Resource Reservation Protocol (RSVP) Application-ID
Profiles for Voice and Video Streams
draft-ietf-tsvwg-rsvp-app-id-vv-profiles-02

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.

Status of this Memo

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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 is currently
   being defined so as to establish the type of traffic contained in
   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, that RFC does
not allow the flexibility of having different domains choosing the
DSCP value for the traffic classes 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.

1.1 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 [RFC 2119].

2. RSVP 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 =     | Sub-type =   |
     |                               | POLICY_LOCATOR|   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
uses the existing P-type "AUTH_APP" for application traffic class.

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.

   This document creates 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

      AUTH_APP, POLICY_LOCATOR, ASCII_DN,
     "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
      APP=broadcast.video.surveillance, VER="

   [Editor's Note: "rfcXXXX" will be replaced with the RFC number
                   assigned to the [ID-TRAF-CLASS] reference. This
                   'note' should be removed during the RFC-Editor
                   review process.]

   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.

   This document creates Realtime Interactive profiles for

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

   Here is the profile for identifying Realtime-Interactive Gaming

       AUTH_APP, POLICY_LOCATOR, ASCII_DN,
      "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.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.

  This document creates Multimedia-Conferencing profiles for

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

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

       AUTH_APP, POLICY_LOCATOR, ASCII_DN,
      "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.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...

   This document creates Multimedia Streaming profiles for

   - Multimedia-Streaming multiplex
   - Multimedia-Streaming webcast

   Here is the profile for identifying Multimedia Streaming
   webcast

       AUTH_APP, POLICY_LOCATOR, ASCII_DN,
      "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.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.

   This document creates 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:

```
AUTH_APP, POLICY_LOCATOR, ASCII_DN,
 "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.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 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]

[Editor's Note: "rfcXXXX" will be replaced with the RFC number
                assigned to the [ID-TRAF-CLASS] reference. This
                'note' should be removed during the RFC-Editor
                review process.]

5.1.1 Broadcast Profiles IANA Registry

Broadcast Audio IPTV Profile
  P-type = AUTH_APP
  A-type = POLICY_LOCATOR
  Sub-type = ASCII_DN
  Conformant policy locator =
                "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                 APP=broadcast.audio.iptv, VER="
  Reference: [this document]

   Broadcast Video IPTV Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                     "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                      APP=broadcast.video.iptv, VER="
     Reference: [this document]

   Broadcast Audio Live-events Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                     "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                      APP=broadcast.audio.live-events, VER="
     Reference: [this document]

   Broadcast Video Live-events Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                     "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                      APP=broadcast.video.live-events, VER="
     Reference: [this document]

   Broadcast Audio-Surveillance Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                     "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                      APP=broadcast.audio.surveillance, VER="
     Reference: [this document]

   Broadcast Video-Surveillance Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                     "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                      APP=broadcast.video.surveillance, VER="
     Reference: [this document]

5.1.2 Realtime-Interactive Profiles IANA Registry

   Realtime-Interactive Gaming Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN

```
        Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP= realtime-interactive.gaming, VER="
      Reference: [this document]

   Real-time Interactive Remote-Desktop Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP=realtime-interactive.remote-desktop, VER="
      Reference: [this document]

   Real-time Interactive Virtualized-Desktop Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP=realtime-interactive.
                         remote-desktop.virtual, VER="
      Reference: [this document]

   Real-time Interactive Telemetry Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP=realtime-interactive.telemetry, VER="
      Reference: [this document]


5.1.3 Multimedia-Conferencing Profiles IANA Registry

   Multimedia-Conferencing Presentation-Data Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP= multimedia-conferencing.presentation-data,
                     VER="
      Reference: [this document]

   Multimedia-Conferencing Presentation-Video Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
```

```
                      APP= multimedia-conferencing.presentation-video,
                      VER="
   Reference: [this document]

Multimedia-Conferencing Presentation-Audio Profile
  P-type = AUTH_APP
  A-type = POLICY_LOCATOR
  Sub-type = ASCII_DN
  Conformant policy locator =
                  "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                   APP= multimedia-conferencing.presentation-audio,
                   VER="
   Reference: [this document]


