in SIP [RFC3261]. The Call-Info header
field (defined in [RFC3261], Section 20.9) defines a 'purpose'
parameter. In addition to providing guidance on calling name
practices and the use of the existing 'purpose' parameter token,
"icon", this document expands on other types of RCD by defining a
new 'purpose' token, "rcd-jcard", and a new generic parameter,
'call-reason', for the Call-Info header field to align with RCD as
defined in the STIR framework [RFC8224] and with "rcd" PASSporTs
defined in [I-D.ietf-stir-passport-rcd].

The 'purpose' parameter token "rcd-jcard" is used to associate RCD
related to the identity of the calling party in the form of a jCard
[RFC7095]. While there is a "card" token defined in [RFC3261] which
could be considered to have an overlapping purpose, the "rcd-jcard"
token is intended to denote the jCard profile defined in this

document for use in the Call-Info header field for RCD. The choice of jCard in this specification is guided by two things. First, JSON has become the default and is generally the widely accepted, optimally supported format for transmission, parsing, and manipulation of data on IP networks, and jCard represents an extensible method of providing information about a person or business associated with a call. Second, jCard has been defined in [I-D.ietf-stir-passport-rcd] and has been adopted by PASSporT [RFC8225] because of the usage of JSON Web Tokens (JWT) [RFC7519].

The new Call-Info header field parameter 'call-reason' provides a string or other object that conveys the caller's intent or reason for calling to help the called party understand the context and intent of the call and why they may want to answer the call.

4. A Call-Info Framework for Carrying Rich Call Data

This specification extends the Call-Info header field to be compatible and complimentary to the RCD framework defined in [I-D.ietf-stir-passport-rcd]. Typically, a SIP-based call involves multiple hops through different trusted and untrusted networks. The STIR framework [RFC7340] addresses the protection of the carriage of call information and identities over untrusted networks, which wasn't addressed in the core SIP specifications. [RFC3261], Section 20.9 defines the Call-Info header field as the mechanism for carrying call- and caller-related information and also provides procedures for defining new 'purpose' parameter tokens. This document discusses the use of existing tokens and defines a new 'purpose' token to correspond to the RCD framework.

There are a number of RCD information types that can be transmitted in the Call-Info header field of a SIP request. The STIR RCD specification [I-D.ietf-stir-passport-rcd] defines calling name, a logo or icon associated with the caller, and a call reason string. It also discusses an extensible way of carrying caller information using jCard [RFC7095]. It may be that future specifications extend information types and, similar to how this document extends the Call-Info header field to provide corresponding functionality to STIR RCD, it is RECOMMENDED that future specifications also provide corresponding Call-Info extensions.

The RCD framework defined both in this document as well as in [I-D.ietf-stir-passport-rcd] carries call-specific information. The insertion of RCD is intended to be singular in that the receiving party should not be required to make any call-specific decisions based on redundant, duplicate, or conflicting RCD. With the use of the Call-Info header field for the transmission of RCD, any RCD-related information defined in this specification or future specifications that extend this mechanism MUST be contained in a

single Call-Info header field containing all URI and 'purpose'
tokens and parameters related to RCD. The RCD information is either
intended to be added by a party that is authoritative over that
information or to have been translated from a verified STIR RCD
PASSporT and unmodified once in a trusted domain. Any additional
parties involved in the call path SHOULD NOT modify the Call-Info
header field or add additional Call-Info header fields related to
RCD. The insertion of the RCD Call-Info header field should be
considered a trusted action based on trusted information, and the
information SHOULD NOT be considered modifiable as a best practice.

As discussed in [I-D.ietf-stir-passport-rcd], the calling name uses
the display-name value of the From header field [RFC3261] of the
request. Alternatively, for some calls, the calling name may come
from the P-Asserted-ID header field [RFC3325]. This is out of scope
for Call-Info header field, so will not be covered in this document
further.

For logos or icons that can represent the calling party, the
'purpose' token "icon" [RFC3261] is used to indicate a URI for an
image resource that can be displayed to the user receiving the SIP
request. For the purpose of this document and the transmission of
RCD, the "icon" 'purpose' token should be used as defined. Section
8.2 provides high-level guidance on image formatting and related
information.

