
**Information technology — Open data
protocol (OData) v4.0**

**Part 2:
OData JSON Format**

*Technologies de l'information — Protocole de données ouvertes
(OData) v4.0*
Partie 2: Format OData JSON

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- Change-marked (redlined) version. *OData JSON Format Version 4.0 Plus Errata 02 (redlined)*. Edited by Ralf Handl, Michael Pizzo, Martin Zurmuehl, and Mark Biamonte. 30 October 2014. OASIS Standard incorporating Approved Errata 02. <http://docs.oasis->

open.org/odata/odata-json-format/v4.0/errata02/os/odata-json-format-v4.0-errata02-os-redlined.html.

Related work:

This specification is related to:

- *OData Version 4.0*. OASIS Standard. Multi-part Work Product that includes:
 - *OData Version 4.0 Part 1: Protocol*. <http://docs.oasis-open.org/odata/odata/v4.0/os/part1-protocol/odata-v4.0-os-part1-protocol.html>.
 - *OData Version 4.0 Part 2: URL Conventions*. <http://docs.oasis-open.org/odata/odata/v4.0/os/part2-url-conventions/odata-v4.0-os-part2-url-conventions.html>.
 - *OData Version 4.0 Part 3: Common Schema Definition Language (CSDL)*. <http://docs.oasis-open.org/odata/odata/v4.0/os/part3-csdl/odata-v4.0-os-part3-csdl.html>.
 - ABNF components: <http://docs.oasis-open.org/odata/odata/v4.0/os/abnf/>
 - Vocabulary components: <http://docs.oasis-open.org/odata/odata/v4.0/os/vocabularies/>
 - XML schemas: <http://docs.oasis-open.org/odata/odata/v4.0/os/schemas/>
 - OData Metadata Service Entity Model: <http://docs.oasis-open.org/odata/odata/v4.0/os/models/MetadataService.edmx>.
- *OData Atom Format Version 4.0*. Edited by Martin Zurmuehl, Michael Pizzo, and Ralf Handl. Latest version: <http://docs.oasis-open.org/odata/odata-atom-format/v4.0/odata-atom-format-v4.0.html>.

Abstract:

The Open Data Protocol (ODaTA) for representing and interacting with structured content is comprised of a set of specifications. The core specification for the protocol is in OData Version 4.0 Part 1: Protocol; this document extends the former by defining representations for OData requests and responses using a JSON format.

Status:

This document was last revised or approved by the OASIS Open Data Protocol (ODaTA) TC on the above date. The level of approval is also listed above. Check the “Latest version” location noted above for possible later revisions of this document. Any other numbered Versions and other technical work produced by the Technical Committee (TC) are listed at https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=odata#technical.

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1 Introduction

The OData protocol is comprised of a set of specifications for representing and interacting with structured content. The core specification for the protocol is in [\[OData-Protocol\]](#); this document is an extension of the core protocol. This document defines representations for the OData requests and responses using the JavaScript Object Notation (JSON), see [\[RFC7159\]](#).

An OData JSON payload may represent:

- a [single primitive value](#)
- a [collection of primitive values](#)
- a [single complex type value](#)
- a [collection of complex type values](#)
- a [single entity](#) or [entity reference](#)
- a [collection of entities](#) or [entity references](#)
- a [collection of changes](#)
- a [service document](#) describing the top-level resources exposed by the service
- an [error](#).

1.1 Terminology

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 [\[RFC2119\]](#).

1.2 Normative References

- [GeoJSON]** Howard Butler, Martin Daly, Alan Doyle, Sean Gillies, Tim Schaub and Stefan Drees, "The GeoJSON Format" draft-butler-geojson-02, 15 March 2014. <http://tools.ietf.org/html/draft-butler-geojson-02>.
- [I-JSON]** Bray, T., Ed., "The I-JSON Message Format" draft-bray-i-json-01, 06 January 2014. <http://tools.ietf.org/html/draft-bray-i-json-01>
- [OData-ABNF]** *OData ABNF Construction Rules Version 4.0*. See link in “Related work” section on cover page.
- [OData-CSDL]** *OData Version 4.0 Part 3: Common Schema Definition Language (CSDL)*. See link in “Related work” section on cover page.
- [OData-Protocol]** *OData Version 4.0 Part 1: Protocol*. See link in “Related work” section on cover page.
- [OData-URL]** *OData Version 4.0 Part 2: URL Conventions*. See link in "Related work" section on cover page.
- [OData-VocCap]** *OData Capabilities Vocabulary*. See link in "Related work" section on cover page.
- [RFC2119]** Bradner, S., “Key words for use in RFCs to Indicate Requirement Levels”, BCP 14, RFC 2119, March 1997. <http://www.ietf.org/rfc/rfc2119.txt>.
- [RFC3986]** Berners-Lee, T., Fielding, R., and L. Masinter, “Uniform Resource Identifier (URI): Generic Syntax”, IETF RFC3986, January 2005. <http://www.ietf.org/rfc/rfc3986.txt>.
- [RFC3987]** Duerst, M. and M. Suignard, “Internationalized Resource Identifiers (IRIs)”, RFC 3987, January 2005. <http://www.ietf.org/rfc/rfc3987.txt>.
- [RFC7159]** Bray, T., Ed., “The JavaScript Object Notation (JSON) Data Interchange Format”, RFC 7159, March 2014. <http://tools.ietf.org/html/rfc7159>.

