AVTEXT Working Group
INTERNET-DRAFT
Intended Status: Standards Track
Expires: April 21, 2014

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Oct 21, 2013

A Real-time Transport Protocol (RTP) Classifier Header Extension
draft-carlberg-avtext-classifier-01

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 to assist functions performed by application layer gateways (such as Session Border Controller or MCUs) and/or by routers/switches through deep packet inspection. Examples of these functions include intelligent dropping of packets or (re)setting the IP header diff-serv code points 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 per-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 acquires 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], and (3) a priority policy element for the Resource Reservation Protocol (RSVP) [rfc6401].

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 interoperability.

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] and shown below in Figure 1 and 2 below.

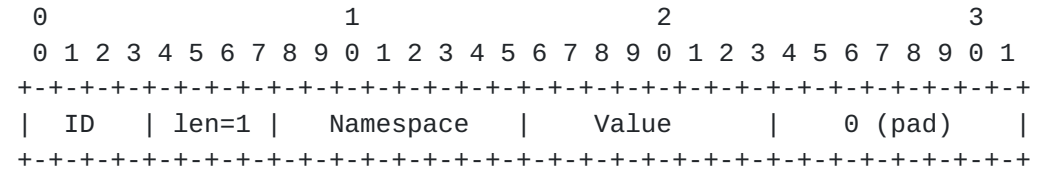

Figure 1: Classifier Using the One-Byte Header

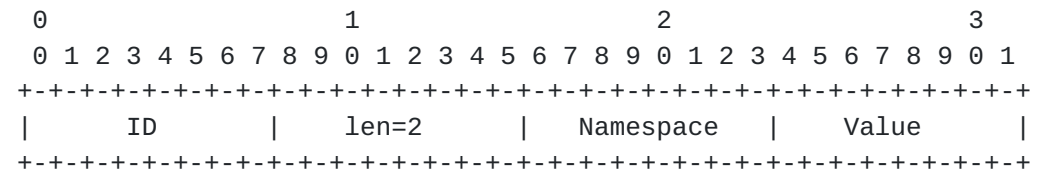

Figure 2: Classifier Using the Two-Byte Header

Author's notes: 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? (the author's position is yes)

Examples exist in the case of Namespaces correlating to a user community. This section should, at a minimum, present an example Namespace that correlates to either a specific application or a set of applications. Another 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. The author's position is that this could be achieved by having a Namespace and set of values that correspond to the existing set of defined differentiated services code points. As such, we recommend a Namespace assigned to a per-hop behaviour (e.g., the AFxx set of code points)

Finally, we anticipate the possibility that two sets of users groups may choose to inject their own classifier information: one that corresponds to hop-by-hop forwarding, and the other at the destination end-point. However, we should encourage a minimalistic approach and discourage more than two (namespace, value) entries.

3.1 Example: AF Namespace

TBD

4. SDP Signaling

TBD

5. IANA Considerations

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

6. Security Considerations

To Be Done

7. 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 authors also thanks Cheng-Jai Lai for recent discussion on the topic.

8. References

8.1 Normative

[rfc2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

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8.2 Informative

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[rfc6401] Le Faucher, F, et al, "RSVP Extensions for Admission Priority", RFC 6401, IETF, Oct 2011

[rfc6710] Melnikov, A., K. Carlberg, "Simple Mail Transfer Protocol Extension for Message Transfer Priorities", RFC 6710, IETF, Aug 2012

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