This document defines 'call-reason' as a new parameter for the Call-
Info header field. This parameter carries a string indicating the
reason for the call.

jCard is a comprehensive and extensible mechanism defined in the
STIR RCD framework. While [RFC3261] specifies a "card" 'purpose'
token, the intent of defining a new "rcd-jcard" 'purpose' token is
to use the JSON jCard format [RFC7095] and to provide guidance for
the use and non-use of jCard attributes to describe the calling
party in a communications session as well to provide some security
considerations around that information. These topics are covered in
the next sections.

5. "rcd-jcard" Call-Info 'purpose' Token

   The Call-Info 'purpose' token "rcd-jcard" indicates support of RCD
   associated with the identity of a calling party in a SIP call
   [RFC3261], Section 20.9. The format of a Call-Info header field when
   using the "rcd-jcard" token is as follows.

   The Call-Info header field is defined to include a URI that points
   to a resource that is a jCard JSON object [RFC7095]. The media type
   for the JSON text MUST be set as application/json with a default

encoding of UTF-8 [RFC8259]. This MAY be carried directly in the Call-Info header field URI using the "data" URI scheme. A jCard also MAY be carried in the body of the SIP request bearing this Call-Info header field via the "cid" URI scheme [RFC2392]. Alternatively, the URI MUST define the use HTTPS or a transport that can validate the integrity of the source of the resource as well as the transport channel through which the resource is retrieved. If, in the specific deployment environment of SIP, the source or integrity of the RCD information cannot be trusted, then the use of the STIR RCD framework defined in [I-D.ietf-stir-passport-rcd] should be considered.

The jCard is intended to contain multiple information elements about the calling party. A call and its corresponding single RCD-related Call-Info header field MUST only contain a single "rcd-jcard" token.

The fields like "fn", "photo", or "logo" if used with the use of "icon" calling name in From or P-Asserted-ID header field or purpose token, as described in the previous section, MUST either match or be avoided to allow the called party to clearly determine the intended calling name or icon.

An example of a Call-Info header field is:

Call-Info: <https://example.com/qbranch.json>;purpose=rcd-jcard

An example of the contents of a URL-linked jCard JSON file is shown as follows:

```
["vcard",
  [
    ["version",{},"text","4.0"],
    ["fn",{},"text","Q Branch"],
    ["org",{},"text","MI6;Q Branch Spy Gadgets"],
    ["photo",{},"uri","https://example.com/photos/q-256x256.png"],
    ["logo",{},"uri","https://example.com/logos/mi6-256x256.jpg"],
    ["logo",{},"uri","https://example.com/logos/mi6-64x64.jpg"]
  ]
]
```

An example SIP INVITE using the "data" URI scheme is as follows:

```
INVITE sip:alice@example.com SIP/2.0
Via: SIP/2.0/TLS pc33.atlanta.example.com;branch=z9hG4bKnashds8
To: Alice <sip:alice@example.com>
From: Bob <sip:12155551000@example.com;user=phone>;tag=1928301774>
Call-ID: a84b4c76e66710
Call-Info: <data:application/json,["vcard",[["version",{},"text",
"4.0"],["fn",{},"text","Q Branch"],["org",{},"text","MI6;Q Branch
Spy Gadgets"],["photo",{},"uri","https://example.com/photos/quart
ermaster-256x256.png"],["logo",{},"uri","https://example.com/log
os/mi6-256x256.jpg"],["logo",{},"uri","https://example.com/logos/
mi6-64x64.jpg"]]]\>;purpose=rcd-jcard;call-reason="Rendezvous for
Little Nellie"
CSeq: 314159 INVITE
Max-Forwards: 70
Date: Fri, 25 Sep 2015 19:12:25 GMT
Contact: <sip:12155551000@gateway.example.com>
Content-Type: application/sdp

v=0
o=UserA 2890844526 2890844526 IN IP4 pc33.atlanta.example.com
s=Session SDP
c=IN IP4 pc33.atlanta.example.com
t=0 0
m=audio 49172 RTP/AVP 0
a=rtpmap:0 PCMU/8000
```

