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transit ioi extension for the P-Charging-Vector header in SIP (Session Initiation Protocol) draft-jesske-dispatch-transit-ioi-00

Abstract

This document adds the term transit-ioi to the P-Charging-Vector Header to mark the transit network in interconnection cases.

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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 [RFC2119].

This document uses terms from [RFC3966].

2. Abbreviations

IMS IP Multimedia Subsystem

ISDN Integrated Service Digital Network

ISUP Integrated Services Digital Network User Part

PSTN Public Switched Telephone Network

SIP Session Initiation Protocol

URI Uniform Resource Identifier

VoIP Voice over IP

3. Overview

In [RFC3455] The P-Charging-Vector Header is defined. This header is used to correlate the charging records generated from diffrent entitis on the path of the call. The normal 3GPP used case covered by this header is a normal call that is originated and terminated within the own network and where originating and an terminating network is diffrent either in roaming cases or interconnection. So the billing and charging matters are normally handled between maximum two networks.

But there are also fixed line carries using the IMS for their purposes. The IMS is the replacement for the PSTN/ISND networks from these operators. The buissenes modells are more complex within a multi operator environment. There are local operators that have not the interconnectivity with all operators, therefore transitcarriers are needed.

In such cases the billing/charging process is spread over 3 Carriers and more carriers. For such scenarios the knowledge of the transit carrier is needed and should be also stated within the P-Charging-Vetor Header.

++	++	++
originating	\ transit	\ term-
Operator	\ Operator	\ minating
	/	/ Operator
	/	/
++	++	++

4. Requirements

REQ-1:

A mechanism is needed to identify the transit carrier within the Charging record.

5. Overall Applicability Statement of the transit-ioi

The IOI identifies both the originating and terminating networks involved in a SIP dialog or transaction outside a dialog. There may an IOI generated from each side of the dialog to identify the network associated with each side. This document adds the transit ioi identifier.

The transit-ioi is added from the eqress SIP proxy, sending the initial request containing a P-Charging-Vector Header.

As described in [RFC3455] the P-Charging-Vector header is applicable within a single private administrative domain or between different administrative domains where there is a trust relationship between the domains. The P-Charging-Vector header is not included in a SIP message sent to another network if there is no trust relationship.

6. Example

We present example in the context of the scenario presented in the following network diagram:

Scenario UA1 --- P1 --- P2 --- P3--- UA2

This example shows the message sequence for an INVITE transaction originating from UA1 eventually arriving at UA2. P1 is an outbound proxy for UA1. In this case P1 also inserts charging information. P1 then routes the call to P2 due to existing interconnection possibilities. P2 routs the call to P3 and P3 terminates the call at

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UA2. Message sequence for INVITE using P-Charging-Vector:

- F1 Invite UA1 -> P1
- INVITE sip:joe@example.com SIP/2.0
- Via: SIP/2.0/UDP 192.0.2.4:5060;branch=z9hG4bKnashds7
- To: sip:joe@example.com
- From: sip:ual@homel.net;tag=456248
- Call-ID: 843817637684230998sdasdh09
- CSeq: 18 INVITE Contact: sip:ual@192.0
- F2 Invite P1 -> P2
- INVITE sip:joe@example.com SIP/2.0
- Via: SIP/2.0/UDP P1.home1.net:5060;branch=z9hG4bK34ghi7a
- Via: SIP/2.0/UDP 192.0.2.4:5060;branch=z9hG4bKnashds7
- To: sip:joe@example.com
- From: sip:ual@homel.net;tag=456248
- Call-ID: 843817637684230998sdasdh09
- CSeq: 18 INVITE Contact: sip:ual@192.0.2.4
- P-Charging-Vector:
- icid-value=1234bc9876e;
- icid-generated-at=192.0.6.8;
- orig-ioi=home1.net
- F3 Invite P2 -> P3
- INVITE sip:joe@example.com SIP/2.0
- Via: SIP/2.0/UDP P2.home1.net:5060;branch=z9hGhG4bK34gh
- Via: SIP/2.0/UDP P1.home1.net:5060;branch=z9hG4bK34ghi7a

Via: SIP/2.0/UDP 192.0.2.4:5060;branch=z9hG4bKnashds7

To: sip:joe@example.com

From: sip:ual@home1.net;tag=456248

Call-ID: 843817637684230998sdasdh09

CSeq: 18 INVITE Contact: sip:ual@192.0.2.4

P-Charging-Vector:

icid-value=1234bc9876e;

icid-generated-at=192.0.6.8;

orig-ioi=home1.net

transit-ioi=transit.xyz.net

7. Syntax definition for transit-ioi

The Syntax of the P-Charging-Vector header syntax as defined within $[\frac{RFC3455}{1}]$ shall be exteded with the transit-ioi value.

transit-ioi = "transit-ioi" EQUAL gen-value

The transit-ioi parameters represent, respectively, the transit interoperator identifier. It is used to correlate charging records between different operators. The transit ioi represents the network responsible for the records in the transit part of the session or standalone request.

<u>8</u>. Security Considerations

The same security considerations as described within <u>RFC3455</u> apply.

9. IANA Considerations

Registration of "transit-ioi" parameter for SIP P-Charging-Vector header.

Registry:

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Header Field	Parameter Name	Predefined Values	Reference
P-Charging-Vector	transit-ioi	No	[this RFC]

10. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", March 1997.
- [RFC3455] "Private Header (P-Header) Extensions to the Session Initiation Protocol (SIP) for the 3rd-Generation Partnership Project (3GPP)", January 2003.
- [RFC3966] "The tel URI for Telephone Numbers", October 2006.

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