IANA Registration for an Enumservice
Calling Name Delivery (CNAM) Information
draft-ietf-enum-cnam-01

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Abstract

This document registers the Enumservice "pstn" and the compound subtypes subtype "cnam" and "data" using the URI scheme 'data:', as

Shockey & Livingood Expires Oct 2006 [Page 1]
This data is used to facilitate the transfer of Calling Name Delivery (CNAM) data for calls that originate on the PSTN that may be displayed on VoIP or other Real-time Client User Agents (CUA).

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1. 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 BCP 14, RFC-2119 [1].

2. Introduction

ENUM (E.164 Number Mapping, RFC 3761 [1]) is a system that transforms E.164 numbers (The International Public Telecommunication Number Plan, ITU-T Recommendation E.164 [2]) into domain names and then uses DNS (Domain Name System, RFC 1034 [3]) delegation through NS records and NAPTR records (Dynamic Delegation Discovery System (DDDS) Part Three: The Domain Name System (DNS) Database, RFC 3403 [4]) to query the services that are available for a specific domain name.
This document registers an Enumservice according to the guidelines given in RFC 3761 [1], to be used for provisioning a NAPTR [4] resource record to indicate a type of functionality associated with an end point and/or telephone number. The registration is defined within the DDDS (Dynamic Delegation Discovery System [4][5][6][7][8]) hierarchy, for use with the "E2U" DDDS Application defined in RFC 3761. This document also registers an IANA application specific media type 'application/cnam'.

3. IANA Enumservice Registration:

The purpose of this Enumservice is to enable service providers to place Calling Name Delivery information into ENUM databases or to send ENUM queries to a protocol converter that would have access to the SS7 Network. This, in turn, could enable such parties to offer Calling Name Delivery services using the technology provided by RFC 3761.

The service parameters defined in RFC 3761 dictate that a "type" and one or more "subtype" should be specified. Within this set of specifications the convention is assumed that the "type" (being the more generic term) defines the service and at least one of the "subtype" defines the URI scheme.

In this document, one type is specified, "pstn" and one compound subtype cnam:data with the URI scheme specified, 'data:', as specified in RFC 2397 [9].

4. Definition of CNAM Data

Caller Display Name is a data string of up to 15 ASCII characters of information associated with a specific calling party number [13] [14] [15] [16] [17]. In the Public Switched Telephone Network (PSTN) this data is sent by the originating network only at the specific request of the terminating network via a SS7 Transaction Capabilities Application Part (TCAP) response message.

5. IANA Enumservice Registration for PSTN Data "cnam"

Enumservice Name: "cnam"

Enumservice Type: "pstn"

Enumservice Subtypes: "cnam"

Enumservice Subtypes: "data"
URI Schemes: 'data:'

Functional Specification:

This Enumservice indicates that a resource record contains Calling Name Delivery Information that can be addressed by the associated 'data' URI scheme [RFC 2397] and a specific media type will be defined as application/cnam in order to facilitate the display of Calling Party information from a PSTN endpoint to a VoIP Client User Agent or other application.

Security Considerations: See Section 9.

Intended Usage: COMMON

Authors:

Richard Shockey and Jason Livingood, et. al. (for author contact detail see Authors’ Addresses section)

Any other information the author deems interesting:

None

6. Structure of CNAM data

RFC 2397 specifies the structure and parameters for the data URI as follows

dataurl    := "data:" [ mediatype ] [ ";base64" ] "," data
mediatype  := [ type "/" subtype ] *( ";" parameter )
data       := *urlchar
parameter  := attribute "=" value

In order to distinguish the particular media type used within this URL this document specifically registers with IANA the mediatype "application/cnam".

All responses using this specification SHOULD specifically reference the media type "application/cnam"

Enumservice Privacy Responses and Parameters

The PSTN defines several values for CNAM data in the event that there are privacy restrictions on the access to that data or that the data is unavailable. These are defined as "Reason for Absence of Name"
[R3-50] in GR-1188, consequently the following responses to a query from a well known database are reserved.

