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**Common Metadata Header Format for IP/MPLS Networks
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Abstract

This document defines the common format for the metadata header used to carry metadata in IPv4, IPv6, and MPLS packets.

Requirements Language

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](#)].

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1. Introduction

This document defines a common header format that is used in IPv4, IPv6 and MPLS packets to carry metadata in addition to the payload. The format of specific metadata types and how the metadata is used is outside the scope of this document. Anticipated uses of metadata include instrumentation of user data frames and service chaining.

Mechanisms for identification of the presence of metadata within an IPv4, IPv6, or MPLS packet are addressed in separate documents [[I-D.guichard-mpls-metadata](#)].

1.1. Terminology

ACH Associated Channel Header

MCH Metadata Channel Header

MD Metadata

2. Metadata Component Structure

The structure of the metadata component is common for IPv4, IPv6, and MPLS encapsulations. It is comprised of a Header and a channel carrying Metadata, and is followed by the original packet payload. Figure 1 shows the complete structure:

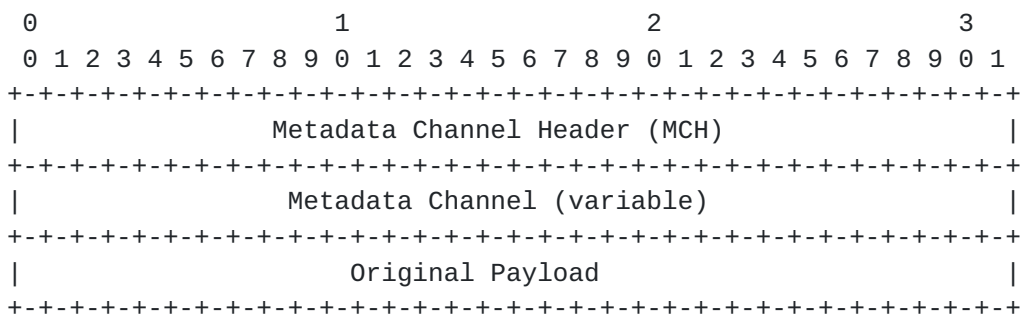


Figure 1: Metadata Component Structure

The meanings of the metadata components are:

- o Metadata Channel Header (MCH): common header used for IPv4, IPv6, and MPLS packets to indicate the type and structure of the metadata carried within the packet.
- o Metadata Channel: the actual metadata. The length and format of the metadata channel is outside the scope of this document and

will vary depending upon the "Metadata Channel Type" specified in the MCH. It is anticipated that there will be a number of instrumentation channels, as well as channels for functionality.

- o Original Payload: beneath the metadata will be the original packet payload. This could be L3, L2 or MPLS payload.

3. Metadata Channel Header Format

The Metadata Channel Header (MCH) is similar in structure to the Associated Channel Header (ACH) as defined in [RFC5586]. The type and format of the actual metadata is defined in other documents.

The proposed format of the MCH is as depicted in Figure 2:

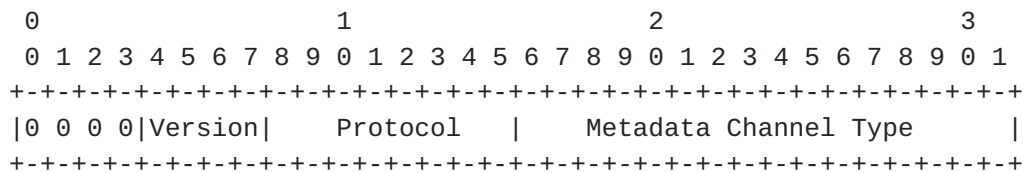


Figure 2: Metadata Channel Header Format

The meanings of the fields in the MCH are:

- o First Nibble: it is set to 0000b to indicate a Metadata Channel associated with IPv4, IPv6, or MPLS.
- o Version: version number of the metadata channel. This specification defines a value of 0.
- o Protocol: Where the network layer is MPLS this MUST be set to a value of 0 and ignored on reception. Where the network layer is IPv4 [RFC0791] this carries the protocol number that identifies the protocol that follows the metadata, i.e. it contains the protocol number that would have been in the IP header if the metadata had not been inserted. Similarly if the network layer is IPv6 [RFC2460] this is the final next-header value that would have been present if the metadata had not been inserted.
- o Metadata Channel Type: The Metadata Channel Type is defined in the IANA Metadata Channel Type registry [Section 4](#).

4. IANA Considerations

This document request IANA to create and maintain the "Metadata Channel Type" registry. Registry entries are assigned by using the "IETF Review" policy defined in [[RFC5226](#)].

IANA are requested to initally mark the registry as follows:

Value	Description
-----+-----	
0x0000	Reserved
0x0001 - 0x7FF7	Unassigned
0x7ff8 - 0x7FFF	Reserved for Experimental Use
0x8000 - 0xFFFF	Unassigned

5. Security Considerations

The security considerations associated with the addition of metadata to packets are discussed in the network layer specific documents [[I-D.guichard-mpls-metadata](#)]. The security risks associated with each metadata type that is defined MUST be documented as part of the definition.

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7. Acknowledgments

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