

OData Version 4.0 Errata 01

Committee Specification Draft 01

24 July 2014

Specification URIs

This version:

<http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/odata-v4.0-errata01-csd01.doc>

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Previous version:

N/A

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<http://docs.oasis-open.org/odata/odata/v4.0/errata01/odata-v4.0-errata01.doc> (Authoritative)

<http://docs.oasis-open.org/odata/odata/v4.0/errata01/odata-v4.0-errata01.html>

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Additional artifacts:

This prose specification is one component of a Work Product that also includes:

- *OData Version 4.0 Part 1: Protocol Plus Errata 01*. Edited by Michael Pizzo, Ralf Handl, and Martin Zurmuehl. 24 July 2014. OASIS Standard incorporating Draft 01 of Errata 01. <http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/complete/part1-protocol/odata-v4.0-errata01-csd01-part1-protocol-complete.html>.
- *OData Version 4.0 Part 2: URL Conventions Plus Errata 01*. Edited by Michael Pizzo, Ralf Handl, and Martin Zurmuehl. 24 July 2014. OASIS Standard incorporating Draft 01 of Errata 01. <http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/complete/part2-url-conventions/odata-v4.0-errata01-csd01-part2-url-conventions-complete.html>.
- *OData Version 4.0 Part 3: Common Schema Definition Language (CSDL) Plus Errata 01*. Edited by Michael Pizzo, Ralf Handl, and Martin Zurmuehl. 24 July 2014. OASIS Standard incorporating Draft 01 of Errata 01. <http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/complete/part3-csdl/odata-v4.0-errata01-csd01-part3-csdl-complete.html>.
- ABNF components: OData ABNF Construction Rules Version 4.0 and OData ABNF Test Cases. <http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/complete/abnf/>.

- Vocabulary components: OData Core Vocabulary, OData Measures Vocabulary and OData Capabilities Vocabulary. <http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/complete/vocabularies/>.
- XML schemas: OData EDMX XML Schema and OData EDM XML Schema. <http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/complete/schemas/>.
- OData Metadata Service Entity Model: <http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/complete/models/>.
- Change-marked (redlined) versions of *OData Version 4.0 Part 1*, *Part 2*, and *Part 3*. OASIS Standard incorporating Draft 01 of Errata 01. <http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/redlined/>.

Related work:

This specification is related to:

- *OData Version 4.0 Part 1: Protocol*. Edited by Michael Pizzo, Ralf Handl, and Martin Zurmuehl. 24 February 2014. OASIS Standard. <http://docs.oasis-open.org/odata/odata/v4.0/os/part1-protocol/odata-v4.0-os-part1-protocol.html>.
- *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>.
- *OData JSON Format Version 4.0*. Edited by Ralf Handl, Michael Pizzo, and Mark Biamonte. Latest version. <http://docs.oasis-open.org/odata/odata-json-format/v4.0/odata-json-format-v4.0.html>.

Abstract:

This document lists Errata for the OASIS Standard *OData Version 4.0*.

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.

Technical Committee members should send comments on this specification to the Technical Committee’s email list. Others should send comments to the Technical Committee by using the “Send A Comment” button on the Technical Committee’s web page at <https://www.oasis-open.org/committees/odata/>.

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Citation format:

When referencing this specification the following citation format should be used:

[OData-v4.0-errata01]

OData Version 4.0 Errata 01. Edited by Michael Pizzo, Ralf Handl, Martin Zurmuehl, and Hubert Heijkers. 24 July 2014. OASIS Committee Specification Draft 01. <http://docs.oasis-open.org/odata/odata/v4.0/errata01/csd01/odata-v4.0-errata01-csd01.html>. Latest version: <http://docs.oasis-open.org/odata/odata/v4.0/errata01/odata-v4.0-errata01.html>.

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1 Introduction

This document lists the approved changes to the OData Version 4.0 specification and contains one chapter per changed part of the specification.

Additional documents containing the final specification text with these changes applied are also available and linked in section "[Additional artifacts](#)" on the title page.

1.1 Normative References

- [OData-Protocol]** *OData Version 4.0 Part 1: Protocol.*
See link in "Related work" section on cover page.