   An example SIP INVITE using the "cid" URI scheme is as follows:

```
INVITE sip:alice@example.com SIP/2.0
Via: SIP/2.0/TLS pc33.atlanta.example.com;branch=z9hG4bKnashds8
To: Alice <sip:alice@example.com>
From: Bob <sip:12155551000@example.com;user=phone>;tag=1928301774
Call-ID: a84b4c76e66710
Call-Info: <cid:12155551000@example.com>;purpose=rcd-jcard;
  call-reason="Rendezvous for Little Nellie"
CSeq: 314159 INVITE
Max-Forwards: 70
Date: Fri, 25 Sep 2015 19:12:25 GMT
Contact: <sip:12155551000@gateway.example.com>
Content-Type: multipart/mixed; boundary=boundary1
Content-Length: ...

--boundary1

Content-Type: application/sdp

v=0
o=UserA 2890844526 2890844526 IN IP4 pc33.atlanta.example.com
s=Session SDP
c=IN IP4 pc33.atlanta.example.com
t=0 0
m=audio 49172 RTP/AVP 0
a=rtpmap:0 PCMU/8000

--boundary1

Content-Type: application/json
Content-ID: <12155551000@example.com>

["vcard",[["version",{},"text","4.0"],["fn",{},"text","Q Branch"],
["org",{},"text","MI6;Q Branch Spy Gadgets"],["photo",{},"uri","ht
tps://example.com/photos/quartermaster-256x256.png"],["logo",{},"u
ri","https://example.com/logos/mi6-256x256.jpg"],["logo",{},"uri",
"https://example.com/logos/mi6-64x64.jpg"]]]
```

6. 'call-reason' Call-Info Parameter

   This specification defines a new parameter that extends the overall
   content of the RCD-related Call-Info header field. As other
   parameters may be defined in the future, this parameter is intended
   to be separate and distinct from the other URI and 'purpose' tokens
   that may proceed these parameters.

   This new parameter of the Call-Info header field is called 'call-
   reason'. The 'call-reason' parameter is intended to convey a short
   textual message suitable for display to an end user during call
   alerting. As a general guideline, this message SHOULD be no longer
   than 64 characters; displays that support this specification may be

forced to truncate messages that cannot fit onto a screen. This
message conveys the caller's intention in contacting the callee. It
is an optional parameter, and the sender of a SIP request cannot
guarantee that its display will be supported by the terminating
endpoint. The manner in which this reason is set by the caller is
outside the scope of this specification.

An alternative approach would have been to use the value of Subject
header field [RFC3261] to convey the reason for the call. However,
because the Subject header field has seen little historical use in
SIP implementations and its specification describes its potential
use in filtering, it seemed prudent to define a new means of
carrying a call reason indication.

An example of a Call-Info header field value with the "call-reason"
parameter follows:

Call-Info: <https://example.com/jbond.json>;purpose=rcd-jcard;
  call-reason="For your ears only"

In the case that there is only a 'call-reason' parameter or any
future parameters that may be defined and no need for a purpose
parameter with no associated URI, it is RECOMMENDED to include a
null data URI, "data:" as the URI. That purpose parameter MUST be
"rcd-jcard" defined in this document to avoid any conflicts with
existing implementations and previously defined purpose parameters.
As an example:

Call-Info: <data:>;purpose=rcd-jcard;
  call-reason="For your ears only"

7. Usage and an Example of Call-Info for RCD

The procedures for the usage of URIs and 'purpose' parameter tokens
should generally follow the procedures defined in [RFC3261]. The
following example of a Call-Info header field shows the use of
multiple 'purpose' parameters to indicate a jCard and an icon and
also a 'call-reason' parameter:

Call-Info: <https://example.com/jbond.json>;purpose=rcd-jcard,
  <https://example.com/jbond.png>;purpose=icon;
  call-reason="For your ears only"

8. Usage of jCard and Property-Specific Usage

Beyond the definition of the specific properties or JSON arrays
associated with each property, this specification defines a few
rules above and beyond [RFC7095] that are specific to the use of
jCard for Call-Info and RCD to ensure there is a minimum level of
supported properties to which every implementation of this

specification should adhere. This includes support for interpreting the value of these properties and the ability to render in some appropriate form the display capabilities of common telephone devices as well as applications, and also includes requirements specific to textual and graphics-capable displays.

8.1. Usage of URIs in jCard

When one or more URIs are used in a jCard, it is important to note that any URI-referenced data, with the exception of the top-level usage of "jcl" as a URI to the jCard itself (unless updated by any future extensions of this specification) MUST NOT contain any URI references. In other words, the jCard can have URI references as defined in the jCard specification and this document, but the content referenced by those URIs MUST NOT have any URIs, and therefore MUST be enforced by the client to not follow those URI references or not render that content to the user if any URI are present in that specific URI linked content. The purpose of this is to control the security and more specifically to align with the content-integrity mechanism defined in [I-D.ietf-stir-passport-rcd]. The authors do not believe there is a scenario for which deeper URI references would be required or even supported by the typical use of current jCard properties. However, because jCard is extensible, this rule is set to restrict further extension without the proper consideration of security and integrity properties of both Call-Info usage as well as the RCD and STIR signing of the data [I-D.ietf-stir-passport-rcd] [RFC8224].