Within the media type ’application/cnam’ a required parameter ‘unavailable’ is supported as well as two options are defined.

Calling Name Privacy Indicator: ’p’

This parameter is defined, as the Calling Party does not wish to have their Display Name displayed

Usage: data:application/cnam;unavailable=p,

Calling Name Status Indicator

Definition: ’u’

This parameter is defined as ”not available/unavailable” defined as the well known database has no data available for that particular E.164 number

Usage: data:application/cnam;unavailable=u,

7. Distribution of CNAM Data

The distribution of CNAM data is often highly restricted. The NAPTR records described herein probably would not be part of the e164.arpa DNS tree. Distribution of this NAPTR data would be either (a) on a private basis (within a service provider’s internal network, or on a private basis between one or more parties using a variety of security mechanisms to prohibit general public access) or (b) openly available on a national basis according to national regulatory policy.

The authors believe it is most likely that these records will be distributed on a purely private basis. If such data was distributed nationally, a national regulatory body may have jurisdiction, especially since CNAM information may contain Personally Identifying Information [PII]. Such a body may choose to restrict distribution of the data in such a way that it may not pass over that country’s national borders. How PII data is collected, distributed and subsequently regulated is out of the scope of this document.

8. Enumservice CNAM Response Examples

This section documents an example for illustrative purposes. These examples shall in no way limit the various forms that this Enumservice may take.
$ORIGIN 3.1.8.7.1.8.9.5.1.2.1.carrier1.example.
NAPTR 10 100 "u" "E2U+pstn:cnam:data"
"!^.*$!data:application/cnam,Francois%20Marie%20Arouet!".

Should no media type be present in the data URI it is presumed that
the data portion of the URI is ASCII text as per RFC 2397

$ORIGIN 3.1.8.7.1.8.9.5.1.2.1.carrier1.example.
NAPTR 10 100 "u" "E2U+pstn:cnam:data"
"!^.*$!data:,Francois%20Marie20%Arouet!".

Escape codes are placed between names per URI formatting in RFC 2396

$ORIGIN 3.1.8.7.1.8.9.5.1.2.1.carrier1.example.
NAPTR 10 100 "u" "E2U+pstn:cnam:data"
"!^.*$!data:application/cnam;unavailable=u,!".

9. Example of E2U+pstn:cnam:data in Call Processing

Typically, the Caller Display Name in the PSTN is delivered to the
called party during the first long silence interval after the first
ringing [16] (see requirement R3-341). If the Called party answers
the call before this, Calling Name may not be delivered.

This is an example of how a switch, proxy, or other calling
application may make use of this Enumservice type during the call
initiation process.

Dialized Number
a) A PSTN user, say from +1-703-729-1234, which is connected to a
calling application, dials an E.164 telephone number: +1-215-
981-7813.
b) The calling application uses the dialed number to form a FQDN
NAPTR query: 3.1.8.7.1.8.9.5.1.2.1.e164.arpa.
c) The DNS finds an E2U+sip record and returns a sip URI for
processing by the calling application: sip:+1-215-981-
7813@carrier2.example;user=phone.SBC1.cox.net
SBC2.cox.net etc
d) A SIP invite is sent to the Called Party proxy at
carrier2.example.
e) The Called Party’s SIP proxy/User Agent sees the SIP message
and before alerting the Called User, performs another ENUM
request using the E164 number in the SIP INVITE’s From field
(i.e. +1-703-729-1234), and sends this query to a well known
database source for CNAM queries:
4.3.2.1.9.2.7.3.0.7.1.cnamedb.networks.example
f) Once the tel URI containing the CNAM data is returned from the well-known database source, the Called party’s proxy/User Agent alerts the Called User about the incoming call and includes the Calling Name in the SIP INVITE sent to the Called User. It then sends a "180 Ringing" message to the Calling party’s proxy, signaling the desire to establish the session. At that point the Called Party’s Client User Agent could display the CNAM data.
g) Once the Called User decides to accept the call, the RTP stream commences and the session begins.