2 Part 1: Protocol

Section	Issue	Comment
1.2 Normative References	706	Reference to obsolete RFC 2616 removed, references to draft RFCs updated to non-draft RFCs
3 Data Model	651	Made entity identity description more precise
4.1 Entity-Ids and Entity References	651	Made entity identity description more precise
4.2 Read URLs and Edit URLs	647	Consistent use of Read/Edit URL and Read/Edit Link
5.2 Model Versioning	683	Clarified rules around schema versioning
	684	Clarified rules around schema versioning
6.1 Query Option Extensibility	668	Minor editorial changes
	698	Clarified handling of query options in returned URLs
7 Formats	706	Reference updated
8.1.1 Header Content-Type	624	Clarified rules around custom format parameters
	700	Clarified rules around use of custom query options
	706	Reference updated
8.1.2 Header Content-Encoding	706	Reference updated
8.1.3 Header Content-Language	706	Reference updated
8.1.4 Header Content-Length	706	Reference updated
8.2.1 Header <code>Accept</code>	624	Clarified rules around custom format parameters
	706	Reference updated
8.2.2 Header <code>Accept-Charset</code>	706	Reference updated
8.2.3 Header <code>Accept-Language</code>	706	Reference updated
8.2.4 Header <code>If-Match</code>	632	Fixed typo to match defined term name
	680	Clarified use of <code>If-Match</code> with Actions
	706	Reference updated
8.2.5 Header <code>If-None-Match</code>	632	Fixed typo to match defined term name
	706	Reference updated
8.2.8 Header <code>Prefer</code>	706	Reference updated
8.2.8.7 Preference <code>return=representation</code> and <code>return=minimal</code>	668	Minor editorial changes
	706	Reference updated

8.2.8.8 Preference <code>respond-async</code>	706	Reference updated
8.2.8.9 Preference <code>wait</code>	706	Reference updated
8.3.4 Header Preference-Applied	706	Reference updated
9.1.4 Response Code 204 No Content	706	Reference updated
9.1.5 Response Code 3xx Redirection	706	Reference updated
9.1.6 Response Code 304 Not Modified	670	Removed invalid case
	706	Reference updated
9.2.2 Response Code 405 Method not Allowed	706	Reference updated
9.2.4 Response Code 412 Precondition Failed	670	Imported definition of 412 response code from [RFC2616] to reference from other sections that use it
	706	Reference updated
9.3 Server Error Responses	706	Reference updated
10 Context URL	711	Fixed description of <code>{type-name}</code>
10.2,10.3,10.7,10.8,10.9,10,10.16 Context URL	712	Spelled out construction rules for unknown entity set cases
10.6 Derived Entity	668	Minor editorial changes
10.9 Collection of Projected Entities	705	Moved example 19 from section 10.8
10.14 Collection of Complex or Primitive Types	709	Added missing parens to example 25
	710	Clarified use case
10.15 Complex or Primitive Type	709	Added missing parens to example 26
	710	Clarified use case
11.2 Requesting Data	620	Consistent use of "structural"
11.2.4.2 System Query Option <code>\$expand</code>	591	Consistent use of "related"
	668	Minor editorial changes
11.2.4.2.1 Expand Options	591	Consistent use of "related"
	668	Minor editorial changes
11.2.4.2.1.1 Expand Option <code>\$levels</code>	668	Minor editorial changes
11.2.5.1 System Query Option <code>\$filter</code>	608	Consistent description of <code>\$count</code> segment
11.2.5.1.2 Build-in Query	578	Fixed non-normative example

Functions		
11.2.5.2 System Query Option \$orderby	608	Consistent description of \$count segment
11.2.5.5 System Query Option \$count	608	Added client guidance
11.2.5.7 Server-Driven Paging	650	Clarified the use of \$format in delta links
11.2.9 Requesting the Number of Items in a Collection	608	Consistent description of \$count segment
	620	Consistent use of "primitive"
11.4.1.5 Returning Results from Data Modification Request	645	Added section to centralized common description of rules for returning an entity from a data modification
	646	Added section to centralize common description of rules for returning an entity from a data modification
	682	Clarified rules in new section for media entities
11.4.2 Create an Entity	668	Minor editorial changes
11.4.2.1 Link to Related Entities When Creating an Entity	691	Removed use of "associated"
11.4.2.2 Create Related Entities When Creating an Entity	689	Called out that media entities do not support deep inserts
11.4.3 Update an Entity	623	Made wording more precise
	634	More consistent/precise wording
	635	Called out handling of id and type in update payload
	643	More consistent/precise wording
11.4.4 Upsert an Entity	609	Made wording consistent with Update
	610	Describe limitation of upserts with server generated keys
11.4.7.3 Deleting a Media Entity	688	Clarified handling of media entity URL for Delete
11.4.8.2 Deleting Stream Values	688	Clarified handling of media entity URL for Delete
11.4.9 Managing Values and Properties Directly	647	Formally define the "edit URL" of a property
11.4.9.1 Update a Primitive Property	717	Added description of update using /\$value
11.4.9.2 Set a Value to Null	688	Clarified handling of media entity URL for Delete
	586	Clarified error results
	721	Minor editorial changes
11.4.9.3 Update a Complex Type	721	Corrected section title
11.5.3.1.1 Inline Parameter Syntax	668	Minor editorial changes

