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The Internet Assigned Number Authority (IANA)  
Header Field Parameter Registry for  
the Session Initiation Protocol (SIP)

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Abstract

This document creates an Internet Assigned Number Authority (IANA) registry for the Session Initiation Protocol (SIP) header field parameters and parameter values. It also lists the already existing parameters and parameter values to be used as the initial entries for this registry.

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## 1. Introduction

RFC 3261 [3] allows new header field parameters and new parameter values to be defined. However, RFC 3261 omitted an IANA registry for them. This document creates such a registry.

RFC 3427 [4] documents the process to extend SIP. This document updates RFC 3427 by specifying how to define and register new SIP header field parameters and parameter values.

## 2. Terminology

In this document, the key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" are to be interpreted as described in BCP 14, RFC 2119 [1] and indicate requirement levels for compliant implementations.

## 3. Use of the Registry

SIP header field parameters and parameter values MUST be documented in an RFC in order to be registered by IANA. This documentation MUST fully explain the syntax, intended usage, and semantics of the parameter or parameter value. The intent of this requirement is to assure interoperability between independent implementations, and to prevent accidental namespace collisions between implementations of dissimilar features.

Note that this registry, unlike other protocol registries, only deals with parameters and parameter values defined in RFCs (i.e., it lacks a vendor-extension tree). RFC 3427 [4] documents concerns with regards to new SIP extensions which may damage security, greatly increase the complexity of the protocol, or both. New parameters and parameter values need to be documented in RFCs as a result of these concerns.

RFCs defining SIP header field parameters or parameter values MUST register them with IANA as described below.

Registered SIP header field parameters and parameter values are to be considered "reserved words". In order to preserve interoperability, registered parameters and parameter values MUST be used in a manner consistent with that described in their defining RFC. Implementations MUST NOT utilize "private" or "locally defined" SIP header field parameters or parameter values that conflict with registered parameters.

Note that although unregistered SIP header field parameters and parameter values may be used in implementations, developers are cautioned that usage of such parameters is risky. New SIP header field parameters and parameter values may be registered at any time, and there is no assurance that these new registered parameters or parameter values will not conflict with unregistered parameters currently in use.

Some SIP header field parameters only accept a set of predefined parameter values. For example, a parameter indicating the transport protocol in use may only accept the predefined tokens TCP, UDP, and SCTP as valid values. Registering all parameter values for all SIP header field parameters of this type would require a large number of subregistries. Instead, we have chosen to register parameter values by reference. That is, the entry in the parameter registry for a given header field parameter contains references to the RFCs defining new values of the parameter. References to RFCs defining parameter values appear in double brackets in the registry.

So, the header field parameter registry contains a column that indicates whether or not each parameter only accepts a set of predefined values. Implementers of parameters with a "yes" in that column need to find all the valid parameter values in the RFCs provided as references.

#### 4. IANA Considerations

Section 27 of RFC 3261 [3] creates an IANA registry for method names, header field names, warning codes, status codes, and option tags. This specification creates a new sub-registry for header field parameters under the SIP Parameters registry.

##### 4.1. Header Field Parameters Sub-Registry

The majority of the SIP header fields can be extended by defining new parameters. New SIP header field parameters are registered by the IANA. When registering a new parameter for a header field or a new value for a parameter, the following information MUST be provided.

- o Header field in which the parameter can appear.
- o Name of the header field parameter being registered.
- o Whether the parameter only accepts a set of predefined values.

- o A reference to the RFC where the parameter is defined and to any RFC that defines new values for the parameter. References to RFCs defining parameter values appear in double brackets in the registry.

Parameters that can appear in different header fields MAY have the same name. However, parameters that can appear in the same header field MUST have different names.

The following are the initial values for this sub-registry.

