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Resource Reservation Protocol (RSVP) Application-ID
Profiles for Voice and Video Streams
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Abstract

RFC 2872 defines an Resource Reservation Protocol (RSVP) object for application identifiers. This document uses that App-ID and gives implementers specific guidelines for differing voice and video stream identifications to nodes along a reservation path, creating specific profiles for voice and video session identification.

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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 [RFC 2119].

1. Introduction

RFC 2872 [RFC2872] describes the usage of policy elements for providing application information in Resource Reservation Protocol (RSVP) signaling [RFC2205]. The intention of providing this information is to enable application-based policy control. However, RFC 2872 does not enumerate any application profiles. The absence of explicit, uniform profiles leads to incompatible handling of these values and misapplied policies. An application profile used by a sender might not be understood by the intermediaries or receiver in a different domain. Therefore, there is a need to enumerate application profiles that are universally understood and applied for correct policy control.

Call control between endpoints has the ability to bind or associate many attributes to a reservation. One new attribute currently being defined is to establish the type of traffic contained that reservation. This is accomplished via assigning a traffic label to

the call (or session or flow) [ID-TRAF-CLASS].

This document takes the application traffic classes from [ID-TRAF-CLASS] and places those strings in the APP-ID object defined in RFC 2872. Thus, the intermediary devices (e.g., routers) processing the RSVP message can learn the identified profile within the Application-ID policy element for a particular reservation, and possibly be configured with the profile(s) to understand them correctly, thus performing the correct admission control.

Another goal of this document is to the ability to signal an application profile which can then be translated into a DSCP value as per the choice of each domain. While the DCLASS object [RFC2996] allows the transfer of DSCP value in an RSVP message, it does not allow the flexibility of having different domains choosing the DSCP value for the traffic classes that that they maintain.

How these labels indicate the appropriate Differentiated Services Codepoint (DSCP) is out of scope for this document.

This document will break out each application type and propose how the values in application-id template should be populated for uniformity and interoperability.

2. Application ID Template

The template from RFC 2872 is as follows:

0	1	2	3
PE Length (8)		P-type = AUTH_APP	
Attribute Length		A-type = POLICY_LOCATOR	Sub-type = ASCII_DN
Application name as ASCII string (e.g. SAP.EXE)			

In line with how this policy element is constructed in RFC 2872, the A-type will remain "POLICY_LOCATOR".

The P-type field is first created in [RFC2752]. This document creates the new P-type "APP_TC" for application traffic class, which is more appropriately named for the purpose described in this extension.

The first Sub-type will be mandatory for every profile within this document, and will be "ASCII_DN". No other Sub-types are defined by

any profile within this document, but MAY be included by individual implementations - and MUST be ignored if not understood by receiving implementations along the reservation path.

RFC 2872 states the #1 sub-element from RFC 2872 as the "identifier that uniquely identifies the application vendor", which is optional to include. This document modifies this vendor limitation so that the identifier need only be unique - and not limited to an application vendor (identifier). For example, this specification now allows an RFC that defines an industry recognizable term or string to be a valid identifier. For example, a term or string taken from another IETF document, such as "conversational" or "avconf" from [ID-TRAF-CLASS]. This sub-element is still optional to include.

The following subsections will define the values within the above template into specific profiles for voice and video identification.

3. The Voice and Video Application-ID Profiles

This section contains the elements of the Application ID policy object which is used to signal the application classes defined in [ID-TRAF-CLASS].

3.1 The Broadcast Profiles

Broadcast profiles are for minimally buffered one-way streaming flows, such as video surveillance, or Internet based concerts or non-VOD TV broadcasts such as live sporting events.

There will be Broadcast profiles for

- Broadcast IPTV for audio and video
- Broadcast Live-events for audio and video
- Broadcast Surveillance for audio and video

Here is an example profile for identifying Broadcast Video-Surveillance

```
APP_TC, POLICY_LOCATOR, ASCII_DN,  
"GUID=http://www.ietf.org/internet-drafts/  
    draft-ietf-mmusic-traffic-class-for-sdp-01.txt,  
APP=broadcast.video.surveillance, VER="
```

Where the Globally Unique Identifier (GUID) indicates the documented reference that created this well known string [ID-TRAF-CLASS], the APP is the profile name with no spaces, and the "VER=" is included, but has no value at this time.

3.2 The Realtime Interactive Profiles

Realtime Interactive profiles are for on-line gaming, and both remote and virtual avconf applications, in which the timing is particularly important towards the feedback to uses of these applications. This traffic type will generally not be UDP based, with minimal tolerance to RTT delays.

