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Authors: B. Schwartz
Google LLC

HTTP Datagram PING

Abstract

This draft defines an HTTP Datagram Format Type for measuring the functionality of a Datagram path.

Discussion Venues

This note is to be removed before publishing as an RFC.

Discussion of this document takes place on the mailing list (masque@ietf.org), which is archived at <https://mailarchive.ietf.org/arch/browse/masque/>.

Source for this draft and an issue tracker can be found at <https://github.com/bemasc/h3-datagram-ping>.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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1. Conventions and Definitions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [[RFC2119](#)] [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

2. PING Datagram Format Type

PING is an HTTP Datagram Format Type [[I-D.draft-ietf-masque-h3-datagram](#)]. It has no Additional Data.

2.1. Format

PING Datagrams have the following format:

```
PING {  
    Sequence Number (i),  
    Opaque Data (..),  
}
```

Figure 1: PING Datagram Format

All Sequence Number and Opaque Data values are potentially valid.

2.2. Use

The sender emits a PING Datagram with any even Sequence Number and any Opaque Data. Upon receiving a PING Datagram with an even Sequence Number, the recipient MUST reply with a PING Datagram whose Sequence Number is one larger, with empty Opaque Data.

Intermediaries MUST forward PING Datagrams without modification, just like any other HTTP Datagram.

3. Use cases

PING Datagrams can be used to characterize the end-to-end HTTP Datagram path associated with an HTTP request. For example, HTTP endpoints can easily use PING Datagrams to estimate the round-trip time and loss rate of the HTTP Datagram path.

PING Datagrams are also suitable for use as DPLPMTUD Probe Packets [RFC8899]. This enables endpoints to estimate the HTTP Datagram MTU of each Datagram path, in order to avoid sending HTTP Datagrams that will be dropped.

Note that these path characteristics can differ from those inferred from the underlying transport (e.g. QUIC), if the HTTP request traverses one or more HTTP intermediaries (see [Section 3.7](#) of [[I-D.draft-ietf-httpbis-semantics](#)]).

4. IANA considerations

IANA is directed to add the following entry to the "HTTP Datagram Format Types" registry:

*Type: PING

*Value: TBD

*Reference: (This document)

5. References

5.1. Normative References

[[I-D.draft-ietf-masque-h3-datagram](#)] Schinazi, D. and L. Pardue, "Using Datagrams with HTTP", Work in Progress, Internet-Draft, draft-ietf-masque-h3-datagram-03, 12 July 2021, <<https://datatracker.ietf.org/doc/html/draft-ietf-masque-h3-datagram-03>>.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/

RFC2119, March 1997, <<https://www.rfc-editor.org/rfc/rfc2119>>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/rfc/rfc8174>>.

5.2. Informative References

[I-D.draft-ietf-httpbis-semantics] Fielding, R. T., Nottingham, M., and J. Reschke, "HTTP Semantics", Work in Progress, Internet-Draft, draft-ietf-httpbis-semantics-19, 12 September 2021, <<https://datatracker.ietf.org/doc/html/draft-ietf-httpbis-semantics-19>>.

[RFC8899] Fairhurst, G., Jones, T., Tüxen, M., Rüngeler, I., and T. Völker, "Packetization Layer Path MTU Discovery for Datagram Transports", RFC 8899, DOI 10.17487/RFC8899, September 2020, <<https://www.rfc-editor.org/rfc/rfc8899>>.

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Author's Address

Benjamin Schwartz
Google LLC

Email: bemasc@google.com