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S. Gundavelli
O. Troan
W. Dec
Cisco
S. Krishnan
Ericsson
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IPv6 ND Vendor-Specific Information Option
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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.

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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.

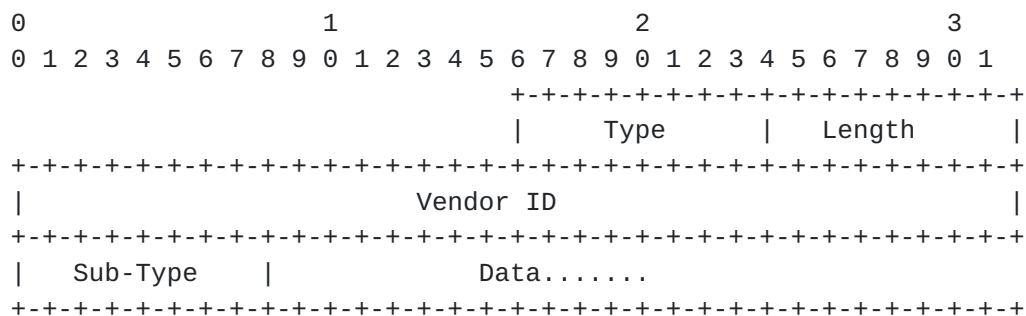


Figure 1: Vendor-Specific Information Option

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.

5. IANA Considerations

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.

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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