8.2. Usage of Multimedia Data in jCard or with Icon

For the use of the 'purpose' token "icon" or for the cases where the jCard either incorporates URIs or includes digital images and sounds directly via Base64 encoding, we provide recommendations to facilitate the successful decoding and rendering of these images and media formats.

For images, such as for the "photo" and "logo" properties, the default image formats SHOULD be PNG [ISOPNG] or JPEG [ITUJPEG], as these files are commonly used to support 24-bit RGB images. Supporting older telephone devices that only support bitmap (BMP) images [RFC7903] with a lower bit range (e.g., 16 bit, 8 bit, or 1 bit), or grayscale, or 1-bit black and white color displays, should be considered optional or even not recommended because, at the time of writing, they are becoming increasingly rare (i.e., typically, devices either have color or color-aware graphical displays that support PNG or JPEG formats or they are exclusively textual displays).

In addition, vector images are increasingly popular to use for icons because they support scalable images without having to send multiple resolutions. The SVG format has gained wide support as of this writing as a common format for vector images. At a minimum, the SVG Tiny 1.2 specification [W3C-SVGTiny1.2] SHOULD be supported as an additional default format for devices.

For the cases where image files are referenced by URIs as file resources, this document defines a character string that SHOULD be concatenated onto the end of a file name, but before the file extension, that signals the height and width of the image to the end device for the convenience of determining the appropriate resolution to retrieve without the need to retrieve all the image files. It is also recommended that images have a square aspect ratio with equal height and width and with a power of two value for the number of pixels (e.g., 32x32, 128x128, 512x512). The format of the string should be "filename-HxW", where "filename" is a unique string representing the file, "H" represents the height in pixels, and "W" represents the width in pixels.

It is appropriate and useful to include multiple versions of images or sounds so that endpoints that cannot support all formats or resolutions can select the format they do support. The convention that is RECOMMENDED is that files that refer to the same content should use the same filename portion. If the image format has a specific resolution, the HxW portion of the filename should correspond to the pixel resolution. The file extension should reference the file type (e.g., filename.png, filename.svg, or filename.jpg) or (e.g., filename-32x32.png, filename-64x64.png, filename.svg, filename-32x32.jpg, or filename-64x64.jpg).

Because this is a complex and often debated topic that has evolved over the many years of advances in image coding and display technologies, we suggest relying on either future specifications or industry forum specifications that might correspond to supporting particular classes of devices to further define how URIs can reference appropriate image formats and files.

For audio files, the recommendation is to provide mp3, m4a or mp4, or wav files [RFC2361], although the usage of sound (for example, a special ring tone for a particular caller) is not well defined in this specification. Future documents should consider both usage and potential security risks of playing sounds that are not specifically authorized by a device user.

8.3. Cardinality

Property cardinalities are indicated, for convenience, using the following notation and follow the guidance of jCard [RFC7095] and

vCard [RFC6350], which is based on ABNF (see
[RFC5234], Section 3.6):

```
+-------------+--------------------------------------------------+
| Cardinality | Meaning                                          |
+-------------+--------------------------------------------------+
|      1      | Exactly one instance per jCard MUST be present.  |
|     *1      | Exactly one instance per jCard MAY be present.   |
|     1*      | One or more instances per jCard MUST be present. |
|      *      | One or more instances per jCard MAY be present.  |
+-------------+--------------------------------------------------+
```

8.4. Identification Properties

The following properties, initially defined in [RFC6350], hold the
identity information of the entity associated with the jCard. This
subset of properties selected for this document are relevant to
telephone and messaging applications. jCard is an extensible object;
therefore, there may be future specifications that extend the set of
properties relevant to the applications that implement this
specification.

8.4.1. "fn" Property

The "fn" property provides a formatted text corresponding to the
name of the object the jCard represents. Reference: [RFC6350],
Section 6.2.1.

Value type: A single text value.

Cardinality: 1*

Example:
["fn", {}, "text", "Mr. John Q. Public\, Esq."]

8.4.2. "n" Property

The "n" property provides the components of the name of the object
the jCard represents. Reference: [RFC6350], Section 6.2.2.

Value type: A single structured text value. Each component can have
multiple values.

