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IGMPv3/MLDv2 Message Extension
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Abstract

IGMP and MLD protocols are extensible, but no extensions have been defined so far. This document provides a well-defined way of extending IGMP and MLD, including a new extension type to distinguish between different extensions.

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1. Introduction

In this document, we describe a generic method to extend IGMPv3 [RFC3376] and MLDv2 [RFC3810] messages to accommodate information other than what is contained in the current message formats. This is done by introducing an extension-type field in the message formats to indicate the application for which the extension is done. This will be followed by the actual value of the extension.

The extension will be part of additional data as mentioned in [RFC3810] Section 5.1.12 (resp. [RFC3376] Section 4.1.10) for query messages and [RFC3810] Section 5.2.12 (resp. [RFC3376] Section 4.2.11) for report messages.

One such extension is being defined in [I-D.ietf-bier-mld]

2. Conventions used in this document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

3. Multicast Listener Query Extension

The MLD query format with extension is shown below

0

1

2

3

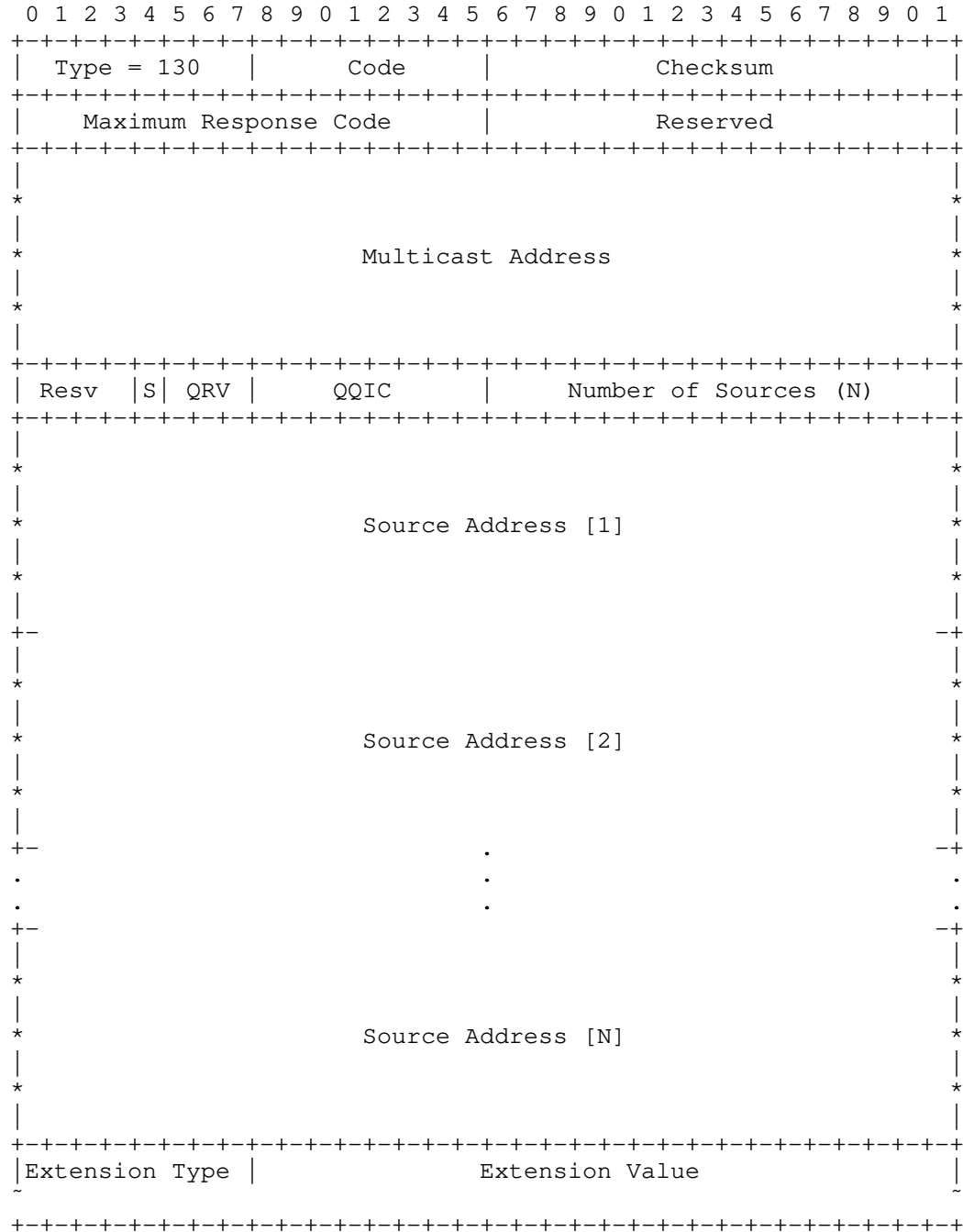


Figure 2: MLD Query Extension

4. Version 2 Multicast Listener Report Extension

The MLD report format with extension is shown below

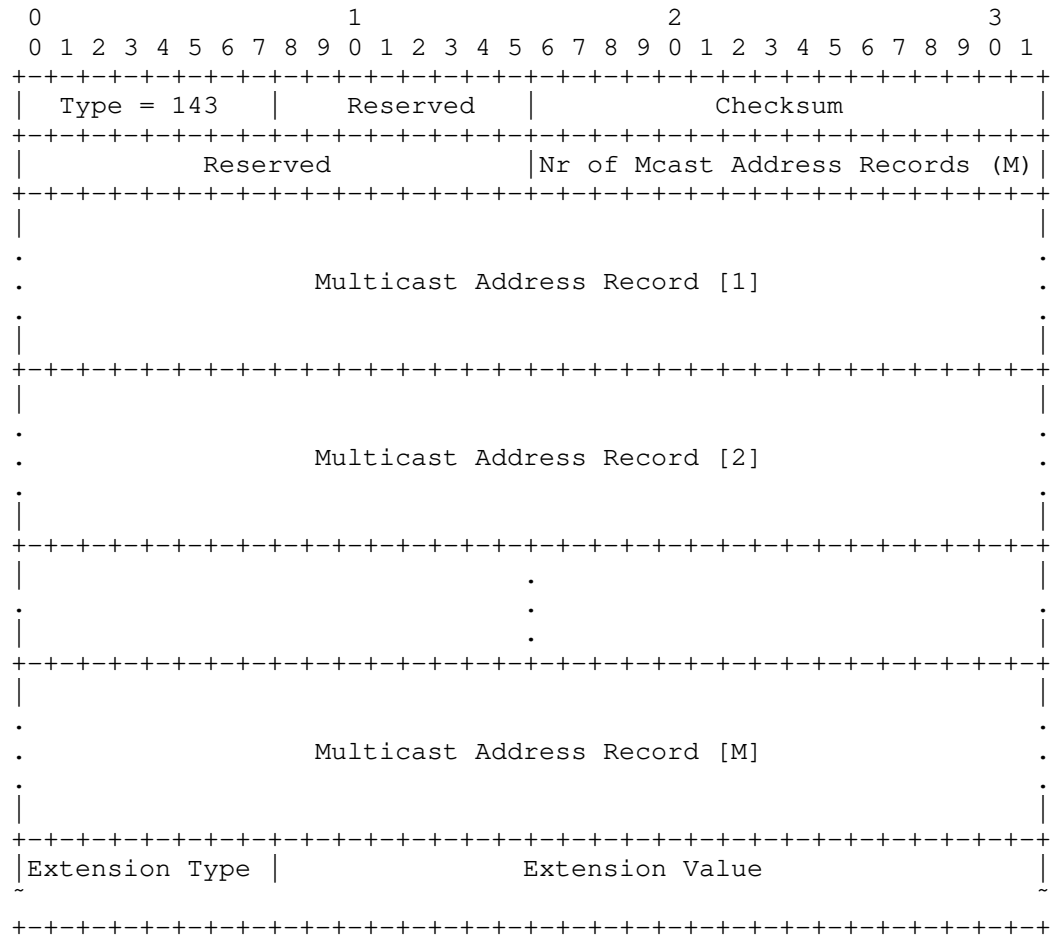


Figure 3: MLD Report Extension

5. IGMP Membership Query Extension

The IGMP query format with the extension is shown below

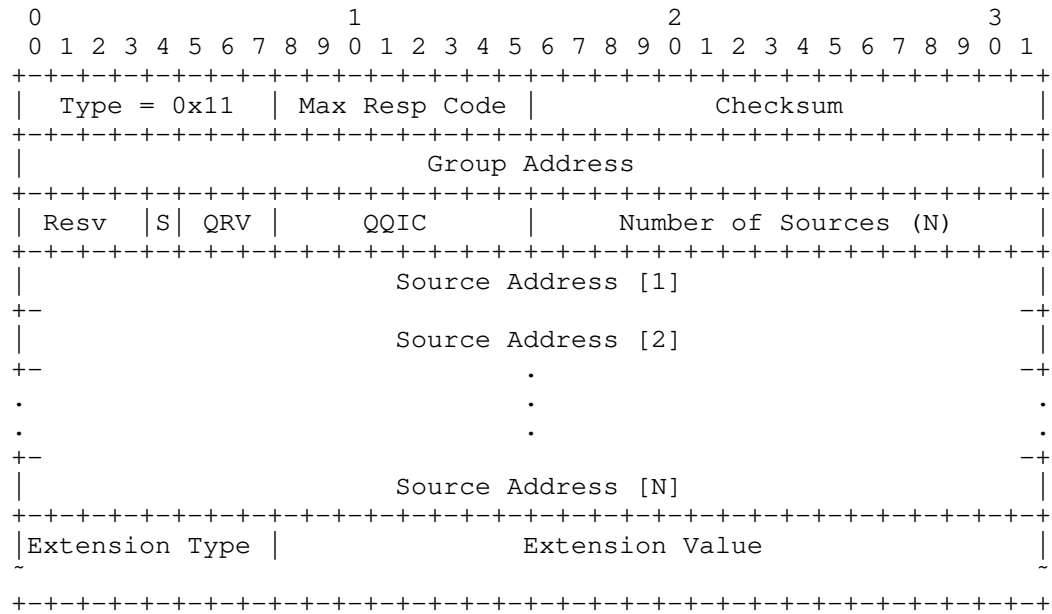


Figure 4: IGMP Query Extension

6. IGMP Version 3 Membership Report Extension

The IGMP report format with the extension is shown below

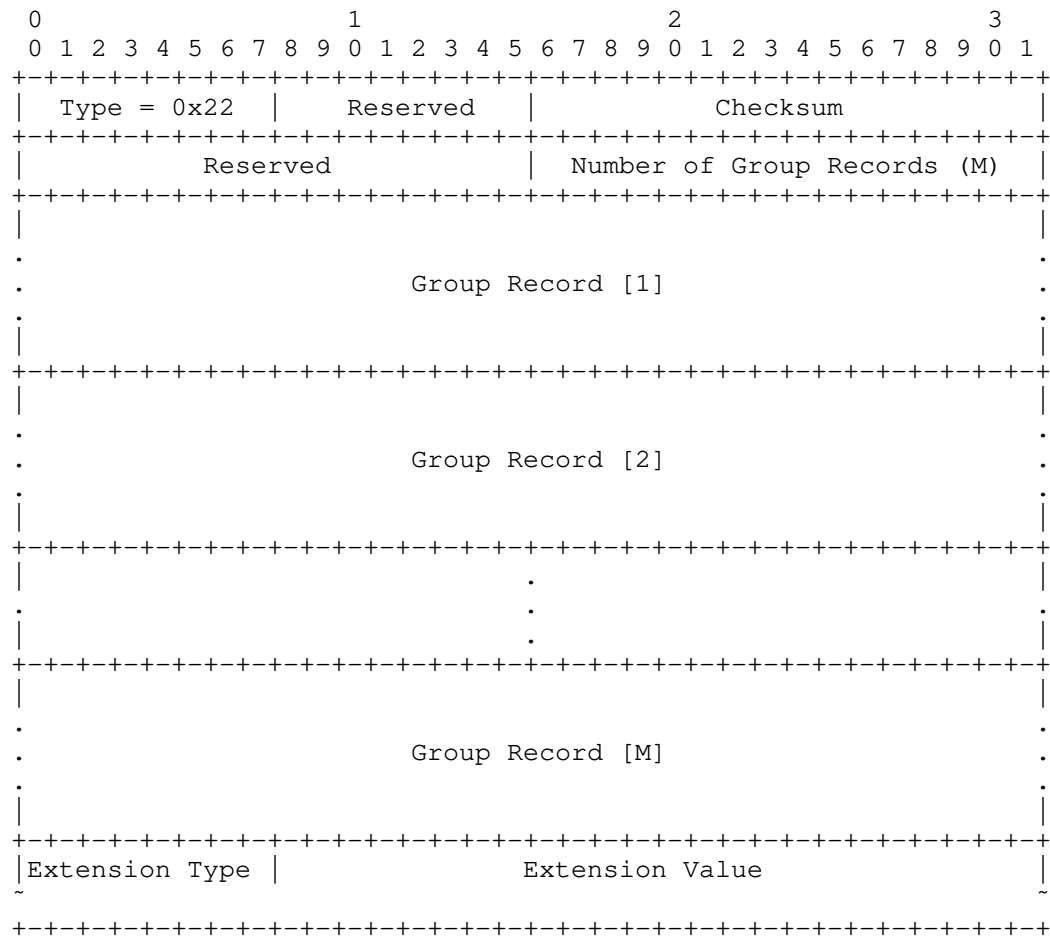


Figure 5: IGMP Report Extension

7. Security Considerations

This document extends MLD (resp. IGMP) message formats. As such, there is no impact on security or changes to the considerations in [RFC3810] and [RFC3376].

8. IANA Considerations

This document requests that IANA creates a new registry for IGMP/MLD extension-types.

9. References

9.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC3376] Cain, B., Deering, S., Kouvelas, I., Fenner, B., and A. Thyagarajan, "Internet Group Management Protocol, Version 3", RFC 3376, DOI 10.17487/RFC3376, October 2002, <<https://www.rfc-editor.org/info/rfc3376>>.
- [RFC3810] Vida, R., Ed. and L. Costa, Ed., "Multicast Listener Discovery Version 2 (MLDv2) for IPv6", RFC 3810, DOI 10.17487/RFC3810, June 2004, <<https://www.rfc-editor.org/info/rfc3810>>.
- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.

9.2. Informative References

- [I-D.ietf-bier-mld]
Pfister, P., Wijnands, I., Venaas, S., Wang, C., Zhang, Z., and M. Stenberg, "BIER Ingress Multicast Flow Overlay using Multicast Listener Discovery Protocols", draft-ietf-bier-mld-04 (work in progress), March 2020.

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