

Vendor-Identifying Vendor Options for DHCPv4
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Abstract

The DHCP options for Vendor Class and Vendor-Specific Information can be ambiguous when a DHCP client represents multiple vendors. This document defines two new options, modeled on the IPv6 options for vendor class and vendor-specific information, which contain Enterprise Numbers to remove ambiguity.

Conventions used in this document

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 [RFC-2119](#) [1].

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[1.](#) **Introduction**

The DHCP protocol for IPv4 defines options to allow a client to indicate its vendor type (option 60), and to allow the DHCP client and server to exchange vendor-specific information (option 43) [[2](#)]. While there is no prohibition against passing multiple copies of these options in a single packet, doing so would introduce ambiguity of interpretation, particularly if conveying vendor-specific information for multiple vendors. The vendor identified by option 60 defines the interpretation of option 43, which itself carries no vendor identifier.

There are circumstances where an implementation may need to support multiple, independently defined forms of vendor-specific information. For example, implementations that must conform to an industry-standard use of DHCPv4, to allow interoperability in a particular technology space, may be required to support the vendor-specific options of that industry group. But the same implementation may also require support for vendor-specific options defined by the manufacturer. In particular, this is an issue for vendors of devices supporting CableLabs standards, such as DOCSIS, CableHome, and PacketCable, since those standards define an industry-specific use for options 60 and 43.

This document defines two new options, modeled on the IPv6 options for vendor class and vendor-specific information [[3](#)], which contain Enterprise Numbers to remove ambiguity. If desired, these new options can be used in addition to the current vendor class and vendor information options, whose definition is unaffected by this document.

[2.](#) **Vendor-Identifying Vendor Class Option**

A DHCP client may use this option to unambiguously identify the vendor that manufactured the hardware on which the client is running, or an industry consortium to which the vendor belongs. The information contained in the data area of this option is contained in one or more opaque fields that identify details of the hardware configuration.

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The format of the V-I Vendor-specific Information option is:

[illegible]

```
option-code      OPTION_V-I  VENDOR_OPTS (to be assigned by
                        IANA)
```

```
option-len      4 + length of option-data field
```

enterprise-number	The vendor's registered Enterprise Number as registered with IANA [4].
-------------------	--

option-data	Encapsulated vendor-specific options, described below.
-------------	--

The definition of the information carried in this option is vendor specific. The vendor is indicated in the enterprise-number field. Each instance of this option contains information corresponding to a single Enterprise Number. Multiple instances of this option may be present, and each is treated independently.

Use of vendor-specific information allows enhanced operation, utilizing additional features in a vendor's DHCP implementation. Servers not equipped to interpret the vendor-specific information sent by a client **MUST** ignore it. Clients that do not receive desired vendor-specific information **SHOULD** make an attempt to operate without it.

The encapsulated vendor-specific options field MUST be encoded as a sequence of code/length/value fields of identical format to the DHCP options field. The option codes are defined by the vendor identified in the enterprise-number field and are not managed by IANA. Option codes 0 and 255 have no pre-defined interpretation or format. Each of the encapsulated options is formatted as follows:

```

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+ - + - + - + - + - + - + - + - + - + - + - + - + - + - + - +
|           opt-code           |           option-len           |
+ - + - + - + - + - + - + - + - + - + - + - + - + - + - + - +
.
```

```

      .                                option-data                                .
      .                                .                                .
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+

```


opt-code	The code for the encapsulated option
option-len	An unsigned integer giving the length of the option-data field in this encapsulated option in octets.
option-data	The data area for the encapsulated option

Multiple instances of the Vendor-specific Information option may appear in a DHCP message. Each instance of the option is interpreted according to the option codes defined by the vendor identified by the Enterprise Number in that option.

4. IANA Considerations

The values for the V-I VENDOR CLASS and V-I VENDOR OPTS option codes must be assigned from the numbering space defined for public DHCP Options in [RFC 2939](#) [5].

5. Security Considerations

This document in and by itself provides no security, nor does it impact existing security. DHCP provides an authentication and message integrity mechanism, as described in [RFC 3118](#) [6], which may be used if authenticity is required for data carried by the options defined in this document.

References

- [1] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [2] S. Alexander and R. Droms. "DHCP Options and BOOTP Vendor Extensions", [RFC 2132](#), March 1997.
- [3] Droms, R., Bound, J., Volz, B., Lemon, T., Perkins, C., and Carney, M., "Dynamic Host Configuration Protocol for IPv6 (DHCPv6)", [RFC 3315](#), July 2003.
- [4] IANA. Private Enterprise Numbers.
<http://www.iana.org/assignments/enterprise-numbers.html>.
- [5] Droms, R., "Procedures and IANA Guidelines for Definition of New DHCP Options and Message Types", [BCP 43](#), [RFC 2939](#), September 2000.
- [6] Droms, R. and W. Arbaugh, "Authentication for DHCP Messages", [RFC](#)

[3118](#), June 2001.

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