| Header Field                  | Parameter Name     | Predefined Values | Reference    |
|-------------------------------|--------------------|-------------------|--------------|
| Accept                        | q                  | No                | [RFC 3261]   |
| Accept-Encoding               | q                  | No                | [RFC 3261]   |
| Accept-Language               | q                  | No                | [RFC 3261]   |
| Authorization                 | algorithm          | Yes               | [RFC 3261]   |
|                               |                    |                   | [[RFC 3310]] |
| Authorization                 | auts               | No                | [RFC 3310]   |
| Authorization                 | cnonce             | No                | [RFC 3261]   |
| Authorization                 | nc                 | No                | [RFC 3261]   |
| Authorization                 | nonce              | No                | [RFC 3261]   |
| Authorization                 | opaque             | No                | [RFC 3261]   |
| Authorization                 | qop                | Yes               | [RFC 3261]   |
| Authorization                 | realm              | No                | [RFC 3261]   |
| Authorization                 | response           | No                | [RFC 3261]   |
| Authorization                 | uri                | No                | [RFC 3261]   |
| Authorization                 | username           | No                | [RFC 3261]   |
| Authentication-Info           | cnonce             | No                | [RFC 3261]   |
| Authentication-Info           | nc                 | No                | [RFC 3261]   |
| Authentication-Info           | nextnonce          | No                | [RFC 3261]   |
| Authentication-Info           | qop                | Yes               | [RFC 3261]   |
| Authentication-Info           | rspauth            | No                | [RFC 3261]   |
| Call-Info                     | purpose            | Yes               | [RFC 3261]   |
| Contact                       | expires            | No                | [RFC 3261]   |
| Contact                       | q                  | No                | [RFC 3261]   |
| Content-Disposition           | handling           | Yes               | [RFC 3261]   |
| Event                         | id                 | No                | [RFC 3265]   |
| From                          | tag                | No                | [RFC 3261]   |
| P-Access-Network-Info         | cgi-3gpp           | No                | [RFC 3455]   |
| P-Access-Network-Info         | utran-cell-id-3gpp | No                | [RFC 3455]   |
| P-Charging-Function-Addresses | ccf                | No                | [RFC 3455]   |
| P-Charging-Function-Addresses | ecf                | No                | [RFC 3455]   |
| P-Charging-Vector             | icid-value         | No                | [RFC 3455]   |
| P-Charging-Vector             | icid-generated-at  | No                | [RFC 3455]   |
| P-Charging-Vector             | orig-ioi           | No                | [RFC 3455]   |
| P-Charging-Vector             | term-ioi           | No                | [RFC 3455]   |

|                     |                |     |                |
|---------------------|----------------|-----|----------------|
| P-DCS-Billing-Info  | called         | No  | [RFC 3603]     |
| P-DCS-Billing-Info  | calling        | No  | [RFC 3603]     |
| P-DCS-Billing-Info  | charge         | No  | [RFC 3603]     |
| P-DCS-Billing-Info  | locroute       | No  | [RFC 3603]     |
| P-DCS-Billing-Info  | rksgroup       | No  | [RFC 3603]     |
| P-DCS-Billing-Info  | routing        | No  | [RFC 3603]     |
| P-DCS-LAES          | content        | No  | [RFC 3603]     |
| P-DCS-LAES          | key            | No  | [RFC 3603]     |
| P-DCS-Redirect      | count          | No  | [RFC 3603]     |
| P-DCS-Redirect      | redirector-uri | No  | [RFC 3603]     |
| Proxy-Authenticate  | algorithm      | Yes | [RFC 3261]     |
|                     |                |     | [ [RFC 3310] ] |
| Proxy-Authenticate  | domain         | No  | [RFC 3261]     |
| Proxy-Authenticate  | nonce          | No  | [RFC 3261]     |
| Proxy-Authenticate  | opaque         | No  | [RFC 3261]     |
| Proxy-Authenticate  | qop            | Yes | [RFC 3261]     |
| Proxy-Authenticate  | realm          | No  | [RFC 3261]     |
| Proxy-Authenticate  | stale          | Yes | [RFC 3261]     |
| Proxy-Authorization | algorithm      | Yes | [RFC 3261]     |
|                     |                |     | [ [RFC 3310] ] |
| Proxy-Authorization | auts           | No  | [RFC 3310]     |
| Proxy-Authorization | cnonce         | No  | [RFC 3261]     |
| Proxy-Authorization | nc             | No  | [RFC 3261]     |
| Proxy-Authorization | nonce          | No  | [RFC 3261]     |
| Proxy-Authorization | opaque         | No  | [RFC 3261]     |
| Proxy-Authorization | qop            | Yes | [RFC 3261]     |
| Proxy-Authorization | realm          | No  | [RFC 3261]     |
| Proxy-Authorization | response       | No  | [RFC 3261]     |
| Proxy-Authorization | uri            | No  | [RFC 3261]     |
| Proxy-Authorization | username       | No  | [RFC 3261]     |
| Reason              | cause          | Yes | [RFC 3326]     |
| Reason              | text           | No  | [RFC 3326]     |
| Retry-After         | duration       | No  | [RFC 3261]     |
| Security-Client     | alg            | Yes | [RFC 3329]     |
| Security-Client     | ealg           | Yes | [RFC 3329]     |
| Security-Client     | d-alg          | Yes | [RFC 3329]     |
| Security-Client     | d-qop          | Yes | [RFC 3329]     |
| Security-Client     | d-ver          | No  | [RFC 3329]     |
| Security-Client     | mod            | Yes | [RFC 3329]     |
| Security-Client     | port1          | No  | [RFC 3329]     |
| Security-Client     | port2          | No  | [RFC 3329]     |
| Security-Client     | prot           | Yes | [RFC 3329]     |
| Security-Client     | q              | No  | [RFC 3329]     |
| Security-Client     | spi            | No  | [RFC 3329]     |
| Security-Server     | alg            | Yes | [RFC 3329]     |
| Security-Server     | ealg           | Yes | [RFC 3329]     |
| Security-Server     | d-alg          | Yes | [RFC 3329]     |
| Security-Server     | d-qop          | Yes | [RFC 3329]     |