Cardinality: *1

Example:
["n", {}, "text", "Public;John;Quinlan;Mr.;Esq."]
["n", {}, "text", "Stevenson;John;Philip,Paul;Dr.;Jr.,M.D.,A.C.P."]

8.4.3. "nickname" Property

The "nickname" property provides the text corresponding to the nickname of the object the jCard represents. Reference: [RFC6350], Section 6.2.3.

Value type: One or more text values separated by a COMMA character (U+002C).

Cardinality: *

Example:
```
["nickname", {}, "text", "Robbie"]
["nickname", {}, "text", "Jim,Jimmie"]
["nickname", {}, "text", "TYPE=work:Boss"]
```

8.4.4. "photo" Property

The "photo" property provides image or photograph information that annotates some aspect of the object the jCard represents. Reference: [RFC6350], Section 6.2.4.

In addition to the definition of jCard, and to promote interoperability and proper formatting and rendering of images, the photo SHOULD correspond to a square image with the size of 128x128, 256x256, 512x512, or 1024x1024 pixels.

Value type: A single URI.

Cardinality: *

Example:
```
["photo", {}, "uri", "http://www.example.com/jqpublic-256x256.png"]
```

8.5. Delivery Addressing Properties

This property is concerned with information related to the delivery address of the jCard object.

8.5.1. "adr" Property

The "adr" property provides the delivery address of the object the jCard represents. Reference: [RFC6350], Section 6.3.1.

Value type: A single structured text value separated by the SEMICOLON character (U+003B).

Cardinality: *

Example:
```
["adr", {"type":"work"}, "text",
  ["", "", "3100 Massachusetts Avenue NW", "Washington", "DC",
  "20008", "USA"]
```

8.6. Communications Properties

These properties describe how to communicate with the object the
jCard represents.

8.6.1. "tel" Property

The "tel" property provides the telephone number for the object the
jCard represents. Reference: [RFC6350], Section 6.4.1.

Relative to the SIP From header field value, this information may
provide an alternate telephone number or other related telephone
numbers for other uses.

It is important to note that any of the potential instances of the
"tel" property should not be considered part of the authentication
or verification part of STIR [RFC8224] or required to match the
"orig" claim in the PASSporT [RFC8225]. These telephone numbers can
be for contact, fax, or other purposes aligned with the general
usage of jCard and vCard, but the potential confusion of the callee
when provided with multiple telephone numbers versus the actual,
verified telephone number should be considered from a general policy
point of view.

Value type: By default, it is a single free-form text value (for
backward compatibility with vCard 3), but it SHOULD be reset to a
URI value. It is expected that the URI scheme will be "tel", as
specified in [RFC3966], but other schemes MAY be used.

Cardinality: *

Example:
```
["tel", { "type": ["voice", "text", "cell"], "pref": "1" }, "uri",
  "tel:+1-202-555-1000"]
["tel", { "type": ["fax"] }, "uri", "tel:+1-202-555-1001"]
```

8.6.2. "email" Property

The "email" property provides the electronic mail address of the
object the jCard represents. Reference: [RFC6350], Section 6.4.2.

Value type: A single text value.

Cardinality: *

Example:
```
["email", {"type":"work"}, "text", "jqpublic@xyz.example.com"]
["email", {"pref":"1"}, "text", "jane_doe@example.com"]
```

8.6.3. "lang" Property

The "lang" property provides the language(s) that may be used for
communicating with the object the jCard represents. Reference:
[RFC6350], Section 6.4.4.

Value type: A single language-tag value.

Cardinality: *

Example:
```
["lang", {"type":"work", "pref":"1"}, "language-tag", "en"]
["lang", {"type":"work", "pref":"2"}, "language-tag", "fr"]
["lang", {"type":"home"}, "language-tag", "fr"]
```

8.7. Geographical Properties

These properties provide geographical information associated with
the object the jCard represents.

8.7.1. "tz" Property

The "tz" property provides the time zone of the object the jCard
represents. Reference: [RFC6350], Section 6.5.1.

Note: the reference for time-zone names is https://www.iana.org/
time-zones.

Value type: The default is a single text value. It can also be reset
to a single URI or a UTC-offset value.

Cardinality: *

Example:
```
["tz", {}, "text", "Raleigh/North America"]
```

8.7.2. "geo" Property

The "geo" property provides the global positioning of the object the
jCard represents. Reference: [RFC6350], Section 6.5.2.

