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A Session Initiation Protocol (SIP) Media Feature Tag for MIME Application Subtypes

Abstract

The caller preferences specification for the Session Initiation Protocol (SIP) allows a caller to express preferences that the call be routed to a User Agent (UA) with particular capabilities. Similarly, a specification exists to allow a UA to indicate its capabilities in a registration. Amongst those capabilities are the type of media streams the agent supports, described as top-level MIME types. The 'application' MIME type is used to describe a broad range of stream types, and it provides insufficient granularity as a capability. This specification allows a UA to indicate which application subtypes the agent supports.

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1. Introduction

The caller preferences specification [RFC3841] for the Session Initiation Protocol (SIP) [RFC3261] allows a user to express preferences for the routing of SIP requests. These preferences are expressed as a set of desired capabilities and characteristics of a receiving agent. When a user agent registers to the SIP network, it includes, as part of its registration, its own capabilities and characteristics [RFC3840]. These capabilities are stored as part of the registration, and then made available to the proxy in the network. When a request arrives at the proxy with caller preferences, the preferences in the request are compared with the supported characteristics and capabilities stored in the registrations, and the result is used to select the target user agents for the request.

RFC 3840 makes use of media feature tags [RFC2506]. Each tag has a name and a type. The tags defined in RFC 3840 describe some of the basic characteristics of user agents, including whether or not they are automata (the sip.automata tag), their class (the sip.class tag),

whether they support media in one or both directions (the sip.duplex), and whether they are a conference focus (sip.isfocus). These tags also include SIP capabilities, including the schemes supported by the agent (sip.schemes), the methods (sip.methods), and the event packages (sip.events) [RFC3265].

RFC 3840 also defines media feature tags for multimedia stream types. There is a media feature tag defined for each top-level media type -- sip.audio for audio streams, sip.video for video streams, and so on. The primary use case for this is to correctly deliver multimedia sessions to the user agent that supports that media type. Consider a caller on a videophone that wants to have a video call with another user. That user has two devices -- a mobile phone that only supports audio and a videophone. We'd like to deliver the videophone call to the videophone as a first priority, and only 'ring' the mobile device for an audio-only call if the user is not present on the videophone.

RFC 3840 defines media feature tags for each and every top-level media type, including 'application'. This media type covers an extremely broad range of subtypes -- multiplayer games of all sorts, shared whiteboards and application sharing, and so on. With audio and video, where there is often a common codec supported by agents (i.e., a common subtype). Consequently, if a caller wants an audio session, routing the request to any user agent that supports audio is likely to result in successful communications. However, with application streams, just routing a request to an agent that supports *some* application stream isn't useful; application streams for different applications are wildly different. Consequently, the application media feature tag does not provide sufficient granularity for call preferences. The specific application subtype needs to be indicated as well.

To remedy this, this specification defines a new media feature tag that indicates which application subtypes are supported by the agent for streaming. The name of this media feature tag is 'sip.app-subtype'.

2. 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 RFC 2119 [RFC2119].

3. sip.app-subtype Media Feature Tag

The 'sip.app-subtype' media feature tag is of type token with a case-insensitive equality relationship. Its value can be any registered or private MIME application subtype compliant to the subtype-name

grammar defined in [RFC4288]. When included in the Contact header field of a REGISTER request, an agent SHOULD include all application subtypes that it can support as streaming formats. An application subtype is supported if the user agent would be capable of processing a Session Description Protocol (SDP) [RFC4566] offer [RFC3264] that contained that subtype as a format in the m-line of the SDP.

When included in the Accept-Contact or Reject-Contact header field, it indicates a desire on the part of a User Agent Client (UAC) to be connected to a User Agent Server (UAS) that can support or cannot support, respectively, streaming using that application subtype.

It is important to note that this media feature tag is only indicating the streaming media types that a user agent is capable of supporting. It says nothing about the functionality provided by the user agent itself or the MIME types that the agent can send or receive in SIP messages or emails. For example, let us assume that a SIP user agent is capable of supporting a chess game. The game is played by each user sending chess moves as binary objects over UDP between a pair of user agents. Those objects have a MIME type of "application/example". When a UA includes the sip.app-subtype media feature tag in a Contact header field with a value of "example", it means that the UA can handle a SIP INVITE that contained an SDP with an application media line and format of "example". It does not mean that the SIP user agent is a chess application, or that the user agent can accept SIP requests that include bodies of type "application/example". To indicate that a user agent can accept SIP requests that include bodies of type "application/example", the agent would utilize the "type" media feature tag as defined in [RFC3840].