Multimedia-Conferencing Application-Sharing Profile
  P-type = AUTH_APP
  A-type = POLICY_LOCATOR
  Sub-type = ASCII_DN
  Conformant policy locator =
                  "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                   APP= multimedia-conferencing.application-sharing,
                   VER="
   Reference: [this document]


Multimedia-Conferencing Whiteboarding Profile
  P-type = AUTH_APP
  A-type = POLICY_LOCATOR
  Sub-type = ASCII_DN
  Conformant policy locator =
                  "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                   APP= multimedia-conferencing.whiteboarding, VER="
   Reference: [this document]
```

5.1.4 Multimedia-Streaming Profiles IANA Registry

```
Multimedia-Streaming Multiplex Profile
  P-type = AUTH_APP
  A-type = POLICY_LOCATOR
  Sub-type = ASCII_DN
  Conformant policy locator =
                  "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                   APP=multimedia-streaming.multiplex, VER="
   Reference: [this document]

Multimedia-Streaming Webcast Profile
  P-type = AUTH_APP
  A-type = POLICY_LOCATOR
  Sub-type = ASCII_DN
  Conformant policy locator =
                  "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                   APP=multimedia-streaming.webcast, VER="
```

      Reference: [this document]

5.1.5 Conversational Profiles IANA Registry

    Conversational Audio Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP=conversational.audio, VER="
    Reference: [this document]

    Conversational Audio Admitted Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP=conversational.audio.aq:admitted, VER="
    Reference: [this document]

    Conversational Video Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP=conversational.video, VER="
    Reference: [this document]

    Conversational Video Admitted Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP=conversational.video.aq:admitted, VER="
    Reference: [this document]

    Conversational Audio Avconf Profile
      P-type = AUTH_APP
      A-type = POLICY_LOCATOR
      Sub-type = ASCII_DN
      Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP=conversational.audio.avconf, VER="
    Reference: [this document]

    Conversational Audio Avconf Admitted Profile
      P-type = AUTH_APP

```
   A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                       "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                        APP=conversational.audio.avconf.aq:admitted,
                        VER="
     Reference: [this document]


   Conversational Video Avconf Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                       "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                        APP=conversational.video.avconf, VER="
     Reference: [this document]


   Conversational Video Avconf Admitted Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                       "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                        APP=conversational.video.avconf.aq:admitted,
                        VER="
     Reference: [this document]


   Conversational Audio Immersive Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                       "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                        APP=conversational.audio.immersive, VER="
     Reference: [this document]


   Conversational Audio Immersive Admitted Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                       "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                        APP=conversational.audio.immersive.aq:admitted,
                        VER="
     Reference: [this document]


   Conversational Video Immersive Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                       "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
```

                        APP=conversational.video.immersive, VER="
      Reference: [this document]

   Conversational Video Immersive Admitted Profile
     P-type = AUTH_APP
     A-type = POLICY_LOCATOR
     Sub-type = ASCII_DN
     Conformant policy locator =
                    "GUID=http://www.rfc-editor.org/rfc/rfcXXXX.txt,
                     APP=conversational.video.immersive.aq:admitted,
                     VER="
      Reference: [this document]

6. Acknowledgments

   To Francois Le Faucheur, Paul Jones, Ken Carlberg, Georgios
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   reviews and encouragement.

7. References

7.1. Normative References

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Appendix - Changes to ID

   [Editor's Note: this appendix should be removed in the RFC-Editor's
                   process.]

A.1 - Changes from WG version -00 to WG version -01

   The following changes were made in this version:

   - corrected nits

   - globally replaced GUID link from the MMUSIC Trafficclass ID to the
     future RFC of that document.

   - added profiles for presentation-video and presentation-audio

A.2 - Changes from Individual -04 to WG version -00

   The following changes were made in this version:

      - changed P-Type from APP_TC back to AUTH_APP, which is already
        defined.

      - fixed nits and inconsistencies

A.3 - 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.4 - 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-03.txt

      - changed 'desktop' adjective to 'avconf' to keep in alignment with
        [ID-TRAF-CLASS]

      - Have a complete IANA Registry proposal for each application-ID
        discussed in this draft.

      - General text clean-up of the draft.