

Internet Engineering Task Force
Internet-Draft
Intended status: Standards Track
Expires: April 26, 2017

H. Stenn
Network Time Foundation
October 23, 2016

Network Time Protocol I-Do Extension Field
draft-stenn-ntp-i-do-02

Abstract

The first implementation of NTPv4 was released in 2003. NTPv4 is defined by [RFC 5905](#) [[RFC5905](#)]. It contains a public-key security protocol, autokey, which is defined by [RFC 5906](#) [[RFC5906](#)]. Until very recently, autokey has been the only defined "user" of NTP packet Extension Fields. New proposals for extension fields are being written and there is currently no convenient way to learn if a remote instance of NTP supports any extension fields or not. This proposal contains a method to tell a remote instance of NTP what we (are willing to admit we) support, and ask what they (are willing to admit they) support.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on April 26, 2017.

Copyright Notice

Copyright (c) 2016 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents

Internet-Draft

Network Time Protocol I-Do

October 2016

carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	Introduction	2
1.1.	Requirements Language	2
2.	The I-Do Extension Field	2
3.	IANA Considerations	4
4.	Security Considerations	5
5.	Normative References	5
	Author's Address	5

[1.](#) Introduction

The first implementation of NTPv4 was released in 2003. NTPv4 is defined by [RFC 5905](#) [[RFC5905](#)]. It contains a public-key security protocol, autokey, which is defined by [RFC 5906](#) [[RFC5906](#)]. Until very recently, autokey has been the only defined "user" of NTP packet Extension Fields. New proposals for extension fields are being written and there is currently no convenient way to learn if a remote instance of NTP supports any extension fields or not. This proposal contains a method to tell a remote instance of NTP what we (are willing to admit we) support, and ask what they (are willing to admit they) support.

[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.](#) The I-Do Extension Field

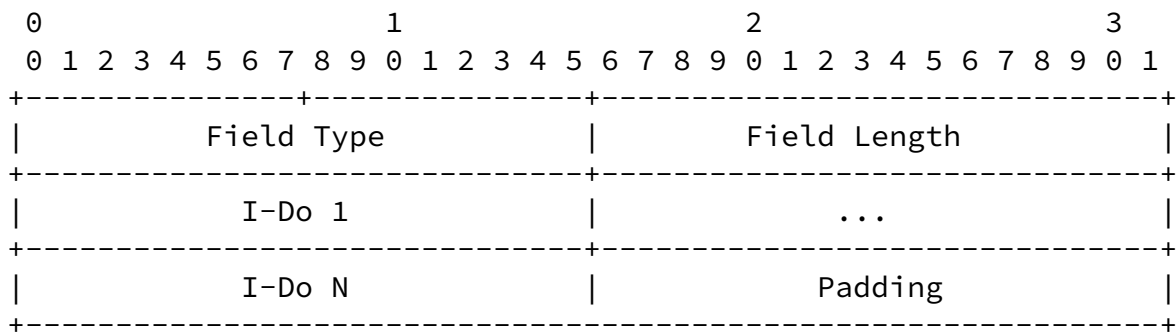
If an incoming packet contains an unrecognized extension field, one of two things will happen. While that extension field SHOULD be ignored, an implementation MAY choose to drop the entire packet. If an extension field is present there ordinarily SHOULD be a MAC following the extension field. Some extension fields are unable to be "signed" by a MAC, regardless of whether or not that MAC is a

traditional MAC or an extension field MAC.

