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GeoJSON Text Sequences

Abstract

This document describes the GeoJSON text sequence format and "application/geo+json-seq" media type. This format is based on JavaScript Object Notation (JSON) text sequences and GeoJSON, and it makes arbitrarily large geographic datasets incrementally parseable without restricting the form of GeoJSON texts within a sequence.

Status of This Memo

This is an Internet Standards Track document.

This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Further information on Internet Standards is available in Section 2 of RFC 7841.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at <http://www.rfc-editor.org/info/rfc8142>.

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1. Introduction

Arbitrarily large sequences of values pose a problem for JavaScript Object Notation (JSON) [RFC7159] that is well explained in the motivation for JSON text sequences [RFC7464]. The GeoJSON format [RFC7946] faces the same kind of problem. Geographic datasets often run to the tens of thousands or millions of features. The problem is often amplified by the presence of large arrays of coordinates for each of the features.

This document describes a specialization of JSON text sequences. A GeoJSON text sequence is a document of arbitrarily large size containing one or more GeoJSON objects (e.g., multiple GeoJSON texts that can be produced and parsed incrementally) and not just a single GeoJSON FeatureCollection, Feature, or Geometry.

1.1. Requirements Language

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 [RFC2119].

2. GeoJSON Text Sequence Format

Defined in prose similar to the description of the JSON text sequence in [RFC7464], a GeoJSON text sequence is any number of GeoJSON [RFC7946] texts, each encoded in UTF-8 [RFC3629], preceded by one ASCII [RFC20] record separator (RS) character, and followed by a line feed (LF).

The GeoJSON text sequence format conforms to all the rules of [RFC7464] and adds the following constraint: each JSON text MUST contain a single GeoJSON object as defined in [RFC7946].

Heterogeneous sequences containing a mix of GeoJSON Geometry, Feature, and FeatureCollection objects are permitted. How producers and parsers of GeoJSON text sequences communicate rules for allowed GeoJSON types in exchanged sequences is not specified in this document.

3. Security Considerations

GeoJSON text sequences have no security considerations beyond those of JSON text sequences [RFC7464] and the GeoJSON format [RFC7946].

4. Interoperability Considerations

The advantage of using ASCII character RS "0x1e" to denote a text is that sequence producers and parsers need not enforce a canonical form of GeoJSON. Any valid GeoJSON, pretty-printed or compact, can be used in a GeoJSON text sequence.

A variety of parsers designed for newline-delimited sequences of compact JSON text are deployed on the internet today. While there is no canonical form for JSON texts, and pretty-printed and compact forms are equally valid, GeoJSON text sequences containing compact GeoJSON texts with no internal newlines are more interoperable with existing non-standardized parsers.

In a distributed system where order and exactly-once delivery of messages are difficult to achieve, GeoJSON text sequences that do not rely on order of texts for extra semantics are more interoperable than those that do.

5. IANA Considerations

The MIME media type for GeoJSON text sequences is "application/geo+json-seq" (which uses the suffix established in [RFC8091]). IANA has registered it in the "Media Types" registry <<https://www.iana.org/assignments/media-types/>>.

Type name: application

Subtype name: geo+json-seq

Required parameters: n/a

Optional parameters: n/a

Encoding considerations: binary

Security considerations: See Section 3 of RFC 8142

Interoperability considerations: See Section 4 of RFC 8142

Published specification: RFC 8142

Applications that use this media type: Geographic information systems (GIS)

Additional information:

Deprecated alias names for this type: n/a

Magic number(s): n/a

File extension(s): n/a

Macintosh file type code(s): n/a

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Intended usage: COMMON

Restrictions on usage: none

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Change controller: IETF

6. References

6.1. Normative References

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- [RFC7946] Butler, H., Daly, M., Doyle, A., Gillies, S., Hagen, S., and T. Schaub, "The GeoJSON Format", RFC 7946, DOI 10.17487/RFC7946, August 2016, <<http://www.rfc-editor.org/info/rfc7946>>.

6.2. Informative References

- [RFC8091] Wilde, E., "A Media Type Structured Syntax Suffix for JSON Text Sequences", RFC 8091, DOI 10.17487/RFC8091, February 2017, <<http://www.rfc-editor.org/info/rfc8091>>.

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