Network Working Group
Request for Comments: 3004
Category: Standards Track

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November 2000

The User Class Option for DHCP

Status of this Memo

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Abstract

This option is used by a Dynamic Host Configuration Protocol (DHCP) client to optionally identify the type or category of user or applications it represents. The information contained in this option is an opaque field that represents the user class of which the client is a member. Based on this class, a DHCP server selects the appropriate address pool to assign an address to the client and the appropriate configuration parameters. This option should be configurable by a user.

1. Introduction

DHCP administrators may define specific user class identifiers to convey information about a client's software configuration or about its user's preferences. For example, the User Class option can be used to configure all clients of people in the accounting department with a different printer than clients of people in the marketing department.

2. Requirements Terminology

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 [3].

3. DHCP Terminology

- "DHCP client"
  A DHCP client or "client" is an Internet host using DHCP to obtain configuration parameters such as a network address.

- "DHCP server"
  A DHCP server or "server" is an Internet host that returns configuration parameters to DHCP clients.

- "binding"
  A binding is a collection of configuration parameters, including at least an IP address, associated with or "bound to" a DHCP client. Bindings are managed by DHCP servers.

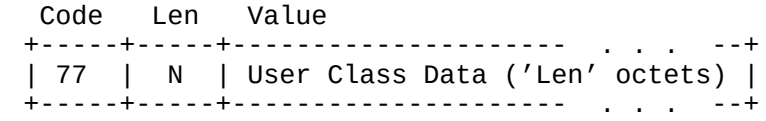
4. User Class option

This option is used by a DHCP client to optionally identify the type or category of user or applications it represents. A DHCP server uses the User Class option to choose the address pool it allocates an address from and/or to select any other configuration option.

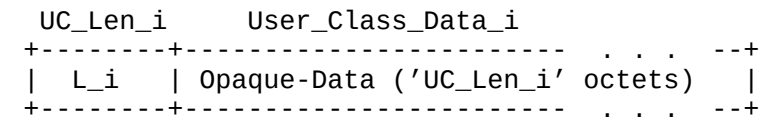
This option is a DHCP option [1, 2].

This option MAY carry multiple User Classes. Servers may interpret the meanings of multiple class specifications in an implementation dependent or configuration dependent manner, and so the use of multiple classes by a DHCP client should be based on the specific server implementation and configuration which will be used to process that User class option.

The format of this option is as follows:



where Value consists of one or more instances of User Class Data. Each instance of User Class Data is formatted as follows:



Each User Class value (User_Class_Data_i) is indicated as an opaque field. The value in UC_Len_i does not include the length field itself and MUST be non-zero. Let m be the number of User Classes carried in the option. The length of the option as specified in Len must be the sum of the lengths of each of the class names plus m: Len= UC_Len_1 + UC_Len_2 + ... + UC_Len_m + m. If any instances of User Class Data are present, the minimum value of Len is two (Len = UC_Len_1 + 1 = 1 + 1 = 2).

The Code for this option is 77.

A server that is not equipped to interpret any given user class specified by a client MUST ignore it (although it may be reported). If a server recognizes one or more user classes specified by the client, but does not recognize one or more other user classes specified by the client, the server MAY use the user classes it recognizes.

DHCP clients implementing this option SHOULD allow users to enter one or more user class values.

5. IANA Considerations

Option 77, which IANA has already assigned for this purpose, should be used as the User Class Option for DHCP.

6. Security Considerations

DHCP currently provides no authentication or security mechanisms. Potential exposures to attack are discussed is section 7 of the protocol specification [1].

This lack of authentication mechanism means that a DHCP server cannot check if a client or user is authorized to use a given User Class. This introduces an obvious vulnerability when using the User Class option. For example, if the User Class is used to give out a special parameter (e.g., a particular database server), there is no way to authenticate a client and it is therefore impossible to check if a client is authorized to use this parameter.

7. References

[1] Droms, R., "Dynamic Host Configuration Protocol", RFC 2131, March 1997.

[2] Alexander, S. and R. Droms, "DHCP Options and BOOTP Vendor Extensions", RFC 2132, March 1997.

[3] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

8. Acknowledgments

This document is based on earlier drafts by Glenn Stump, Ralph Droms, Ye Gu, Ramesh Vyaghrapuri and Burcak Beser. Thanks to Ted Lemon, Steve Gonczi, Kim Kinnear, Bernie Volz, Richard Jones, Barr Hibbs and Thomas Narten for their comments and suggestions.

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Acknowledgement

Funding for the RFC Editor function is currently provided by the Internet Society.