

6man WG
Internet-Draft
Intended status: Standards Track
Expires: August 17, 2010

S. Gundavelli
O. Troan
W. Dec
Cisco
S. Krishnan
Ericsson
February 13, 2010

IPv6 ND Vendor-Specific Information Option
draft-gundavelli-6man-ipv6-nd-vendor-spec-options-00.txt

Abstract

The current IPv6 Neighbor Discovery specification does not provide semantics for carrying vendor-specific options in the IPv6 Neighbor Discovery messages. With the anticipated wide scale deployment of IPv6 networks, it is useful for organizations and vendors to have the ability to carry organization/vendor specific information in the IPv6 Neighbor Discovery messages. This will facilitate the vendors and organizations to make deployment specific extensions as needed in system deployment. This document defines a new vendor-specific information option that can be carried in IPv6 Neighbor Discovery messages exchanged between IPv6 nodes on a link.

Status of this Memo

This Internet-Draft is submitted to IETF in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

The list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/lid-abstracts.txt>.

The list of Internet-Draft Shadow Directories can be accessed at <http://www.ietf.org/shadow.html>.

This Internet-Draft will expire on August 17, 2010.

Internet-Draft

IPv6 ND Vendor-Specific Option

February 2010

Copyright Notice

Copyright (c) 2010 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the BSD License.

Table of Contents

1.	Introduction	3
2.	Requirements Language	4
3.	Vendor-Specific Information Option	5
4.	Processing Rules	7
5.	IANA Considerations	8
6.	Security Considerations	9
7.	Acknowledgements	10
8.	References	11
8.1.	Normative References	11
8.2.	Informative References	11
	Authors' Addresses	12

1. Introduction

Support for Vendor-specific options in protocol messages have proven to be extremely useful in the development and the deployments of protocols. The Mobile IPv6 [[RFC3775](#)], DHCPv6 [[RFC3315](#)], IKEv2 [[RFC4306](#)] and many other protocols have provided the needed semantics for constructing and carrying vendor-specific options in their respective protocol messages. These options have allowed vendors to implement customary extensions to protocols and distinguish themselves from other vendors. These extensions with proper name space ensured interoperability and coexistence with other implementations. A given implementation always had the option to simply skip a vendor specific option when it did not recognize the vendor ID present in the received option.

Enabling this capability does not take away the fact that vendors are encouraged to bring their extensions to IETF and move it through the standards process. However, it is also important to provide the needed tools for vendors to extend protocols when the extensions are very much local to a given deployment and global standardization of those extensions are not needed.

The IPv6 Neighbor Discovery specification [[RFC4861](#)] defines various messages for communication between IPv6 nodes on a link. However, the protocol does not currently support vendor specific options. This document defines a new vendor-specific information option that can be carried in IPv6 Neighbor Discovery messages exchanged between IPv6 nodes on a link.

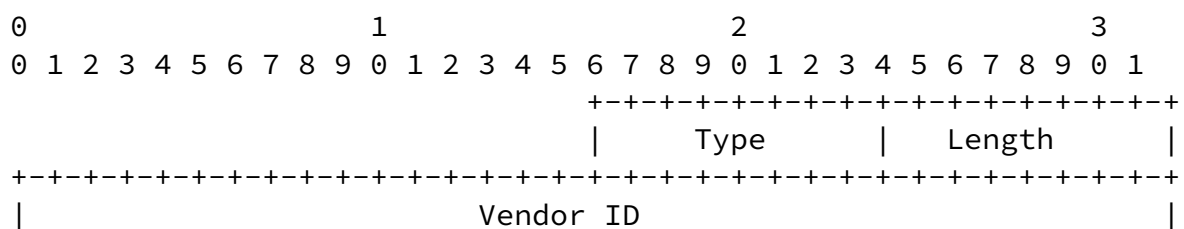
2. Requirements Language

In this document, the key words "MAY", "MUST", "MUST NOT", "OPTIONAL", "RECOMMENDED", "SHOULD", and "SHOULD NOT", are to be interpreted as described in [[RFC2119](#)].

3. Vendor-Specific Information Option

A new option, Vendor-Specific Information Option is defined. This option is used by IPv6 Neighbor Discovery peers to exchange vendor-specific information. This option can be included in any of the IPv6 Neighbor Discovery messages.