There will be Realtime Interactive profiles for

- Realtime-Interactive Gaming
- Realtime-Interactive Remote-Desktop
- Realtime-Interactive Virtualized-Desktop

Here is the profile for identifying Realtime-Interactive Gaming

```
APP_TC, POLICY_LOCATOR, ASCII_DN,  
"GUID=http://www.ietf.org/internet-drafts/  
    draft-ietf-mmusic-traffic-class-for-sdp-01.txt,  
APP=realtime-interactive.gaming, VER="
```

Where the Globally Unique Identifier (GUID) indicates the documented reference that created this well known string [ID-TRAF-CLASS], the APP is the profile name with no spaces, and the "VER=" is included, but has no value, but MAY if versioning becomes important.

3.3 The Multimedia Conferencing Profiles

There will be Multimedia Conferencing profiles for presentation data, application sharing and whiteboarding, where these applications will most often be associated with a larger Conversational (audio and/or audio/video) conference. Timing is important, but some minimal delays are acceptable, unlike the case for Realtime-Interactive traffic.

- Multimedia-Conferencing presentation-data
- Multimedia-Conferencing application-sharing
- Multimedia-Conferencing whiteboarding

Here is the profile for identifying Multimedia-Conferencing Application-sharing

```
APP_TC, POLICY_LOCATOR, ASCII_DN,  
"GUID=http://www.ietf.org/internet-drafts/  
    draft-ietf-mmusic-traffic-class-for-sdp-01.txt,  
APP=multimedia-conferencing.application-sharing, VER="
```

Where the Globally Unique Identifier (GUID) indicates the RFC reference that created this well known string [ID-TRAF-CLASS], the APP is the profile name with no spaces, and the "VER=" is included, but has no value, but MAY if versioning becomes important.

3.4 The Multimedia Streaming Profiles

Multimedia Streaming profiles are for more significantly buffered one-way streaming flows than Broadcast profiles. These include...

There will be Multimedia Streaming profiles for

- Multimedia-Streaming multiplex
- Multimedia-Streaming webcast

Here is the profile for identifying Multimedia Streaming webcast

```
APP_TC, POLICY_LOCATOR, ASCII_DN,  
"GUID=http://www.ietf.org/internet-drafts/  
    draft-ietf-mmusic-traffic-class-for-sdp-01.txt,  
APP=multimedia-streaming.webcast, VER="
```

Where the Globally Unique Identifier (GUID) indicates the documented reference that created this well known string [ID-TRAF-CLASS], the APP is the profile name with no spaces, and the "VER=" is included, but has no value, but MAY if versioning becomes important.

3.5 The Conversational Profiles

Conversational category is for realtime bidirectional communications, such as voice or video, and is the most numerous due to the choices of application with or without adjectives. The number of profiles is then doubled because there needs to be one for unadmitted and one for admitted. The IANA section lists all that are currently proposed for registration at this time, therefore there will not be an exhaustive list provided in this section.

There will be conversational profiles for

- Conversational Audio
- Conversational Audio Admitted
- Conversational Video
- Conversational Video Admitted
- Conversational Audio Avconf
- Conversational Audio Avconf Admitted
- Conversational Video Avconf
- Conversational Video Avconf Admitted
- Conversational Audio Immersive
- Conversational Audio Immersive Admitted
- Conversational Video Immersive
- Conversational Video Immersive Admitted

Here is an example profile for identifying Conversational Audio:

```
APP_TC, POLICY_LOCATOR, ASCII_DN,  
"GUID=http://www.ietf.org/internet-drafts/  
    draft-ietf-mmusic-traffic-class-for-sdp-01.txt,  
APP=conversational.audio, VER="
```

Where the Globally Unique Identifier (GUID) indicates the documented reference that created this well known string [ID-TRAF-CLASS], the APP is the profile name with no spaces, and the "VER=" is included, but has no value, but MAY if versioning becomes important.

4. Security considerations

The security considerations section within RFC 2872 sufficiently covers this document, with one possible exception - someone using the wrong template values (e.g., claiming a reservation is Multimedia Streaming when it is in fact Real-time Interactive). Given that each traffic flow is within separate reservations, and RSVP does not have the ability to police the type of traffic within any reservation, solving for this appears to be administratively handled at best. This is not meant to be a 'punt', but there really is nothing this template creates that is going to make things any harder for anyone (that we know of now).

5. IANA considerations

5.1 New RSVP Policy Element (P-Type)

In line with the convention created in RFC 3182, the following P-Type is created in the RSVP Policy Element registry [TBD]:

4	APP_TC	Traffic Class identification of applications
---	--------	--

[Editor's note: Unfortunately, RFC 2750 specified the creation of the "RSVP Policy Element" IANA registration, which does not appear at the <http://www.iana.org/assignments/rsvp-parameters> page, therefore it appears this registry does not yet exist. We will get with the chairs to work on this.]

