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Simple Network Time Protocol (SNTP) Configuration Option for DHCPv6

Status of This Memo

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Abstract

This document describes a new DHCPv6 option for passing a list of Simple Network Time Protocol (SNTP) server addresses to a client.

1. Introduction

This document describes a new option, called the SNTP [3] servers option, for passing information about SNTP servers in DHCPv6 [1].

2. Requirements

The keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL, when they appear in this document, are to be interpreted as described in RFC 2119 [2].

3. Terminology

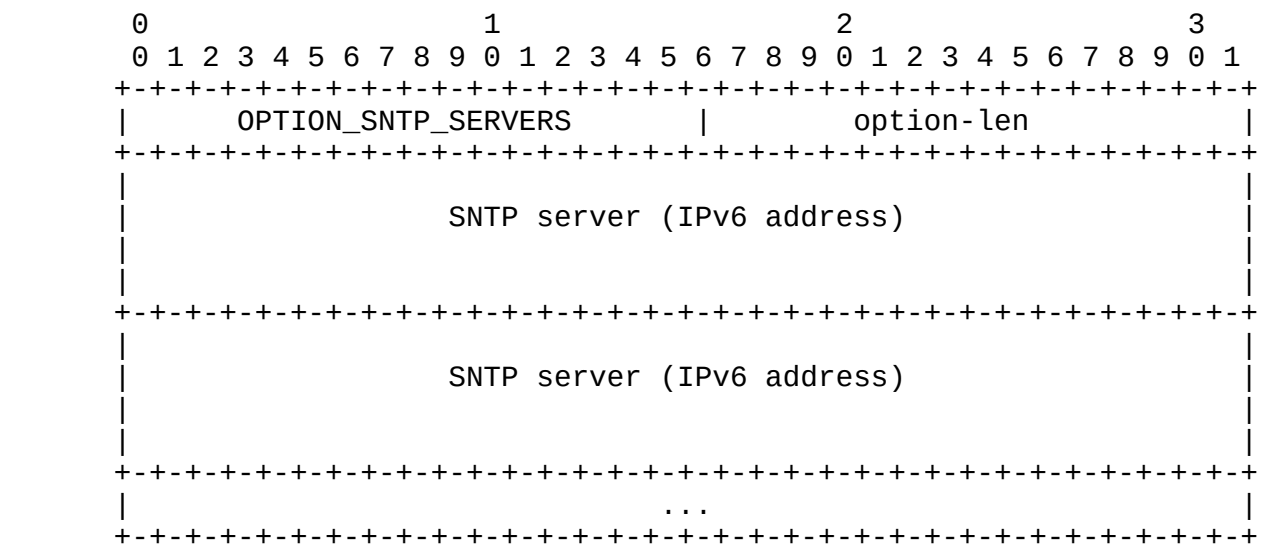
This document uses terminology specific to IPv6 and DHCPv6 as defined in the "Terminology" section of the DHCPv6 specification [1].

4. Simple Network Time Protocol (SNTP) Servers Option

The Simple Network Time Protocol servers option provides a list of one or more IPv6 addresses of SNTP [3] servers available to the client for synchronization. The clients use these SNTP servers to synchronize their system time to that of the standard time servers. Clients MUST treat the list of SNTP servers as an ordered list. The server MAY list the SNTP servers in decreasing order of preference.

The option defined in this document can only be used to configure information about SNTP servers that can be reached using IPv6. The DHCP option to configure information about IPv4 SNTP servers can be found in RFC 2132 [4]. Mechanisms for configuring IPv4/IPv6 dual-stack applications are being considered, but are not specified in this document.

The format of the Simple Network Time Protocol servers option is as shown below:



option-code: OPTION_SNTP_SERVERS (31)

option-len: Length of the 'SNTP server' fields, in octets; it must be a multiple of 16

SNTP server: IPv6 address of SNTP server

5. Appearance of This Option

The SNTP servers option MUST NOT appear in messages other than the following: Solicit, Advertise, Request, Renew, Rebind, Information-Request, and Reply. If this option appears in messages other than those specified above, the receiver SHOULD ignore it.

The option number for this option MAY appear in the Option Request Option [1] in the following messages: Solicit, Request, Renew, Rebind, Information-Request, and Reconfigure. If this option number appears in the Option Request Option in messages other than those specified above, the receiver SHOULD ignore it.

6. Security Considerations

The SNTP servers option may be used by an intruder DHCPv6 server to cause DHCPv6 clients to contact a rogue SNTP server, resulting in invalid synchronization of time in the client, finally leading to time-critical applications running inaccurately in the client machine. Time accuracy can be crucial to some security algorithms. For example, expired certificates may gain a new life, making the applications running on the client machine less secure. The inaccuracy can even cause clients to set their time incorrectly, making them vulnerable to replay attacks in protocols that use time stamps to detect replays.

To avoid attacks through these options, the DHCPv6 client SHOULD use authenticated DHCPv6 (see the "Authentication of DHCP messages" section in the DHCPv6 specification [1]).

7. IANA Considerations

The IANA has assigned an option code to the following from the option-code space defined in the "DHCPv6 Options" section of the DHCPv6 specification [1].

Option Name	Value	Described in
OPTION_SNTP_SERVERS	31	Section 4.

8. Acknowledgements

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9. Normative References

[1] Droms, R., Bound, J., Volz, B., Lemon, T., Perkins, C., and M. Carney, "Dynamic Host Configuration Protocol for IPv6 (DHCPv6)", RFC 3315, July 2003.

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

10. Informative References

[3] Mills, D., "Simple Network Time Protocol (SNTP) Version 4 for IPv4, IPv6 and OSI", RFC 2030, October 1996.

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

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Acknowledgement

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