Value type: A single URI.

Cardinality: *

Example:
["geo", {}, "uri", "geo:37.386013,-122.082932"]

8.8. Organizational Properties

These properties are concerned with information associated with
characteristics of the organization or organizational units of the
object that the jCard represents.

8.8.1. "title" Property

The "title" property has the intent of providing the position or job
of the object the jCard represents. Reference [RFC6350],
Section 6.6.1.

Value type: A single text value.

Cardinality: *

Example:
["title", {}, "text", "Research Scientist"]

8.8.2. "role" Property

The "role" property has the intent of providing the position or job
of the object the jCard represents. Reference [RFC6350],
Section 6.6.2.

Value type: A single text value.

Cardinality: *

Example:
["role", {}, "text", "Project Leader"]

8.8.3. "logo" Property

The "logo" property has the intent of specifying a graphic image of
a logo associated with the object the jCard represents. Reference
[RFC6350], Section 6.6.3.

Value type: A single URI.

Cardinality: *

Example:
```
["logo", {}, "uri", "http://www.example.com/abccorp-512x512.jpg"]

["logo", {}, "uri", "data:image/jpeg;base64,MIICajCCAdOgAwIBAgIC
      AQEEBQAwdzELMAkGA1UEBhMCVVMxLDAqBgNVBAoTI05ldHNjYXBlIENvbW11bm
      ljYXRpb25zIENvcnBvcmF0aW9uMRwwGgYDVQQLExNJbmZvcm1hdGlvbiBTeXN0
      <...the remainder of base64-encoded data...>"]
```

8.8.4. "org" Property

   The "org" property has the intent of specifying the organizational
   name and units of the object the jCard represents. Reference
   [RFC6350], Section 6.6.4.

   Value type: A single structured text value consisting of components
   separated by the SEMICOLON character (U+003B).

   Cardinality: *

Example:
```
["org", {}, "text", "ABC\, Inc.;North American Division;Marketing"]
```

8.9. Explanatory Properties

   These properties provide additional information such as notes or
   revisions specific to the jCard.

8.9.1. "categories" Property

   The "categories" property specifies application category information
   about the object the jCard represents. Reference: [RFC6350],
   Section 6.7.1.

   Value type: One or more text values separated by a COMMA character
   (U+002C).

   Cardinality: *

Example:
```
["categories", {}, "text", "TRAVEL AGENT"]

["categories", {}, "text", "INTERNET,IETF,INDUSTRY"]
```

8.9.2. "note" Property

   The "note" property specifies supplemental information or a comment
   about the object the jCard represents. Reference: [RFC6350],
   Section 6.7.2.

   Value type: A single text value.

```
   Cardinality: *

Example:
["note", {}, "text", "This fax number is operational 0800 to 1715
          EST\, Mon-Fri."]
```

8.9.3. "sound" Property

The "sound" property specifies digital sound content information
that annotates some aspect of the object the jCard represents. This
property is often used to specify the proper pronunciation of the
name property value of the jCard. Reference: [RFC6350],
Section 6.7.5.

Value type: A single URI.

Cardinality: *

```
Example:
["sound", {}, "uri", "https://www.example.com/pub/logos/abccorp.mp3"]

["sound", {}, "uri", "data:audio/basic;base64,MIICajCCAdOgAwIBAgICBE
     AQEEBQAwdzELMAkGA1UEBhMCVVMxLDAqBgNVBAoTI05ldHNjYXBlIENvbW11bm
     ljYXRpb25zIENvcnBvcmF0aW9uMRwwGgYDVQQLExNJbmZvcm1hdGlvbiBTeXN0
     <...the remainder of base64-encoded data...>"]
```

8.9.4. "uid" Property

The "uid" property specifies a globally unique identifier
corresponding to the object the jCard represents. Reference:
[RFC6350], Section 6.7.6.

Value type: A single URI value. It MAY also be reset to free-form
text.

Cardinality: *1

```
Example:
["uid", {}, "uri", "urn:uuid:f81d4fae-7dec-11d0-a765-00a0c91e6bf6"]
```

8.9.5. "url" Property

The "url" property specifies a uniform resource locator associated
with the object the jCard represents. Reference: [RFC6350],
Section 6.7.8.

There are potential security and privacy implications of providing
URLs with telephone calls. The end client receiving a jCard with a
"url" property MUST only display the URL and not automatically
follow the URL or provide automatic preview of the URL, and

generally provide good practices in making it clear to the user it
is their choice to follow the URL in a browser context consistent
with all of the common browser security and privacy practices
available on most consumer OS environments.

