

Network Working Group
Internet-Draft
Intended status: Experimental
Expires: 1 October 2022

T. Pauly
Apple Inc.
D. Schinazi
Google LLC
30 March 2022

The IP Geolocation HTTP Client Hint
draft-pauly-httpbis-geoip-hint-00

Abstract

This document defines an HTTP Client Hint that allows a client to share information about its IP Geolocation. This helps ensure that servers have information about location that is consistent with what a client expects and what other servers use.

Discussion Venues

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

Source for this draft and an issue tracker can be found at <https://github.com/tfpaully/privacy-proxy>.

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 <https://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 1 October 2022.

Copyright Notice

Copyright (c) 2022 IETF Trust and the persons identified as the document authors. All rights reserved.

Internet-Draft

Geohash CH

March 2022

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<https://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Revised BSD License text as described in Section 4.e of the [Trust Legal Provisions](#) and are provided without warranty as described in the Revised BSD License.

Table of Contents

| | | |
|----------------------|-----------------------------------|-------------------|
| 1. | Introduction | 2 |
| 1.1. | Requirements | 3 |
| 2. | IP Geo Header | 3 |
| 3. | Server Behavior | 3 |
| 4. | Security Considerations | 4 |
| 5. | IANA Considerations | 4 |
| 5.1. | HTTP Headers | 5 |
| 6. | References | 5 |
| 6.1. | Normative References | 5 |
| 6.2. | Informative References | 5 |
| | Authors' Addresses | 6 |

[1.](#) Introduction

HTTP Client Hints [[RFC8942](#)] defines a convention for HTTP headers to communicate optional information from clients to servers as hints. This can be done conditionally based on if a server claims supports for a particular hint.

This document defines a client hint that can be used to send a IP geolocation entry that maps to the client's IP address. This location can be used to influence server behavior, such as by causing the server to return responses relevant to the client's location. The format of the IP geolocation entry is the same as that defined for IP geolocation feeds in [[GEOFEED](#)].

This header is intended to be used to provide rough geolocation hints to servers that do not already have accurate or authoritative mappings for the IP addresses of clients. This can be particularly useful for cases where IP geolocation mappings have changed recently, or a client is using a VPN or proxy that may not be commonly recognized by servers.

Internet-Draft

Geohash CH

March 2022

The mechanism for how a client learns the IP geolocation mapping to send is beyond the scope of this document. [\[RFC9092\]](#) defines some mechanisms for discovery, but clients can also have other mechanisms (such as coordinating with a VPN or proxy that is assigning the client a tunnelled or proxied address) to learn what hint to send.

[1.1.](#) Requirements

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.](#) IP Geo Header

The "Sec-CH-IP-Geo" is an Item Structured Field [\[STRUCTURED-FIELDS\]](#). The field's value is a String. The string uses the format defined in Section 2.1.1 of [\[GEOFEED\]](#), with the IP Prefix element removed. Thus, this contains a comma-separated list of Alpha2code, Region, and City. The value SHOULD NOT contain a Postal Code.

For example, the header for an entry "192.0.2.5,US,US-AL,Alabaster" would be:

```
Sec-CH-IP-Geo = "US,US-AL,Alabaster"
```

This field also defines a parameter, "feed", that contains the URI of the IP geolocation feed that is authoritative for this entry. For example:

```
Sec-CH-IP-Geo = "SG,SG-01,Singapore"; feed="https://noc.ietf.org/geo/google"
```

Servers that can provide different content based on Geohash hints SHOULD include the headers in their "Accept-CH" list.

Accept-CH: Sec-CH-IP-Geo

Servers also SHOULD indicate for any cacheable content if the IP geo hints will influence the cached content, using the "Vary" header.

Vary: Sec-CH-IP-Geo

[3.](#) Server Behavior

Upon receiving a IP Geolocation Client Hint, a server can use the information to influence its behavior in various ways, such as determining the content of HTTP responses.