- [RFC5646] Phillips, A., Ed., and M. Davis, Ed., “Tags for Identifying Languages”, BCP 47, RFC 5646, September 2009. <http://tools.ietf.org/html/rfc5646>.
- [ECMAScript] *ECMAScript Language Specification Edition 5,1*. June 2011. Standard ECMA-262. <http://www.ecma-international.org/publications/standards/Ecma-262.htm>.

1.3 Typographical Conventions

Keywords defined by this specification use this monospaced font.

Normative source code uses this paragraph style.

Some sections of this specification are illustrated with non-normative examples.

Example 1: text describing an example uses this paragraph style

```
Non-normative examples use this paragraph style.
```

All examples in this document are non-normative and informative only.

All other text is normative unless otherwise labeled.

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2 JSON Format Design

JSON, as described in [RFC7159], defines a text format for serializing structured data. Objects are serialized as an unordered collection of name-value pairs.

JSON does not define any semantics around the name/value pairs that make up an object, nor does it define an extensibility mechanism for adding control information to a payload.

OData's JSON format extends JSON by defining general conventions for name-value pairs that annotate a JSON object, property or array. OData defines a set of canonical annotations for control information such as ids, types, and links, and custom annotations MAY be used to add domain-specific information to the payload.

A key feature of OData's JSON format is to allow omitting predictable parts of the wire format from the actual payload. To reconstitute this data on the receiving end, expressions are used to compute missing links, type information, and other control data. These expressions (together with the data on the wire) can be used by the client to compute predictable payload pieces as if they had been included on the wire directly.

Annotations are used in JSON to capture control information that cannot be predicted (e.g., the next link of a collection) as well as a mechanism to provide values where a computed value would be wrong (e.g., if the media read link of one particular entity does not follow the standard URL conventions). Computing values from metadata expressions is compute intensive and some clients might opt for a larger payload size to avoid computational complexity; to accommodate for this the `Accept` header allows the client to control the amount of control information added to the response.

To optimize streaming scenarios, there are a few restrictions that MAY be imposed on the sequence in which name/value pairs appear within JSON objects. For details on the ordering requirements see [Payload Ordering Constraints](#).

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3 Requesting the JSON Format

The OData JSON format can be requested using the `$format` query option in the request URL with the MIME type `application/json`, optionally followed by format parameters, or the case-insensitive abbreviation `json` which MUST NOT be followed by format parameters.

Alternatively, this format can be requested using the `Accept` header with the MIME type `application/json`, optionally followed by format parameters.

If specified, `$format` overrides any value specified in the `Accept` header.

Possible format parameters are:

- `odata.metadata`
- `IEEE754Compatible`
- `odata.streaming`

Services SHOULD advertise the supported MIME types by annotating the entity container with the term `Capabilities.SupportedFormats` defined in [OData-VocCap], listing all available formats and combinations of supported format parameters.

3.1 Controlling the Amount of Control Information in Responses

The amount of **control information** needed (or desired) in the payload depends on the client application and device. The `odata.metadata` parameter can be applied to the `Accept` header of an OData request to influence how much control information will be included in the response.

Other `Accept` header parameters (e.g., `odata.streaming`) are orthogonal to the `odata.metadata` parameter and are therefore not mentioned in this section.

If a client prefers a very small wire size and is intelligent enough to compute data using metadata expressions, the `Accept` header should include `odata.metadata=minimal`. If computation is more critical than wire size or the client is incapable of computing control information, `odata.metadata=full` directs the service to inline the control information that normally would be computed from metadata expressions in the payload. `odata.metadata=none` is an option for clients that have out-of-band knowledge or don't require control information.

3.1.1 `odata.metadata=minimal`

The `odata.metadata=minimal` format parameter indicates that the service SHOULD remove computable control information from the payload wherever possible. This is the default value for the `odata.metadata` parameter and will be assumed if no other value is specified in the `Accept` header or `$format` query option. The response payload MUST contain at least the following common **annotations**:

- `odata.context`: the root context URL of the payload and the context URL for any deleted entries or added or deleted links in a delta response, or for entities or entity collections whose set cannot be determined from the root context URL
- `odata.metadataEtag`: the ETag of the metadata document as applicable
- `odata.etag`: the ETag of the entity, as appropriate
- `odata.count`: the total count of a collection of entities or collection of entity references, if requested
- `odata.nextLink`: the next link of a collection with partial results
- `odata.deltaLink`: the delta link for obtaining changes to the result, if requested

In addition, `odata` annotations MUST appear in the payload for cases where actual values are not the same as the computed values and MAY appear otherwise. When `odata` annotations appear in the payload, they are treated as exceptions to the computed values.