The SIP Access Network Info header

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1. Abstract

This document defines the private SIP extension header P-Access-Network-Info. This mechanism is useful in SIP networks that are partitioned, such as 3G wireless networks which are partitioned at the SIP layer into "access" and "home" networks. SIP User Agents may use this header to relay information about the access network to serving proxies in their home network. The serving proxy may then use this information to optimize services for the UA. For example, a 3GPP terminal uses this header to pass information about the access network such as radio access technology and cell ID to its home service.

2. Conventions used in this document

In this document, the key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULDN'T", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" are to be interpreted as described in RFC 2119 [1] and indicate requirement levels for compliant implementations.

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4. Introduction

There are many cases where a user is accessing their home network services via a particular access network. An example is a 3GPP wireless terminal that accesses a SIP server via the UMTS Radio Access Network. Other examples include a laptop connected to a wireless LAN at an airport, or a laptop connected to a local ISP from a hotel room.

In this document we define an access network as any network that provides a user with access to the SIP capabilities or services provided by the home network of that user.

5. Overview

In some cases, the home network may wish to know information about the type of access network that the UA is currently using. Some services are more suitable or less suitable depending on the access type, and some services are of more value to subscribers if the access network details are known in the home network. For instance, the type of access being used may influence home network decisions on what level of security to apply to sessions, or it may influence the value a home network chooses to use for default timers.

In other cases, the home network may simply wish to know crude location information in order to provide certain basic services.

In most cases, it may be desired that the home network have the knowledge of some information relating to the network that provided access to the service. This is achieved by defining a new private SIP extension header as defined in [3], P-Access-Network-Info. This header carries information relating to the access network between the UAC and its serving proxy in the home network.

6. The P-Access-Network-Info header

The P-Access-Network-Info header is used to transport a set of parameters associated with the access characteristics of a particular network.

The P-Access-Network-Info header MAY be inserted by a UA. Proxies, MUST NOT add to or modify the contents of the P-Access-Network-Info.

The information in the P-Access-Network-Info is privacy sensitive. It is intended for use between the UA and its serving proxy. The serving proxy MUST delete this header before forwarding the message outside of the its domain.

The UA inserting this information MUST trust the serving proxy to
protect its privacy by deleting the header before forwarding the message outside of the home proxy’s domain. In order to do this it must also have transitive trust in intermediate proxies between it and the serving proxy. This trust is established by business agreements between the home network and the access network, and generally supported by the use of standard security mechanisms, e.g. IPsec, AKA, and TLS.

The P-Access-Network-Info header is described using ABNF syntax. The following description of the ABNF syntax is based on the ABNF used for SIP [3]:

```
P-Access-Network-Info = "Access-Network-Info" HCOLON access-network-information

access-network-information = access-type [SEMI access-info]

access-type                          = "IEEE-802.11a" | "IEEE-802.11b" | "3GPP-GERAN" | "3GPP-UTRAN-FDD" | "3GPP-UTRAN-TDD" | "3GPP-CDMA2000" | token

access-info                          = "3GPP-CGI" | "3GPP-UTRAN-Cell-ID" | extension

3gpp-cgi                             = "3GPP-CGI" EQUAL quoted-string

3gpp-utran-cell-id                   = "3GPP-UTRAN-CELL-ID" EQUAL quoted-string

extension                            = token [EQUAL quoted-string]
```

A UAC supporting this extension may be capable of accessing the services provided by its home network via one or more access technologies. Such a UAC must know the values to use for each type of supported access technology. The means of this determination are outside the scope of this document.

The home network must know the possible values that a particular UA may use to populate the access-type and access-info fields.

In other words, a home network with business agreements allowing users to access via a particular technology must be able to parse the P-Access-Network-Info header containing an access-type for that technology in order to use this information.

For example, the access-type could read "IEEE-802.11b". If a home network knows it has a business agreement with a WLAN access network, it must be ready to understand the value "IEEE-802.11b".

Similarly, a UAC supporting this extension that can access via WLAN must be able to insert the relevant value.

Access-info could contain additional information relating to the access network. In particular, the contents of the access-info field may be dependent on the value of the access-type field. For example, where the access-type is "3GPP-GERAN", the access-info SHALL be "3GPP-CGI". These conditions are defined elsewhere by proprietary users of this extension, e.g. by 3GPP.
The following table expands on tables 2 and 3 in [3].

<table>
<thead>
<tr>
<th>Header field</th>
<th>where</th>
<th>proxy</th>
<th>ACK</th>
<th>BYE</th>
<th>CAN</th>
<th>INV</th>
<th>OPT</th>
<th>REG</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Access-Network-Info</td>
<td>dr</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

Comparisons follow the case-sensitivity rules defined by SIP [3].

7. Handling of the P-Access-Network-Info header

7.1 UAC behavior

A UAC that supports this extension and is willing to disclose the related parameters may insert the P-Access-Network-Info header in any SIP message request. The UAC SHOULD insert this header only when it trusts both the access network and the home network.

This document does not define either the nature or the information or the messages where the P-Access-Network-Info needs to be inserted.

7.2 UAS behavior

A serving proxy that supports this extension and receives the P-Access-Network-Info header MAY use the contents to, e.g., provide a different service depending on the network through which the UA is accessing the server. A serving proxy that supports this extension deletes the P-Access-Network-Info header from a message before forwarding the message outside of the home network domain. The information carried in the header is used by the home network and is of no interest to the destination network.

It is implied that a serving proxy using the information contained in this header has to trust the access network.

7.3 Proxy behavior

A proxy MUST NOT insert or modify the P-Access-Network-Info header.

A serving proxy, typically located in the home network, and therefore trusted, SHOULD delete the header when the SIP signaling is forwarded beyond the home network domain. The serving network information is used by a home network and is of no interest to the destination network.

8. Security considerations

This extension assumes that the access network is trusted by the UA (because the UA’s home network has a trust relationship with the access network), as described in section 6.

This extension assumes that the information added to the header by the UAC should be sent only to trusted entities and should not be used outside of the home network domain.

The home network uses the information contained in this header to provide additional services or enhanced performance to the user, and UAs are expected to provide correct information. However, there are no security problems resulting from a UAC inserting incorrect information.

This header SHOULD always be deleted by the serving network prior to forwarding it outside of the home network domain, as described in
section 7.

9. IANA Considerations

This document defines the SIP extension header "P-Access-Network-Info" which should be included in the registry of SIP headers defined in SIP [3]. As required by the SIP change process draft-tsvarea-sipchange [6] the SIP extension header name "Access-Network-Info" should also be registered in association with this extension.

10. References

Normative References


Non-Normative References


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