A Real-time Transport Protocol (RTP) Classifier Header Extension
draft-carlberg-avtext-classifier-00

Abstract

This document defines a new RTP header extension. The purpose of the extension is to provide additional information that further distinguishes the RTP datagram (and its payload) from other datagrams containing the same type of payload. The information may be used by application layer gateways to drop packets, or place them in a lower priority outbound queue. Or, through deep packet inspection, information stored in the classifier header extension may be used to (re)set diff-serv code points set in the IP header that may be have reset at ingress/egress boundaries of a diff-serv domain.

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1. Introduction

This document defines a new RTP Header extension. The purpose of the
extension it to provide additional information that distinguishes the
RTP datagram (and its payload) from other datagrams containing the same
type of payload. This distinction can be viewed as a generalized
abbreviation of the significance of the payload.

It is important to note that this document uses the term classification,
NOT priority, in distinguishing payloads. This is because the word
priority tends to convey a definitive importance of the packet, as well
as an expected Quality of Service (QoS). In addition, the concept of
priority may be different on aper application or per user community
basis. Hence, local policy is required to determine the relationship of
various classifications. This policy may be associated with the
administrative policy defined for a domain. The form, support of, and
dissemination of local policy is outside the scope of this document.

Another advantage in appending a classifier extension to the RTP header
is that it provides a means by which a forwarding node aquires
information from the source without the need to breach confidentiality
(through the use of Secure RTP) or support of the codec used to produce
the RTP payload.

1.2 Terminology and Abbreviations

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 RFC2119 [RFC2119].

2. Related Work

There have been several efforts that have added classification, in the
more narrow scope of priority to other applications. These efforts
include: (1) a Resource Priority Header in the Session Initiation
Protocol (SIP) [rfc4412] and (2) a priority extension for the Simple Mail
Transfer Protocol (SMTP) [rfc6710].

In each of these examples, the priority classification was accomplished
by dividing the solution space into two parts. The first identified a
namespace associated with the set of priorities. The second part
identified the specific priority. Initial example values would be
defined in the respective RFC, while future values would be placed in a
registry maintained by IANA. The advantage in using this two-part
solution was that various "communities of interest" had the freedom to define the form of the classification (in their case, priority) and the number of classifications. In addition, the registry provided a common place where various vendors and user groups could access and agree on a single set of values that assisted in interopability.

3. Classifier Header Extension

The classifier header extension for RTP is divided into two parts: a Namespace entry and a Value entry. This information is carried in an RTP header extension element as by "A General Mechanism for RTP Header Extensions" [rfc5285].

The payload of the classifier header extension element can be encoded using either the one-byte or two-byte header defined in [RFC5285]. Figures 1 and 2 show sample audio level encodings with each of these header formats.

```
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|  ID   | len=1 |   Namespace   |    Value      |    0 (pad)    |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Figure 1: Classifier Using the One-Byte Header

```
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|      ID       |     Len=2     |  Namespace    |    Value      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Figure 2: Classifier Using the Two-Byte Header

3.1 Example A

Authors note: There have been recent discussions in the Transport Services working group (TSVWG) on the relative importance of different types of payloads. There has also been recent work concerning the mapping of diff-serv code points related to RTP payloads. In both of these cases, the focus has been with the characteristics of specific types of applications.

On the other hand, and as discussed above in section 2, previous related work has gravitated to supporting classifications (specifically, priorities) based on a user community. One can easily observe that these are two different and possibly divergent motivations in adding classification information to an RTP payload. A question to the
community is should both interests be supported by a new RTP classifier header?

Examples exist in the case of Namespaces correlating to a user community. This section should, at a minimum, present an example Namespace that corresponds to either a specific application or a set of applications. A question to the community is whether the latter can be achieved since it would reduce the number of Namespaces that would need to be supported by implementors.

4. IANA Considerations

At present, this section is listed as To Be Done. Eventually, a description and statement requirement of a registry will need to be described.

5. Security Considerations

To Be Done

6. Acknowledgements

An earlier work-in-progress related effort concerning the specification of a classifier extension header for RTP was presented to the IETF community in 2002. The author thanks James Polk and Dave Oran for earlier discussions on this topic. The author also thanks Toerless Eckert and Cheng-Jai Lai for recent discussion on the topic.

7. References

7.1 Normative


7.2 Informative

RFC 4412, IETF, Feb 2006

RFC 6710, IETF, Aug 2012

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