The definition of the information carried in this option is vendor specific. The vendor is indicated in the enterprise-number field. Use of vendor-specific information allows enhanced operation, utilizing additional features in a vendor's IPv6 Neighbor Discovery implementation. Multiple instances of the option can be present in a Neighbor Discovery message. The option should be padded to ensure it ends on a natural 64-bit boundary.



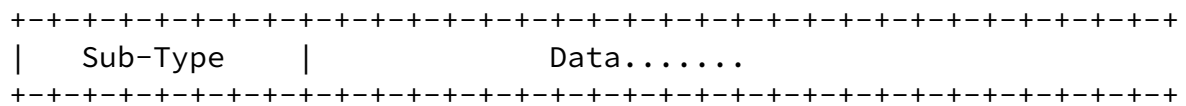


Figure 1: Vendor-Specific Information Option

Type

An 8-bit field indicating that it is a Neighbor Discovery Vendor-Specific option. The value to be assigned by IANA.

Length

8-bit unsigned integer. The length of the option (including the type and length fields) in units of 8 octets.

Vendor Id

The SMI Network Management Private Enterprise Code of the IANA-maintained Private Enterprise Numbers registry [IANA-Enterprise-Numbers].

Sub-Type

An 8-bit field identifies the specific vendor extension. Each vendor will manage their respective name space.

4. Processing Rules

The following considerations MUST be applied by all IPv6 nodes when sending and receiving any Neighbor Discovery messages with Vendor-Specific Information option.

- o When including a Vendor-Specific Information option in a Neighbor Discovery message, general considerations from [[RFC4861](#)] MUST be

applied on the rules of inclusion of options in Neighbor Discovery messages. Additionally, if the node is a SEND [\[RFC3971\]](#) node, the Vendor-Specific Information option MUST precede the RSA Signature option [\[RFC3971\]](#).

- o If there is a Vendor-Specific Information option present in the received Neighbor Discovery message, but if the vendor Id is unknown, the option SHOULD be silently ignored and the rest of the message must be processed.

This specification defines a new Neighbor Discovery option, Vendor-Specific Information Option. This is defined in [Section 3.0](#). The type value for this option needs to be assigned from the registry, IPv6 Neighbor Discovery Option Formats, defined in [[RFC4861](#)].

6. Security Considerations

The Vendor-Specific Information option defined in this specification is carried in the IPv6 Neighbor Discovery messages, like any other IPv6 Neighbor Discovery option and does not require any special security considerations. However, Neighbor Discovery messages are vulnerable to threats mentioned in [[RFC3756](#)]. These threats can be mitigated by the use Secure Neighbor Discovery [[RFC3971](#)].

[7.](#) Acknowledgements

The authors would like to acknowledge Mark Townsley, Ralph Droms and Eric Voit for all the discussions on this topic.

[8.](#) References

[8.1.](#) Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC4861] Narten, T., Nordmark, E., Simpson, W., and H. Soliman, "Neighbor Discovery for IP version 6 (IPv6)", [RFC 4861](#), September 2007.

[8.2.](#) Informative References

- [RFC3315] Droms, R., Bound, J., Volz, B., Lemon, T., Perkins, C., and M. Carney, "Dynamic Host Configuration Protocol for IPv6 (DHCPv6)", [RFC 3315](#), July 2003.
- [RFC3756] Nikander, P., Kempf, J., and E. Nordmark, "IPv6 Neighbor Discovery (ND) Trust Models and Threats", [RFC 3756](#), May 2004.
- [RFC3775] Johnson, D., Perkins, C., and J. Arkko, "Mobility Support in IPv6", [RFC 3775](#), June 2004.
- [RFC3971] Arkko, J., Kempf, J., Zill, B., and P. Nikander, "SEcure Neighbor Discovery (SEND)", [RFC 3971](#), March 2005.
- [RFC4306] Kaufman, C., "Internet Key Exchange (IKEv2) Protocol", [RFC 4306](#), December 2005.

Authors' Addresses

Sri Gundavelli
Cisco
170 West Tasman Drive
San Jose, CA 95134
USA

Email: sgundave@cisco.com

Ole Troan
Cisco
Skoyen Atrium, Drammensveien 145A
Oslo, N-0277
Norway

Email: otroan@cisco.com

Wojciech Dec
Cisco
Haarlerbergweg 13-19
Amsterdam, Noord-Holland 1101 CH
Netherlands

Email: wdec@cisco.com

Suresh Krishnan
Ericsson
8400 Blvd Decarie
Town of Mount Royal, Quebec
Canada

Email: suresh.krishnan@ericsson.com