A consequence of this is that, as new streaming media type formats are defined (such as game stream formats, whiteboard session formats, and so on), they SHOULD be defined using the SDP application stream and utilize a MIME application subtype.

4. Example

The following is an example SIP REGISTER message fragment indicating usage of this media feature tag. The REGISTER indicates that the UA can participate in application media sessions utilizing exchange of objects of type "application/example".

```
REGISTER sip:example.com SIP/2.0
To: sip:Y@example.com
Contact: <sip:Y1@pc.example.com>
 ;methods="INVITE,ACK,OPTIONS,BYE,CANCEL"
 ;uri-user="<Y1>"
 ;uri-domain="example.com"
 ;audio
 ;schemes="sip"
 ;mobility="fixed"
 ;class="personal"
 ;+sip.app-subtype="example"
```

Such a registration indicates that an INVITE of the following form:

```
INVITE sip:Y@example.com SIP/2.0
To: sip:Y@example.com
Content-Type: application/sdp
Content-Length: ...

v=0
o=jdoe 2890844526 2890842807 IN IP4 10.47.16.5
c=IN IP4 192.0.1.2
t=0 0
m=audio 49170 RTP/AVP 0
m=application 8493 udp example
```

would be accepted by the UA. The SDP in the INVITE indicates an audio session and an application session that runs over UDP and exchanges "application/example" object formats.

5. Security Considerations

When present in a REGISTER request, this media feature tag gives information on the set of supported application media streams. It is possible that this information is sensitive, providing insight into the capabilities of a product. These considerations are already discussed in RFC 3840, and those considerations apply here as well. Applications that utilize this media feature tag SHOULD provide a means for ensuring its integrity. Similarly, the media feature tag should only be trusted as valid when it comes from the user or user agent described by the feature tag. As a result, mechanisms for conveying the feature tag SHOULD provide a mechanism for guaranteeing authenticity.

6. IANA Considerations

This specification adds a new media feature tag to the SIP Media Feature Tag Registration Tree defined in RFC 3840 [RFC3840].

Media feature tag name: sip.app-subtype

ASN.1 Identifier: 1.3.6.1.8.4.24

Summary of the media feature indicated by this tag: This feature tag indicates the MIME application subtypes supported by the agent for purposes of streaming media.

Values appropriate for use with this feature tag: Token (equality relationship).

The feature tag is intended primarily for use in the following applications, protocols, services, or negotiation mechanisms: This feature tag is most useful in a communications application, for describing the capabilities of a device, such as a phone or PDA.

Examples of typical use: Routing a call to a phone that can support a multiplayer game.

Related standards or documents: RFC 5688

Security Considerations: Security considerations for this media feature tag are discussed in Section 5 of RFC 5688.

7. References

7.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC3264] Rosenberg, J. and H. Schulzrinne, "An Offer/Answer Model with Session Description Protocol (SDP)", RFC 3264, June 2002.

[RFC3840] Rosenberg, J., Schulzrinne, H., and P. Kyzivat, "Indicating User Agent Capabilities in the Session Initiation Protocol (SIP)", RFC 3840, August 2004.

[RFC4288] Freed, N. and J. Klensin, "Media Type Specifications and Registration Procedures", BCP 13, RFC 4288, December 2005.

[RFC4566] Handley, M., Jacobson, V., and C. Perkins, "SDP: Session Description Protocol", RFC 4566, July 2006.

7.2. Informative References

[RFC3261] 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.

[RFC3265] Roach, A., "Session Initiation Protocol (SIP)-Specific Event Notification", RFC 3265, June 2002.

[RFC3841] Rosenberg, J., Schulzrinne, H., and P. Kyzivat, "Caller Preferences for the Session Initiation Protocol (SIP)", RFC 3841, August 2004.

[RFC2506] Holtman, K., Mutz, A., and T. Hardie, "Media Feature Tag Registration Procedure", BCP 31, RFC 2506, March 1999.

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