Internet Engineering Task Force Internet-Draft Intended status: Standards Track Expires: September 15, 2016

Network Time Protocol Last Extension Field draft-stenn-ntp-last-extension-00

Abstract

NTPv4 is defined by <u>RFC 5905</u> [<u>RFC5905</u>], and it and earlier versions of the NTP Protocol have supported symmetric private key MAC authentication. MACs pre-date the Extension Fields introduced in <u>RFC 5905</u> [<u>RFC5905</u>], and as the number of Extension Fields grows there is an increasing chance of ambiguity when deciding if the "next" set of data is an Extension Field or a MAC. This proposal defines a new Extension Field which is used to signifiy that it is the last Extension Field in the packet. If present, any subsequent data SHOULD be considered to be a legacy MAC.

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1. Introduction

NTPv4 is defined by <u>RFC 5905</u> [<u>RFC5905</u>], and it and earlier versions of the NTP Protocol have supported symmetric private key MAC authentication. MACs pre-date the Extension Fields introduced in <u>RFC 5905</u> [<u>RFC5905</u>], and as the number of Extension Fields grows there is an increasing chance of ambiguity when deciding if the "next" set of data is an Extension Field or a MAC. This proposal defines a new Extension Field which is used to signifiy that it is the last Extension Field in the packet. If present, any subsequent data SHOULD be considered to be a legacy MAC.

<u>1.1</u>. 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 <u>RFC 2119</u> [<u>RFC2119</u>].

2. The Last Extension Field Extension Field

Now that multiple extension fields are a possibility, and the chance that additional packet data could be an Extension Field or an oldstyle MAC, having a means to indicate that there are no more Extension Fields in an NTP packet, and any subsequent data MUST be something else, almost certainly an old-style MAC, is a valuable facility. Stenn

NTP Extension Field: Last Extension Field

Field Type: TBD (Recommendation for IANA: 0x2008 (Last Extension Field, MAC OPTIONAL))

Field Length: 4

Payload: None.

Example:

0	1	2 9 0 1 2 3 4 5 6 7 8	3	
	+		901 +	
Field Type (0x	, ,	eld Length (0x0004)		
	MAC Key ID		ļ	
I	Sixteen		I	
++ 0ctets				
++ l of l				
++				
 +	MAC		 +	

Example: NTP Extension Field: Last Extension Field

3. Acknowledgements

The author wishes to acknowledge the contributions of Joey Saccadonuts.

4. IANA Considerations

This memo requests IANA to allocate NTP Extension Field Types 0x0007 (I-Do), 0x2007 (I-Do, MAC OPTIONAL), 0x4007 (I-Do Response), and 0x6007 (I-Do Response, MAC OPTIONAL) for this proposal.

Stenn

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5. Security Considerations

Additional information TBD

<u>6</u>. Normative References

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- [RFC5905] Mills, D., Martin, J., Ed., Burbank, J., and W. Kasch, "Network Time Protocol Version 4: Protocol and Algorithms Specification", <u>RFC 5905</u>, DOI 10.17487/RFC5905, June 2010, <<u>http://www.rfc-editor.org/info/rfc5905</u>>.
- [RFC7384] Mizrahi, T., "Security Requirements of Time Protocols in Packet Switched Networks", <u>RFC 7384</u>, DOI 10.17487/RFC7384, October 2014, <<u>http://www.rfc-editor.org/info/rfc7384</u>>.

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