

Internet Engineering Task Force
Internet-Draft
Updates: [3315](#) (if approved)
Intended status: Standards Track
Expires: August 17, 2009

E. Hunt
ISC
February 13, 2009

DHCPv6 MRC Clarification
draft-hunt-dhcpv6-clarify-mrc-00

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Internet-Draft

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Abstract

The definition of the Maximum Retransmission Count (MRC) variable described in [RFC 3315](#) is clarified to resolve an ambiguity.

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1. Introduction

[Section 14 of RFC 3315](#) [[RFC3315](#)] has an ambiguous definition of the Maximum Retransmission Count (MRC) variable. The existing text says:

MRC specifies an upper bound on the number of times a client may retransmit a message. Unless MRC is zero, the message exchange fails once the client has transmitted the message MRC times.

The conflicting use of the words "transmit" and "retransmit" has led to two different understandings of the MRC variable. Some implementations use it to limit the total number of transmissions a client may send, including the initial one. Others count only subsequent retransmissions. This has caused problems with formal acceptance testing.

We favor the second interpretation as a better match to the name of the variable. (If MRC had been intended to include the original transmission in its counter, it would have been called the Maximum Transmission Count instead.)

2. Recommendations

In [section 14 of RFC 3315](#) [[RFC3315](#)], the definition of MRC should be read as follows:

MRC specifies an upper bound on the number of times a client may retransmit a message after the initial transmission has taken place. Unless MRC is zero, client transmissions end after the client has transmitted the message a total of MRC + 1 times.

Future revisions of [RFC 3315](#) should include this language.

Note that in this interpretation, the special meaning of MRC = 0 (indicating no limit) makes it impossible to use MRC to limit the

client to a single transmission and no retransmissions. This inflexibility is unfortunate, but avoids a need to change the variable name for clarity.

If a single transmission is required, MRD can be used instead, to limit the total time the client spends transmitting to a period less than the first retransmission timeout. In this scenario, IRT must exceed MRD by an amount greater than the random factor added when calculating the first RT. As an example, if MRD is set to one second and IRT to two seconds, the first RT will never be lower than 1.9 seconds, and so a second transmission will never take place.

[3.](#) Acknowledgments

The ambiguity discussed in this document was first noted by Hideshi Enokihara on the DHCWG mailing list.

Jeremy Reed and David Hankins of ISC provided editorial feedback.

[4.](#) IANA Considerations

This document requests no IANA actions.

[5.](#) Security Considerations

None.

[6.](#) References

[6.1.](#) Normative 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.

[6.2.](#) Informative References

[ENOKIHARA]

Enokihara, H., "Petty question regarding MRC in [RFC3315](http://www.ietf.org/mail-archive/web/dhcwg/current/msg06876.html)",
2007, <[http://www.ietf.org/mail-archive/web/dhcwg/current/
msg06876.html](http://www.ietf.org/mail-archive/web/dhcwg/current/msg06876.html)>.

Author's Address

Evan Hunt
ISC
950 Charter St.
Redwood City, CA 94063
USA

Email: each@isc.org