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Modification to Default Value of MAX_SOL_RT
draft-droms-dhc-dhcpv6-maxsolrt-update-00

Abstract

This document updates RFC 3315 by redefining the default value for SOL_MAX_RT and defining an option through which a DHCPv6 server can override the client's default value for SOL_MAX_RT with a new value.

Status of this Memo

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1. Introduction

Section 5.5 of the DHCPv6 specification *[RFC3315]* defines the default value of MAX_SOL_RT to be 120 seconds. In some circumstances, this default will lead to an unacceptably high volume of aggregated traffic at a DHCPv6 server.

1.1. Requirements Language

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 *[RFC2119]*.

2. Update to RC 3315

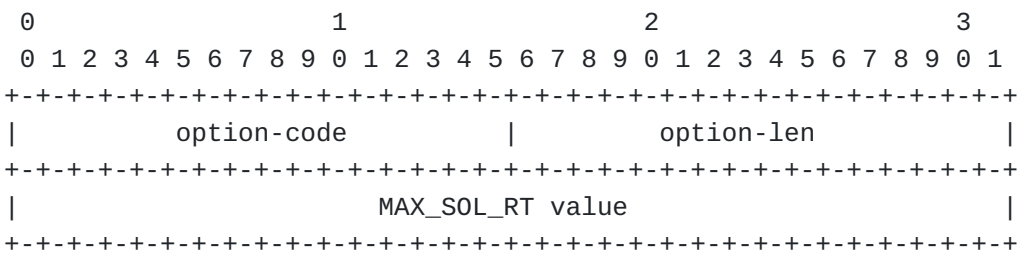
```
OLD:
   SOL_MAX_RT      120 secs  Max Solicit timeout value

NEW:
   SOL_MAX_RT     3600 secs  Max Solicit timeout value
```

This document changes section 5.5 of RFC 3315 as follows:
With this change, a DHCPv6 client that does not receive a satisfactory response will send Solicit messages with the same initial frequency and exponential backoff as specified in RFC 3315. However, the long term behavior of these DHCPv6 clients will be to send a Solicit message every 3600 seconds rather than every 120 seconds, significantly reducing the aggregated traffic at the DHCPv6 server.
The change to MAX_SOL_RT is in response to DHCPv6 message rates observed at a DHCPv6 server in a deployment in which many DHCPv6 clients are sending Solicit messages but the DHCPv6 server has been configured not to respond to those Solicit messages. RFC 3315 was written with the expectation that the 'M' and 'O' flags in NDP *[RFC2461]* would control the use of DHCPv6 by hosts. However, the current definition of the 'M' and 'O' flags in RFC 4861 *[RFC4861]* does not explicitly preclude the use of DHCPv6 by a host. Some devices are specified to initiate DHCPv6 even if RAs are received with the 'M' and 'O' bits set to 0. In some circumstances, it is desirable to enable the assignment of IPv6 addresses through DHCPv6 to some nodes on a link but not to others, which cannot be implemented through the 'M' and 'O' bits.

3. SOL_MAX_RT option

A DHCPv6 server sends the SOL_MAX_RT option to a client to override the default value of SOL_MAX_RT. One use for the SOL_MAX_RT option is to set a longer value for SOL_MAX_RT, which reduces the Solicit traffic from a client that has not received any IPv6 addresses.



option-code	OPTION_MAX_SOL_RT (TBD).
option-len	4.
MAX_SOL_RT value	Overriding value for MAX_SOL_RT in seconds.

The format of the SOL_MAX_RT option is:
If the DHCPv6 server declines to assign any addresses to a client in an IA_NA or IA_TA option, it MAY include a SOL_MAX_RT option in the appropriate options field along with a Status Code option indicating NoAddrsAvail.
If a DHCPv6 client receives an IA_NA or IA_TA option containing a SOL_MAX_RT option, the client MUST set its internal SOL_MAX_RT parameter to the value contained in the SOL_MAX_RT option.

4. Security Considerations

This document introduces one security considerations beyond those described in RFC 3315. A malicious DHCPv6 server might cause a client to set its SOL_MAX_RT parameter to an arbitrarily high value with the SOL_MAX_RT option. Assuming the client also receives a response from a valid DHCPv6 server, the large value for SOL_MAX_RT will not have any effect.

5. IANA Considerations

IANA is requested to assign an options code from the "DHCP Option Codes" Registry for OPTION_MAX_SOL_RT.

6. References

[RFC2119]	Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.
[RFC2461]	Narten, T., Nordmark, E. and W.A. Simpson, "Neighbor Discovery for IP Version 6 (IPv6)", RFC 2461, December 1998.
[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.
[RFC4861]	Narten, T., Nordmark, E., Simpson, W. and H. Soliman, "Neighbor Discovery for IP version 6 (IPv6)", RFC 4861, September 2007.

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