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R. Jesske
B. Dreyer
M. Kreipl
R. Schott
Deutsche Telekom

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SIP Product Identifier
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Abstract

Complex telephony networks using SIP signalling such as the IP Multimedia Subsystem (IMS) of the Third Generation Partnership (3GPP) serve diverse customer groups, including business and retail clients, with various products like mobile, fixed, and PBX services. Such services have the problem of different handling of the services. This may end up in a complex analysis of the signalling syntax before starting the required procedures for calls based on their service provided to the customer. With the introduction of microservice based technologies the complexity increases.

This draft describes a generic identification mechanism for SIP dialogs in using an identifier indicating the service/product which the customer is using to allow an efficient processing of the SIP dialog and session.

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1. Introduction

Telephony networks using SIP become more and more complex due to the different users accessing these networks. Operators providing services to their customers are reducing their separate networks to provide diffrent services by one and the same network. So mobile, fixed and business telephony are provided via the same network. Nevertheless there are different requirements and preconditions to be fulfilled by their network to serve the customers. This can result in varying in diffrent registration models through service specific access components and application servers, with procedures and routing potentially differing as well.

To reduce the number of separate components (SIP Proxy and B2BUA) software should provide the capability to differentiate such service approaches instead of providing different networks or at least different components. This document discusses the different approaches in separating services by using protocol solutions.

2. Service Use Cases

2.1. General

Operators deploy a network providing services to customers which have a mobile subscription, a fixed line and/or a business subscription. So for mobile services there are customers having prepaid and postpaid services. Business customers may use a cloud PBX from a service provider, have access via a value added service like an office work place including an communication/conference platform. Retail customers with a plain communication service. Also the combination of several numbers and different access types is possible like mobile and fixed. For such cases the network itself will have numerous entities providing services and functionalities. An example could be an IMS network specified by 3GPP. Such networks have a variety of access network possibilities, different application servers and also different network inter connectivities. With deploying different products on the same network the complexity will increase. Functionalities as mentioned before within the architecture will be based on the products.

The question arises how B2BUA providing services are spread over complex networks. Based on the amount of user groups this can end up in many different B2BUAs which are serving different customer groups with different services as line hunting for business customers or announcement services . For such a routing today a multiple SIP parameters is used to identify the correct routing. It would be the To/From header fields. With using a unique identifier for a specific group the routing is now easier and more efficient.

2.2. Evaluation and identification of possibl emecanisms

2.2.1. Registration token

Using a registration token within the contact header field may be a solution for identifying the product category for the user and can be enriched by the registrar. Stateful entities need to save the token and need to act when the token is received in the SIP INVITE. For that the SIP entity has to evaluate the contact header field and react on the embedded token. This may have some disadvantages. Also all UAs have to store such token. From current experience there are UAs which react with failures when receiving such unknown tokens in a

200 OK (REGISTER).

2.2.2. SIP header approach

In using a SIP header field the identifier can be sent through the network and can be used by each entity which needs to process this information due to different service procedures. We therefore propose the use of the Product-ID SIP header field. The use of the Product ID during registration is a normal registration procedure. It may change within a Re-Register when the customer changes their used products.

SIP Register 200 OK:

200 OK SIP Server -> UA

SIP/2.0 200 OK

Via: SIP/2.0/TLS client.biloxi.example.com:5061;branch=z9hG4bKnashd92
;received=192.0.2.201

From: Bob sip:bob@biloxi.example.com;tag=ja743ks76zlflH

To: Bob sip:bob@biloxi.example.com;tag=37GkEhwl6

Call-ID: 1j9FpLxk3uxtm8tn@biloxi.example.com

CSeq: 2 REGISTER

Contact: sip:bob@client.biloxi.example.com;expires=3600

Content-Length: 0

Product-ID: "PID#1"

SIP INVITE Example: 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:ua1@home1.net;tag=456248

Call-ID: 843817637684230998sdasdh09

CSeq: 18 INVITE

Contact: sip:bob@client.biloxi.example.com;expires=3600

Product-ID: "PID#1"

The advantage in using the SIP header field is that it will be ignored by entities and UAs not knowing the header field.

2.2.3. Conclusion

Considering that the mechanism should be as generic as possible and shall not violate existing implementations the SIP header approach is the preferred one. The danger of end device incompatibility by using registration token is more dangerous than using new SIP headers which are ignored by entities if not implemented.

2.3. Product Identifier

2.3.1. Applicability Statement for Product Identifier

This mechanism is appropriate in environments where SIP services are dependent on SIP elements knowing details about the product used by the customer calling

active mode in enriching SIP with the product identifier

reactive mode by network functions having stored the product identifier on behalf of the customer

2.3.2. Usage of the Product Identifie

UA behaviour B2B UA behavior Stateless/statefull SIP server behaviour Clien server

2.3.3. Product identifier Syntax

The syntax of the Product-ID SIP header field is described as follows:

Product-ID = "Product-ID" HCOLON product-id-spec

product-id-spec = (token / quoted-string) *(SEMI product-id-param)
product-id-param = generic-param

3. Security Considerations

An UA may setup a product identifier that is not allowed for the current usage ie customer connected. The network has to take care of such requests with wrong identifiers, to save the network and customer when provding wrong services or services which do not apply for that profile.

4. Acknowledgments

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5. References

5.1. Normative References

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Authors' Addresses

Roland Jesske
Deutsche Telekom
Ida-Rhodes-Str. 2
64295 Darmstadt
Germany
Email: r.jesske@telekom.de
URI: www.telekom.de

Bastian Dreyer
Deutsche Telekom
Budapester Straテタ 18
20359 Hamburg
Germany
Email: Bastian.dreyer@telekom.de
URI: www.telekom.de

Michael Kreipl
Deutsche Telekom
Dieselstr. 43
90441 Nテシrnberg
Germany
Email: michael.kreipl@telekom.de
URI: www.telekom.de

Roland Schott
Deutsche Telekom
Ida-Rhodes-Str. 2
64295 Darmstadt
Germany
Email: roland.schott@telekom.de
URI: www.telekom.de