Pauly & Schinazi

Expires 1 October 2022

[Page 3]

Internet-Draft

Geohash CH

March 2022

Many servers have existing IP geolocation feeds that they use to identify client locations. Servers can choose to use the hint value in one of several ways:

- * Use the client hint information instead of consulting another geolocation feed.
- * Check the value of the "feed" parameter on the header and determine if it is a trusted feed. If this feed is trusted, but is not the default feed used by the server, the server can choose to prefer the feed indicated by the client.
- * Check the value of the "feed" parameter on the header and fetch a copy of the feed to verify the mapping, if a copy of the feed has not been fetched recently.
- * If the feed indicated in the "feed" parameter is unknown or untrusted, but starts becoming common, the server can flag this feed as one to be manually checked and added, if appropriate. This allows servers to automatically discover when new feeds and services are brought up..

If the server is acting as a forward proxy, such as a CONNECT proxy, it can use the hint to determine an appropriate geo-mapped IP address to use for outbound connections, or a client subnet to present in the EDNS0 Client Subnet extension for DNS queries [[RFC6891](#)] [[RFC7871](#)].

[4.](#) Security Considerations

The use of the IP Geolocation Client Hint MUST use the Sec- header prefix as recommended in [[RFC8942](#)].

Servers MUST NOT use IP Geolocation Client Hints for making security or access-control decisions, as the value can be spoofed by a client. The hint is intended only for use in optimizing behavior.

The value contained in this hint SHOULD be based only on a IP Geolocation feed value for an IP address the client is already presenting to a server. In order to avoid disclosing any private information, this value MUST not be based on geolocation of the client determined by other means, such as physical latitude and longitude coordinates.

[5.](#) IANA Considerations

[5.1.](#) HTTP Headers

This document registers the "Sec-CH-IP-Geo" header in the "Permanent Message Header Field Names" registry
<<https://www.iana.org/assignments/message-headers>>.

| Header Field Name | Protocol | Status | Reference |
|-------------------|----------|--------|---------------|
| Sec-CH-IP-Geo | http | exp | This document |

[6.](#) References

[6.1.](#) Normative References

- [GEOFEED] Kline, E., Duleba, K., Szamonek, Z., Moser, S., and W. Kumari, "A Format for Self-Published IP Geolocation Feeds", [RFC 8805](#), DOI 10.17487/RFC8805, August 2020, <<https://www.rfc-editor.org/info/rfc8805>>.
- [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/info/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/info/rfc8174>>.

[RFC8942] Grigorik, I. and Y. Weiss, "HTTP Client Hints", [RFC 8942](#), DOI 10.17487/RFC8942, February 2021, <<https://www.rfc-editor.org/info/rfc8942>>.

[STRUCTURED-FIELDS]

Nottingham, M. and P-H. Kamp, "Structured Field Values for HTTP", [RFC 8941](#), DOI 10.17487/RFC8941, February 2021, <<https://www.rfc-editor.org/info/rfc8941>>.

[6.2](#). Informative References

[RFC6891] Damas, J., Graff, M., and P. Vixie, "Extension Mechanisms for DNS (EDNS(0))", STD 75, [RFC 6891](#), DOI 10.17487/RFC6891, April 2013, <<https://www.rfc-editor.org/info/rfc6891>>.

Pauly & Schinazi

Expires 1 October 2022

[Page 5]

Internet-Draft

Geohash CH

March 2022

[RFC7871] Contavalli, C., van der Gaast, W., Lawrence, D., and W. Kumari, "Client Subnet in DNS Queries", [RFC 7871](#), DOI 10.17487/RFC7871, May 2016, <<https://www.rfc-editor.org/info/rfc7871>>.

[RFC9092] Bush, R., Candela, M., Kumari, W., and R. Housley, "Finding and Using Geofeed Data", [RFC 9092](#), DOI 10.17487/RFC9092, July 2021, <<https://www.rfc-editor.org/info/rfc9092>>.

Authors' Addresses

Tommy Pauly
Apple Inc.
One Apple Park Way

Cupertino, California 95014,
United States of America
Email: tpaully@apple.com

David Schinazi
Google LLC
Email: dschinazi.ietf@gmail.com