Value type: A single uri value.

Cardinality: *

Example:
["url", {}, "uri", "https://example.org/french-rest/chezchic.html"]

8.9.6. "version" Property

The "version" property MUST be included and is intended to specify
the version of the vCard specification used to format this vCard.
Reference: [RFC6350], Section 6.7.9.

Value type: A single text value.

Cardinality: 1

Example:
["version", {}, "text", "4.0"]

9. Extension of jCard

Part of the intent of using jCard is to leverage its extensibility
to define new properties to relay new information related to a
caller. This capability is inherently supported as part of standard
extensibility. However, usage of those new properties should be
published and registered following [RFC7095], Section 3.6 or new
specifications.

10. IANA Considerations

10.1. SIP Call-Info Header Field 'purpose' Parameter Token

This document defines the token "rcd-jcard" as a new value for the
'purpose' parameter of the Call-Info header field in the "Header
Field Parameters and Parameter Values" registry defined by
[RFC3968].

```
+--------------+----------------+-------------------+------------+
| Header Field | Parameter Name | Predefined Values | Reference  |
+--------------+----------------+-------------------+------------+
| Call-Info    | purpose        | Yes               | [this RFC] |
+--------------+----------------+-------------------+------------+
```

10.2. SIP Call-Info Header Field 'call-reason' Parameter

This document defines the 'call-reason' generic parameter for use as a new parameter in the Call-Info header field in the "Header Field Parameters and Parameter Values" registry defined by [RFC3968]. The parameter's token is "call-reason", and it takes the value of a quoted string.

```
+--------------+----------------+-------------------+------------+
| Header Field | Parameter Name | Predefined Values | Reference  |
+--------------+----------------+-------------------+------------+
| Call-Info    | call-reason    | No                | [this RFC] |
+--------------+----------------+-------------------+------------+
```

11. Security Considerations

Revealing information such as the name, location, and affiliation of a person necessarily entails certain privacy risks. The SIP Call-Info header field has no particular confidentiality requirement, as the information sent in SIP is in the clear anyway. Transport-level security can be used to hide information from eavesdroppers, and the same confidentiality mechanisms would protect any Call-Info or jCard information carried or referred to in SIP.

The security framework of signing and providing integrity to this data [I-D.ietf-stir-passport-rcd] should be followed, and the use of constraints and other certificate-based associations should be considered. This includes considerations for information about the calling party, which is generally constant, versus per-call data, which is more transient. This also includes the relationship that certificates with constraints presents to how they relate to each other and how that information is managed, protected, and associated with the correct call corresponding to a calling party.

12. References

12.1. Normative References

[I-D.ietf-stir-passport-rcd] Wendt, C. and J. Peterson, "PASSporT Extension for Rich Call Data", Work in Progress, Internet-Draft, draft-ietf-stir-passport-rcd-26, 5 June 2023, <https://datatracker.ietf.org/doc/html/draft-ietf-stir-passport-rcd-26>.

[ISOPNG] ISO/IEC, "Information technology -- Computer graphics and image processing -- Portable Network Graphics (PNG),

                    Functional specification, ISO/IEC 15948:2004", March
                    2004.

   [ITUJPEG]   ITU-T, "Information technology - Digital compression and
               coding of continuous-tone still images, JPEG File
               Interchange Format (JFIF) ITU-T Recommendation T.871,
               ISO/IEC 10918-5, 2013", May 2013.

   [RFC2119]   Bradner, S., "Key words for use in RFCs to Indicate
               Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/
               RFC2119, March 1997, <https://www.rfc-editor.org/rfc/
               rfc2119>.

   [RFC2392]   Levinson, E., "Content-ID and Message-ID Uniform Resource
               Locators", RFC 2392, DOI 10.17487/RFC2392, August 1998,
               <https://www.rfc-editor.org/rfc/rfc2392>.

   [RFC3261]
               Rosenberg, J., Schulzrinne, H., Camarillo, G., Johnston,
               A., Peterson, J., Sparks, R., Handley, M., and E.
               Schooler, "SIP: Session Initiation Protocol", RFC 3261,
               DOI 10.17487/RFC3261, June 2002, <https://www.rfc-
               editor.org/rfc/rfc3261>.