5.2 Application Profiles

This document requests IANA create a new registry for the application identification classes similar to the following table within the Resource Reservation Protocol (RSVP) Parameters registry:

Registry Name: RSVP APP-ID Profiles
Reference: [this document]
Registration procedures: Standards Track document [RFC5226]

5.2.1 Broadcast Profiles IANA Registry

Broadcast Audio IPTV Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=broadcast.audio.iptv, VER="

Reference: [this document]

Broadcast Video IPTV Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=broadcast.video.iptv, VER="

Reference: [this document]

Broadcast Audio Live-events Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=broadcast.audio.live-events, VER="

Reference: [this document]

Broadcast Audio Live-events Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=broadcast.video.live-events, VER="

Reference: [this document]

Broadcast Audio-Surveillance Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=broadcast.audio.surveillance, VER="

Reference: [this document]

Broadcast Video-Surveillance Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=broadcast.video.surveillance, VER="

Reference: [this document]

5.2.2 Realtime-Interactive Profiles IANA Registry

Realtime-Interactive Gaming Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP= realtime-interactive.gaming, VER="

Reference: [this document]

Real-time Interactive Remote-Desktop Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=realtime-interactive.remote-desktop, VER="

Reference: [this document]

Real-time Interactive Virtualized-Desktop Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=realtime-interactive.virtualized-desktop,
VER="

Reference: [this document]

5.2.3 Multimedia-Conferencing Profiles IANA Registry

Multimedia-Conferencing Presentation-Data Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN
Conformant policy locator =
 "GUID=http://www.ietf.org/internet-drafts/
 draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
 APP= multimedia-conferencing.presentation-data,
 VER="

Reference: [this document]

Multimedia-Conferencing Application-Sharing Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
 "GUID=http://www.ietf.org/internet-drafts/
 draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
 APP= multimedia-conferencing.application-sharing,
 VER="

Reference: [this document]

Multimedia-Conferencing Whiteboarding Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
 "GUID=http://www.ietf.org/internet-drafts/
 draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
 APP= multimedia-conferencing.whiteboarding, VER="

Reference: [this document]

5.2.4 Multimedia-Streaming Profiles IANA Registry

Multimedia-Streaming Multiplex Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
 "GUID=http://www.ietf.org/internet-drafts/
 draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
 APP=multimedia-streaming.multiplex, VER="

Reference: [this document]

Multimedia-Streaming Webcast Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
 "GUID=http://www.ietf.org/internet-drafts/
 draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
 APP=multimedia-streaming.webcast, VER="

Reference: [this document]

5.2.5 Conversational Profiles IANA Registry

Conversational Audio Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.audio, VER="

Reference: [this document]

Conversational Audio Admitted Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.audio.aq:admitted, VER="

Reference: [this document]

Conversational Video Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.video, VER="

Reference: [this document]

Conversational Video Admitted Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.video.aq:admitted, VER="

Reference: [this document]

Conversational Audio Avconf Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.audio.avconf, VER="

Reference: [this document]

Conversational Audio Avconf Admitted Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.audio.avconf.aq:admitted,
VER="

Reference: [this document]

Conversational Video Avconf Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.video.avconf, VER="

Reference: [this document]

Conversational Video Avconf Admitted Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.video.avconf.aq:admitted,
VER="

Reference: [this document]

Conversational Audio Immersive Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.audio.immersive, VER="

Reference: [this document]

Conversational Audio Immersive Admitted Profile

P-type = APP_TC
A-type = POLICY_LOCATOR
Sub-type = ASCII_DN
Conformant policy locator =
"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.audio.immersive.aq:admitted,
VER="

Reference: [this document]

Conversational Video Immersive Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.video.immersive, VER="

Reference: [this document]

Conversational Video Immersive Admitted Profile

P-type = APP_TC

A-type = POLICY_LOCATOR

Sub-type = ASCII_DN

Conformant policy locator =

"GUID=http://www.ietf.org/internet-drafts/
draft-ietf-mmusic-traffic-class-for-sdp-01.txt,
APP=conversational.video.immersive.ag:admitted,
VER="

Reference: [this document]

7. Acknowledgments

To Francois Le Faucheur, Paul Jones and Glen Lavers for their helpful comments and encouragement.

8. References

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Appendix - Changes to ID

A.1 - Changes from Individual -03 to -04

The following changes were made in this version:

- clarified security considerations section to mean RSVP cannot police the type of traffic within a reservation to know if a traffic flow should be using a different profile, as defined in this document.
- changed existing informative language regarding "... other Sub-types ..." from 'can' to normative 'MAY'.

- editorial changes to clear up minor mistakes

A.2 - Changes from Individual -02 to -03

The following changes were made in this version:

- Added [ID-TRAF-CLASS] as a reference
- Changed to a new format of the profile string.
- Added many new profiles based on the new format into each parent category of Section 3.
- changed the GUID to refer to draft-ietf-mmusic-traffic-class-for-sdp-01.txt
- changed 'desktop' adjective to 'avconf' to keep in alignment with draft-ietf-mmusic-traffic-class-for-sdp-01.txt
- Have a complete IANA Registry proposal for each application-ID discussed in this draft.
- General text clean-up of the draft.