Internet-Draft

Network Time Protocol I-Do

October 2016



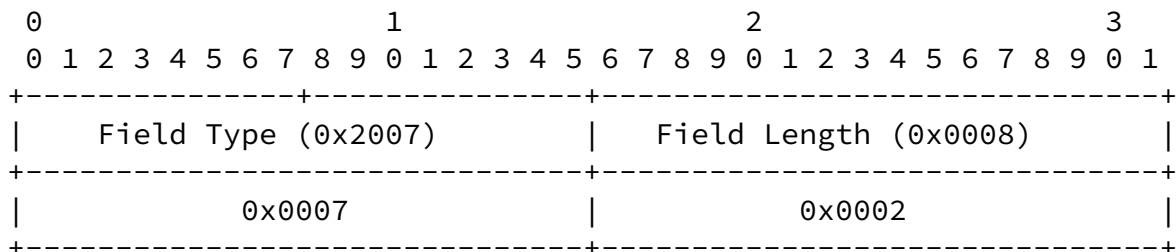
NTP Extension Field: REFID Suggestion

Field Type: TBD (Recommendation for IANA: 0x0007 (I-Do, MAC required), 0x2007 (I-Do, MAC OPTIONAL), 0x8007 (I-Do Response, MAC required), 0xA007 I-Do Response, MAC OPTIONAL))

Field Length: as needed

Payload: An enumeration of the supported base Field Types, followed by any padding, 0x0000, needed to fill the payload to the desired 32-bit boundary.

Example: A system that wants to advertise support for Autokey and I-Do, sending to a system that wants to advertise support for I-Do, NTS, and MAC-As-Extension-Field



NTP Extension Field: I-Do

0									1									2									3								
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1				
Field Type (0xA007)									Field Length (0x000a)																										
0x0003									0x0004																										
0x0007									0x0000																										

NTP Extension Field: I-Do Response

The sender of any I-Do extension field MUST send an extension field with a Field Type of 0x0007 (I-Do, MAC required) or 0x2007 (I-Do, MAC OPTIONAL) and SHOULD include a payload with any 0x0000 padding values after enumerating the supported base Extension Field Types. If the responding system recognizes the I-Do extension field, its response MUST include an extension field with a Field Type of 0x8007 (I-Do Response, MAC required) or 0xA007 (I-Do Response, MAC OPTIONAL), and SHOULD include a payload with any 0x0000 padding values after enumerating the supported base Extension Field Types.

The following information is included here until it is specified in a better location. If the Field Type does not have bit 0x2000 set, there MUST be a MAC included later in the packet for this extension field to be accepted. If the Field Type has bit 0x2000 set, the presence of a MAC later in the packet is OPTIONAL.

Any system that receives an I-Do extension field as either an "offer" or a "response" SHOULD scan the entire payload looking for nonzero values that specify the capabilities of the remote association.

Any system that receives an I-Do "offer", 0x0007 or 0x2007, SHOULD reply with an I-Do "response", 0x8007 or 0xA007.

Any system that sends an I-Do "offer" or "response" may send as few or as many of its supported Field Types as it chooses. At any subsequent time, either side may re-negotiate the list of supported field types it is prepared to accept from the other system by sending a new I-Do extension field.

The most-recently received I-Do list replaces any previous I-Do list.

3. IANA Considerations

This memo requests IANA to allocate NTP Extension Field Types:

0x0007 (I-DO)

0x2007 (I-DO, MAC OPTIONAL)

0x8007 (I-DO Response)

0xA007 (I-DO Response, MAC OPTIONAL)

and I-DO types:

0xFFFE (I-DO Leap Smear REFIDs)

0xFFFF (I-DO IPv6 REFID hash)

Stenn

Expires April 26, 2017

[Page 4]

Internet-Draft

Network Time Protocol I-Do

October 2016

for this proposal.

4. Security Considerations

Additional information TBD

5. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<http://www.rfc-editor.org/info/rfc2119>>.
- [RFC5905] Mills, D., Martin, J., Ed., Burbank, J., and W. Kasch, "Network Time Protocol Version 4: Protocol and Algorithms Specification", [RFC 5905](#), DOI 10.17487/RFC5905, June 2010, <<http://www.rfc-editor.org/info/rfc5905>>.
- [RFC5906] Haberman, B., Ed. and D. Mills, "Network Time Protocol Version 4: Autokey Specification", [RFC 5906](#), DOI 10.17487/RFC5906, June 2010, <<http://www.rfc-editor.org/info/rfc5906>>.

Author's Address

Harlan Stenn
Network Time Foundation
P.O. Box 918
Talent, OR 97540
US

Email: stenn@nwttime.org