NOTE: The above example describes in general the approach that would be required by a terminating SIP UA/Proxy to acquire and send CNAM information to the Called Party. The exact mechanism, determination of when to issue ENUM-CNAM request, and formatting of SIP messages is beyond the scope of this document.

10. SIP considerations

In those cases where SIP proxy’s must carry CNAM data as P-asserted identity fields as defined in RFC 3325

11. Security Considerations

DNS, as used by ENUM, is a global, distributed database. Thus, an implementation of this Enumservice that uses e164.apra or any other publicly accessible domain means that the information stored there is visible to anyone anonymously. While this is not qualitatively different from publication in a Telephone Directory, it does open or ease access to such data without any indication that such data has been accessed or who has accessed it.

The CNAM ENUMservice defined in this document is assumed to be used in an environment where elements are trusted and where attackers are not supposed to have access to the protocol messages between those elements. Traffic protection between network elements is sometimes achieved by using IPSec and sometimes by physically protecting the network. In any case, it is presumed the environment where the CNAM request-response mechanism will be used can ensure the integrity and the confidentiality of the contents of the CNAM data.

Carriers, service providers, and other users may simply choose not to publish such information in a DNS tree, but may instead simply privately exchange and publish this in their internal ENUM database,
which is only able to be queried by trusted elements of their network, such as soft switches and SIP proxy servers.

An analysis of threats specific to the dependence of ENUM on the DNS and the applicability of DNSSEC [13] to this is provided in RFC 3761 [1]. A thorough analysis of threats to the DNS itself is covered in RFC 3833 [14].

12. Privacy Considerations

This document does not take into consideration issues of privacy as it relates to Personally Identifying Information transmitted over IP networks. Service providers using this query response technique are advised that many national jurisdictions have strict regulations on the use of Caller Display Name data and that National Regulatory Authorities may have special regulations that permit subscribers to block the use of such data before call setup. Other jurisdictions have services known as anonymous caller rejection, meaning that calls made from a system where Calling Line Identification and Caller Display Name are blocked are prevented from establishing a session.

13. Internationalized Character Set Considerations

ANSI standards specify the use of ASCII for in the response to TCAP queries for Caller Display Name. This specification does not preclude the use of internationalized characters within the data URI, nor does it preclude the use of more than 15 characters. As a practical matter, however, it is recommended that the data URI be no longer than 64 characters.

14. IANA Registration Template for Media Type "application/cnam"

To: ietf-types@iana.org
Subject: Registration of media type application/cnam

Type name: application
Subtype name: cnam

Required parameters: unavailable

Optional parameters:
Two optional parameters are defined.
Calling Name Privacy Indicator: ‘p’
This parameter defined as the Calling Party does not wish to have their Display Name displayed.

Intended usage: ‘unavailable=p’

Calling Name Status Indicator: ‘u’

This parameter is defined as "not available/unavailable" defined as data is available for that particular E.164 number.

Intended Usage : ‘unavailable=u’

Encoding considerations: (none)

Security considerations:

Interoperability considerations: Published specification: Usage of this media type is defined in RFC 3761

Applications that use this media type: This media type may be used in various forms of SIP applications that interact with PSTN databases for the purpose of displaying Calling Name Information on SIP Client/User agents or other compatible devices.

Additional information:

Magic number(s): None
File extension(s): None
Macintosh file type code(s):None

Person & email address to contact for further information: Richard Shockey [ richard.shockey@neustar.biz or richard@shockey.us ]

Intended usage: Common

Restrictions on usage: This content type is designed to carry potentially personally identifying information and as a consequence, may be subject to restrictions within various national jurisdictions.

Author/Change Controller: This specification is a work item of the IETF ENUM working group, with the mailing list address enum@ierf.org

Other Information:

Security Considerations:
15. IANA Considerations

This document registers the 'cnam' Enumservice using the type "pstn" and the compound subtypes "cnam" and "data" in the Enumservice registry described in the IANA considerations in RFC 3761. Details of this registration are provided in sections 3, 4 and 5 of this document.

This document also registers the media type "application/cnam"

16. References

Normative References


Informative References


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