The Calling Party's Category tel URI Parameter
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Abstract

   This document specifies a new parameter for the tel URI that
   represents the Calling Party's Category, a parameter used in SS7 ISUP
   and other telephony signaling protocols.

1. Introduction

   SS7 ISUP [4] defines a Calling Party's Category (CPC) parameter that

characterizes the station used to originate a call and carries other
important state that can describe the originating party. When
telephone numbers are contained in URIs, such as the tel URI [2], it
may be desirable to communicate any CPC associated with that
telephone number or, in the context of a call, the party calling from
it.

Note that in some networks (including North America), the Originating
Line Information (OLI) parameter is used to carry this information in
ANSI ISUP [9] rather than the CPC parameter. Legacy multifrequency
(MF) signaling networks carry this information in the ANI II
Digits [13]. The tel URI parameter specified in this document is
designed to carry data from these sources as well.

2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
document are to be interpreted as described in RFC 2119 [1].

3. Parameter Definition

The Calling Party's Category is represented as a tel URI parameter.
The ABNF [3] syntax is as follows. The 'par' production is defined
in RFC3966 [2]. The "/=" syntax indicates an extension of the
production on the left-hand side:

```
par            /= cpc
cpc             = cpc-tag "=" cpc-value
cpc-tag        = "cpc"
cpc-value      = "ordinary" / "prison"   / "police"  / "test"
                  "operator" / "payphone" / "unknown" /
                  "hospital" / "cellular" / "cellular-roaming" /
                   genvalue
genvalue       = 1*(alphanum / "-" / "." )
```

The semantics of these Calling Party's Category values are described
below:
    ordinary: The caller has been identified, and has no special
    features.
    test: This is a test call that has been originated as part of a
    maintenance procedure.

operator: The call was generated by an operator position.
payphone: The calling station is a payphone.
prison: The calling station is in a prison.
hotel: The calling station is in a hotel or motel.
hospital: The calling station is in a medical facility.
police: The calling station is associated with a branch of law
enforcement.
cellular: The calling station is a radio-telephone operating in
its home network.
cellular-roaming: The calling station is a radio-telephone roaming
in another network
unknown: The CPC could not be ascertained.

An example of the syntax of the CPC parameter (in a small fragment of
a SIP [8] message) is given below:

        INVITE sip:bob@biloxi.example.com SIP/2.0
        To: "Bob" <sip:bob@biloxi.example.com>
        From: <tel:+17005554141;cpc=payphone>;tag=1928301774

4. Usage

The CPC is generally useful only when describing the originator of a
telephone call. Therefore, when this parameter is used in an
application such as SIP, it is recommended that the parameter be
applied to URIs that characterize the originator of a call (such as a
SIP URI or tel URI in the From header field of a SIP message). Note
that many Calling Party's Category values from the PSTN were
intentionally excluded from the cpc parameter as they are either
meaningless outside of the PSTN or can be represented using another
existing concept. For example, the language of an operator can be
expressed more richly using the Accept-Language header in SIP than in
the cpc parameter. Similarly the priority of a call is a
characteristic of the call and not the calling party.

It is anticipated that this URI parameter will be used primarily by
gateways that interwork ISUP or ANI II networks with SIP networks.
Various SIP network intermediaries might consult the CPC as they make
routing decisions, although no specific behavior is prescribed in
this document. While no specific mapping of the various ISUP
parameters that contain CPC data is offered in this document,
creating such a mapping would be trivial.

While the CPC could be conveyed using the ISUP tunnelling mechanism
described in RFC 3372 [10], this technique is widely regarded by the
implementation community as overkill for the problem of conveying CPC
information. For example, the CPC parameter provides a convenient

way for SIP intermediaries to make routing decisions based on the CPC
without having to implement an ISUP parser. The CPC paremeter
provides a simple, convenient form of CPC interoperability between
ISUP and ANI II, which is otherwise poorly addressed in RFC 3372.
Indeed when a SIP intermediary makes routing decisions for a call
where both the originating and the terminating gateways natively use
ANI II, the ISUP tunnelling approach is especially unattractive,
requiring each of the three devices to perform a translation into an
otherwise unneeded PSTN protocol.

If the CPC parameter is not present, consumers of the CPC should
treat the URI as if it specified a CPC of "ordinary".

At most, one instance of the CPC can be associated with a particular
URI.

5. Security Considerations

There are three potential risks specific to the information provided
by the Calling Party's Category: leakage of potentially private
information, the threat of tampering with the CPC to add false CPC
values, and the threat of tampering with the CPC to remove actual CPC
values.

The information contained in the CPC parameter may be of a private
nature, and it may not be appropriate for this value to be revealed
to the destination user (typically it would not be so revealed in the
PSTN). However, the calling party's category is often discoverable
or easily guessable from the calling party's phone number. For that
reason it is unlikely that this information is significantly more
privacy sensitive than the telephone number itself. The same
techniques used to provide complete or partial telephone number
privacy in SIP are appropriate to apply to the CPC parameter as well.
For more information about privacy issues in SIP see RFC3323 [6].
The mechanism described in RFC 3325 [7] may also be relevant for
maintaining partial privacy or the CPC within a trusted
administrative domain or federation of domains as described in RFC
3324 [11].

Making a call with a falsified CPC (ex: hospital, police, or
operator) could allow the caller to gain access to resources or
information not otherwise available. Likewise removing an
"undesirable" CPC value (ex: prison or hotel) could allow the caller
to bypass various restrictions in the telephone network. For that
reason, agents which expect CPC values SHOULD take care to insure the
integrity and authenticity of the CPC parameter. The RECOMMENDED
mechanism to protect the entire calling party address along with the

CPC parameter is the SIP Identity [5] mechanism. Alternatively,
agents within an adminstrative domain or federation of domains MAY
use the mechanism described in RFC 3325 [7] to place the CPC
parameter in a P-Asserted-Identity header field.

The SIP Identity mechanism provides a signature over the URI in the
From header field of a SIP request. It can sign a tel URI alone or a
tel URI embedded in a SIP or SIPS URI, but it provides stronger
protection against tampering when the tel URI is embedded in a SIP or
SIPS URI. Because there is no direct correlation between a tel URI
and an Internet domain, the receiver can use a list of domains from
which it will trust CPC information, or a list of root certificates
which are associated with trusting CPC information.

Otherwise, this mechanism adds no new security considerations to
those discussed in [2].

6. IANA Considerations

This document extends the registry of tel URI parameters defined in
[12] with one new parameter described below.

Parameter Name: cpc
Predefined Values: Yes
Reference: This document

7. Contributors and Acknowledgments

The original version of this document was written by Jon Peterson.

Thanks to Takuya Sawada for a detailed review.

8. References

8.1. Normative References

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8.2. Informational References

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URIs

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