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Client Identifier Option in DHCP Server Replies
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Abstract

This document updates [RFC2131](#) [[RFC2131](#)]. The changes to [[RFC2131](#)] defined in this draft clarifies the use of 'client identifier' option by the DHCP servers. The clarification addresses the issues arising out of the point specified by [[RFC2131](#)] that the server 'MUST NOT' return client identifier' option to the client.

Requirements

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 [[RFC2119](#)].

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Table of Contents

1.	Introduction	3
2.	Problem Statement	3
3.	Proposed Modification To [RFC2131]	4
4.	IANA Considerations	4
5.	Security Considerations	4
6.	Acknowledgements	5
7.	Normative References	5
	Authors' Addresses	5

1. Introduction

The Dynamic Host Configuration Protocol (DHCP) defined in [\[RFC2131\]](#) provides configuration parameters to hosts on a TCP/IP based network. DHCP is built on a client-server model, where designated DHCP server allocate network addresses and deliver configuration parameters to dynamically configured hosts.

The changes to [\[RFC2131\]](#) defined in this document clarifies the use of 'client identifier' option by the DHCP servers. The clarification addresses the issues (as mentioned in Problem Statement) arising out of the point specified by [\[RFC2131\]](#) that the server 'MUST NOT' return client identifier' option to the client.

2. Problem Statement

[\[RFC2131\]](#) specifies that a combination of 'client identifier' or 'chaddr' and assigned network address constitute a unique identifier for the client's lease and are used by both the client and server to identify a lease referred in any DHCP messages. [\[RFC2131\]](#) also specifies that the server "MUST NOT" return 'client identifier' in DHCP OFFER and DHCP ACK messages. DHCP relay agents and servers, following these recommendations MAY drop the DHCP packets in the absence of both 'client identifier' and 'chaddr'.

In some cases, client may not be having valid hardware address value to be filled in 'chaddr' field of the packet and hence may set this field as zero. One such example is when DHCP is used to assign IP address to a mobile phone or a tablet and where the 'chaddr' field is set to zero in DHCP request packets. In such cases, client usually sets the 'client identifier' option field (to a value as permitted in [\[RFC2131\]](#)), and both client and server use this field to uniquely identify the client within a subnet.

Note that due to above mentioned recommendations in [\[RFC2131\]](#), valid downstream DHCP packets (DHCP OFFER, DHCP ACK and DHCP NAK) from the server MAY get dropped at the DHCP relay agent in the absence of 'client identifier' option when 'chaddr' field is set as zero.

The problem may get aggravated when a client receives a response from the server without 'client identifier' and with 'chaddr' value set to zero, as it cannot guarantee that the response is intended for it. This is because even though the 'xid' field is present to map responses with requests, this field alone cannot guarantee that a particular response is for a particular client, as 'xid' values generated by multiple clients within a subnet need not be unique.

Lack of 'client identifier' option in DHCP reply messages also affects the scenario where multiple DHCP clients may be running on the same host sharing the same 'chaddr'.

This document attempts to address these problems faced by DHCP relay agent and client by proposing modification to DHCP server behavior. The proposed solution is in line with DHCPv6 [\[RFC3315\]](#) where the server always includes the Client Identifier option in the Reply messages.

[3.](#) Proposed Modification To [\[RFC2131\]](#)

If the 'client identifier' option is set in a message received from a client, the server MUST return the 'client identifier' option, unaltered, in its response message.

Following table is extracted from [section 4.3.1 of \[\\[RFC2131\\]\]\(#\)](#) and relevant fields are modified accordingly to overcome the problems mentioned in this document.

Option	DHCP OFFER	DHCP ACK	DHCP NAK
-----	-----	-----	-----
Client identifier (if sent by client)	MUST	MUST	MUST
Client identifier (if not sent by client)	MUST NOT	MUST NOT	MUST NOT

When a client receives a DHCP message containing a 'client identifier' option, the client MUST compare that client identifier to the one it is configured to send. If the two client identifiers do not match, the client MUST silently discard the message.

[4.](#) IANA Considerations

This memo asks the IANA for no new parameters.

[5.](#) Security Considerations

No known security considerations.

6. Acknowledgements

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7. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2131] Droms, R., "Dynamic Host Configuration Protocol", [RFC 2131](#), March 1997.
- [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.

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