6lo Working Group R. Droms
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Assignment of an Ethertype for IPv6 with LoWPAN Encapsulation draft-droms-6lo-ethertype-request-01

Abstract

When carried over layer 2 technologies such as Ethernet, IPv6 datagrams using LoWPAN encapsulation as defined in RFC 4944 must be identified so the receiver can correctly interpret the encoded IPv6 datagram. This document requests the assignment of an Ethertype for that purpose.

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1. Introduction

The IETF has defined a format for IPv6 [RFC2460] datagram encapsulation [RFC4944] ("LoWPAN encapsulation"). This document regards any IPv6 datagram using the Dispatch octet as defined in section 5.1 of RFC 4944 to be using LoWPAN encapsulation. LoWPAN encapsulation as defined in RFC 4944 has been updated by [RFC6282], and may be extended and modified by future IETF standards document. The intended layer 2 technology for IPv6 datagrams using LoWPAN encapsulation as originally defined is [IEEE.802.15.4_2011], which does not provide for a protocol switch in its layer 2 headers.

There is interest in carrying IPv6 datatgrams over layer 2 technologies that do include a protocol switch field:

- Usage of LoWPAN encapsulation in conjunction with IEEE 802.15.9 Multiplexed Data Service [IEEE802159], which provides the ability to perform upper layer protocol dispatch for IEEE 802.15.4 networks. Wi-SUN Alliance intends to use the 15.9 Multiplexed Data Information Element to dispatch LoWPAN encapsulation frames to upper stack layers. As specified in IEEE 802.15.9, dispatch of LoWPAN encapsulation frames will require an Ethertype be assigned for LoWPAN encapsulation.

- LoWPAN encapsulation will likely be needed for WiFi Alliance's HaLoW [HALOW] standard (low power operation in the 900 MHz band)

- Other layer 2 technologies such as Ethernet and debugging tools such as Wireshark require a unique protocol type field for LoWPAN encapsulation to properly interpret IPv6 datagrams that use LoWPAN encapsulation.

2. Request to IEEE for assignment of an Ethertype

When this document is published, the IETF will formally submit a request to IEEE for assignment of an Ethertype for IPv6 datagrams using LoWPAN encapsulation.

3. IANA Considerations

This memo includes no request to IANA.

4. Security Considerations

This document is intended only to request assignment of an Ethertype for IPv6 datagrams using LoWPAN encapsulation. It has no incremental implications for security beyond those in the relevant protocols.

5. Normative References

[HALOW] Wi-Fi Alliance, "Wi-Fi HaLow", http://www.wi-fi.org/discover-wi-fi/wi-fi-halow .

[IEEE.802.15.4_2011] IEEE, "IEEE Standard for Local and metropolitan area networks--Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs)", IEEE 802.15.4-2011, DOI 10.1109/ieeestd.2011.6012487, September 2011, <http://ieeexplore.ieee.org/servlet/opac?punumber=6012485>.

[IEEE802159] IEEE, "IEEE Draft Recommended Practice for Transort of Key Management Protocol (KMP) Datagrams", IEEE P802.15.9/D04, May 2015.

[RFC2460] Deering, S. and R. Hinden, "Internet Protocol, Version 6 (IPv6) Specification", RFC 2460, DOI 10.17487/RFC2460, December 1998, <http://www.rfc-editor.org/info/rfc2460>.

[RFC4944] Montenegro, G., Kushalnagar, N., Hui, J., and D. Culler, "Transmission of IPv6 Packets over IEEE 802.15.4 Networks", RFC 4944, DOI 10.17487/RFC4944, September 2007, <http://www.rfc-editor.org/info/rfc4944>.

[RFC6282] Hui, J., Ed. and P. Thubert, "Compression Format for IPv6 Datagrams over IEEE 802.15.4-Based Networks", RFC 6282, DOI 10.17487/RFC6282, September 2011, <http://www.rfc-editor.org/info/rfc6282>.

Authors' Addresses

Ralph Droms
Cisco
55 Cambridge Parkway
Cambridge, Massachusetts
US

Phone: +1 617 621 1904
Email: rdroms.ietf@gmail.com

Paul Duffy
Cisco
1414 Massachusetts Ave.
Boxborough, Massachusetts 01719
US

Phone: +1 978 204 9993
Email: paduffy@cisco.com