   [RFC3966]   Schulzrinne, H., "The tel URI for Telephone Numbers", RFC
               3966, DOI 10.17487/RFC3966, December 2004, <https://
               www.rfc-editor.org/rfc/rfc3966>.

   [RFC3968]   Camarillo, G., "The Internet Assigned Number Authority
               (IANA) Header Field Parameter Registry for the Session
               Initiation Protocol (SIP)", BCP 98, RFC 3968, DOI
               10.17487/RFC3968, December 2004, <https://www.rfc-
               editor.org/rfc/rfc3968>.

   [RFC5234]   Crocker, D., Ed. and P. Overell, "Augmented BNF for
               Syntax Specifications: ABNF", STD 68, RFC 5234, DOI
               10.17487/RFC5234, January 2008, <https://www.rfc-
               editor.org/rfc/rfc5234>.

   [RFC6350]   Perreault, S., "vCard Format Specification", RFC 6350,
               DOI 10.17487/RFC6350, August 2011, <https://www.rfc-
               editor.org/rfc/rfc6350>.

   [RFC7095]   Kewisch, P., "jCard: The JSON Format for vCard", RFC
               7095, DOI 10.17487/RFC7095, January 2014, <https://
               www.rfc-editor.org/rfc/rfc7095>.

   [RFC7519]   Jones, M., Bradley, J., and N. Sakimura, "JSON Web Token
               (JWT)", RFC 7519, DOI 10.17487/RFC7519, May 2015,
               <https://www.rfc-editor.org/rfc/rfc7519>.

[RFC7852]   Gellens, R., Rosen, B., Tschofenig, H., Marshall, R.,
            and J. Winterbottom, "Additional Data Related to an
            Emergency Call", RFC 7852, DOI 10.17487/RFC7852, July
            2016, <https://www.rfc-editor.org/rfc/rfc7852>.

[RFC7903]   Leonard, S., "Windows Image Media Types", RFC 7903, DOI
            10.17487/RFC7903, September 2016, <https://www.rfc-
            editor.org/rfc/rfc7903>.

[RFC8174]   Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC
            2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174,
            May 2017, <https://www.rfc-editor.org/rfc/rfc8174>.

[RFC8224]   Peterson, J., Jennings, C., Rescorla, E., and C. Wendt,
            "Authenticated Identity Management in the Session
            Initiation Protocol (SIP)", RFC 8224, DOI 10.17487/
            RFC8224, February 2018, <https://www.rfc-editor.org/rfc/
            rfc8224>.

[RFC8225]   Wendt, C. and J. Peterson, "PASSporT: Personal Assertion
            Token", RFC 8225, DOI 10.17487/RFC8225, February 2018,
            <https://www.rfc-editor.org/rfc/rfc8225>.

[RFC8259]   Bray, T., Ed., "The JavaScript Object Notation (JSON)
            Data Interchange Format", STD 90, RFC 8259, DOI 10.17487/
            RFC8259, December 2017, <https://www.rfc-editor.org/rfc/
            rfc8259>.

[W3C-SVGTiny1.2] W3C, "Scalable Vector Graphics (SVG) Tiny 1.2", 22
            December 2008, <https://www.w3.org/TR/SVGMobile/>.

12.2. Informative References

[RFC2361]   Fleischman, E., "WAVE and AVI Codec Registries", RFC
            2361, DOI 10.17487/RFC2361, June 1998, <https://www.rfc-
            editor.org/rfc/rfc2361>.

[RFC3325]   Jennings, C., Peterson, J., and M. Watson, "Private
            Extensions to the Session Initiation Protocol (SIP) for
            Asserted Identity within Trusted Networks", RFC 3325, DOI
            10.17487/RFC3325, November 2002, <https://www.rfc-
            editor.org/rfc/rfc3325>.

[RFC7340]   Peterson, J., Schulzrinne, H., and H. Tschofenig, "Secure
            Telephone Identity Problem Statement and Requirements",
            RFC 7340, DOI 10.17487/RFC7340, September 2014, <https://
            www.rfc-editor.org/rfc/rfc7340>.

Acknowledgements

We would like to thank David Hancock, Alec Fenichel, and other members of the SIPCORE and STIR working groups for their helpful suggestions and comments during the creation of this document.

Authors' Addresses

Chris Wendt
Somos Inc.
United States of America

Email: chris@appliedbits.com

Jon Peterson
Neustar Inc.
1800 Sutter St Suite 570
Concord, CA 94520,
United States of America

Email: jon.peterson@neustar.biz