|                    |             |     |                |
|--------------------|-------------|-----|----------------|
| Security-Server    | d-ver       | No  | [RFC 3329]     |
| Security-Server    | mod         | Yes | [RFC 3329]     |
| Security-Server    | port1       | No  | [RFC 3329]     |
| Security-Server    | port2       | No  | [RFC 3329]     |
| Security-Server    | prot        | Yes | [RFC 3329]     |
| Security-Server    | q           | No  | [RFC 3329]     |
| Security-Server    | spi         | No  | [RFC 3329]     |
| Security-Verify    | alg         | Yes | [RFC 3329]     |
| Security-Verify    | ealg        | Yes | [RFC 3329]     |
| Security-Verify    | d-alg       | Yes | [RFC 3329]     |
| Security-Verify    | d-qop       | Yes | [RFC 3329]     |
| Security-Verify    | d-ver       | No  | [RFC 3329]     |
| Security-Verify    | mod         | Yes | [RFC 3329]     |
| Security-Verify    | port1       | No  | [RFC 3329]     |
| Security-Verify    | port2       | No  | [RFC 3329]     |
| Security-Verify    | prot        | Yes | [RFC 3329]     |
| Security-Verify    | q           | No  | [RFC 3329]     |
| Security-Verify    | spi         | No  | [RFC 3329]     |
| Subscription-State | expires     | No  | [RFC 3265]     |
| Subscription-State | reason      | Yes | [RFC 3265]     |
| Subscription-State | retry-after | No  | [RFC 3265]     |
| To                 | tag         | No  | [RFC 3261]     |
| Via                | branch      | No  | [RFC 3261]     |
| Via                | comp        | Yes | [RFC 3486]     |
| Via                | maddr       | No  | [RFC 3261]     |
| Via                | received    | No  | [RFC 3261]     |
| Via                | rport       | No  | [RFC 3581]     |
| Via                | ttl         | No  | [RFC 3261]     |
| WWW-Authenticate   | algorithm   | Yes | [RFC 3261]     |
|                    |             |     | [ [RFC 3310] ] |
| WWW-Authenticate   | domain      | Yes | [RFC 3261]     |
| WWW-Authenticate   | nonce       | No  | [RFC 3261]     |
| WWW-Authenticate   | opaque      | No  | [RFC 3261]     |
| WWW-Authenticate   | qop         | Yes | [RFC 3261]     |
| WWW-Authenticate   | realm       | No  | [RFC 3261]     |
| WWW-Authenticate   | stale       | Yes | [RFC 3261]     |

#### 4.2. Registration Policy for SIP Header Field Parameters

As per the terminology in RFC 2434 [2], the registration policy for SIP header field parameters and parameter values shall be "IETF Consensus."

For the purposes of this registry, the parameter or the parameter value for which IANA registration is requested MUST be defined by an RFC. There is no requirement that this RFC be standards-track.

## 5. Security Considerations

The registry in this document does not in itself have security considerations. However, as mentioned in RFC 3427, an important reason for the IETF to manage the extensions of SIP is to ensure that all extensions and parameters are able to provide secure usage. The supporting RFC publications for parameter registrations described in this specification MUST provide detailed security considerations for them.

## 6. Acknowledgements

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## 7. Normative References

- [1] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.
- [2] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 2434, October 1998.
- [3] Rosenberg, J., Schulzrinne, H., Camarillo, G., Johnston, A., Peterson, J., Sparks, R., Handley, M., and E. Schooler, "SIP: Session Initiation Protocol", RFC 3261, June 2002.
- [4] Mankin, A., Bradner, S., Mahy, R., Willis, D., Ott, J., and B. Rosen, "Change Process for the Session Initiation Protocol (SIP)", BCP 67, RFC 3427, December 2002.

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