11.6 Asynchronous Requests	668	Minor editorial changes
	706	Reference updated
11.7.1 Batch Request Headers	679	Fixed header value in non-normative code example
11.7.3 Change Sets	713	Minor editorial change
11.7.3.1 Referencing New Entities in a Change Set	697	Clarified use of \$<content-id> in a changeset
11.7.4 Responding to a Batch Request	713	Minor editorial change
12 Security Considerations	706	Reference updated
13.1.1 OData Minimal Conformance Level	612	Consistent use of Read/Edit URL and Read/Edit Link

3 Part 2: URL Conventions

Section	Issue	Comment
2 Url Components	565	Clarified that percent-decoding happens exactly once and copied reference to RFC3986 from [OData-ABNF]
3 Service Root URL	611	Clarified that, as per the [OData-ABNF] rules, the service root always terminates in a forward slash.
4 Resource Path	527	Removed incorrect reference to Content-Location.
4.8 Addressing Count of a Collection	608	Replicated common semantics of composing system query options to \$count for better locality/discoverability
4.12 Addressing All Entities in a Service	602	Replicated common semantics for composing type segments to collections and added examples for better locality/discoverability
5.1 System Query Options	608	Added missing rule from [OData-ABNF] around composing \$filter and \$search to /\$count
5.1.1.1 Logical Operators	622	Called out eq/ne comparison for stream,binary,geo types
5.1.1.4.28 isof	564	Added reference to assignment rules in 5.1.1.4.29 cast
5.1.1.4.29 cast	671	Made description of type returned by cast function consistent with [OData-ABNF]
	564	Included description of assignability of structured types to enable this section to be shared with isof
	562	Corrected typo; the first <i>four</i> rules (not three) all refer to primitive types
5.1.1.6.2 Complex and Collection Literals	636	Described the use of parameter aliases to reference inline complex and collection values
5.1.1.6.4 \$it	663	Called out use of /\$it for invoking bound functions (as per [OData-ABNF]) and added example
5.1.2 \$expand	604	Optional cast to complex type, ABNF was more restrictive than normative prose text
	718	Add descriptive text for counting related entities
5.1.3 \$select	642	Made description more precise
	604	Optional cast to complex type, ABNF was more restrictive than normative prose text

4 Part 3: Common Schema Definition Language

Section	Issue	Comment
3.2 Element <code>edm:DataServices</code>	668	Minor editorial changes
3.3 <code>edm:Reference</code>	681	Clarified alias conflicts and recursive referencing
3.3.1 Attribute <code>Uri</code>	668	Minor editorial changes
3.4.2 Attribute <code>Alias</code>	681	Clarified alias conflicts and recursive referencing
4.4 Primitive Types	603	Clarified the usage of the primitive type <code>Edm.Stream</code>
5.1.1 Attribute <code>Namespace</code>	668	Minor editorial changes
6.2 Property <code>Facet</code>	668	Minor editorial changes
6.2.4 Attribute <code>Scale</code>	566	Clarified allowed range of <code>Scale</code> values
6.2.7 Attribute <code>DefaultValue</code>	668	Minor editorial changes
7.1.5 Attribute <code>ContainsTarget</code>	668	Minor editorial changes
	685	Described use of <code>NavPropBinding</code> with Containment
	722	Minor editorial change
8.1.5 Attribute <code>HasStream</code>	559	Clarified relationship of <code>HasStream</code> attribute and inheritance
10 Enumeration Type	620	Consistent use of "nominal"
11.1.3 Type Definition Facets	668	Minor editorial changes
12.1 Element <code>edm:Action</code>	620	Consistent use of "primitive"
12.2 Element <code>edm:Function</code>	620	Consistent use of "primitive"
13 Entity Container	651	Removed redundant and confusing note referencing "Part 1: Protocol"
13.4.1 Attribute <code>Path</code>	685	Described use of <code>NavPropBinding</code> with Containment
13.4.2 Attribute <code>TargetPath</code>		
13.6 Element <code>edm:FunctionImport</code>	621	Clarified, that all overloads of unbound functions specified in a function import are callable from the entity container
14.1.4 Attribute <code>DefaultValue</code>	668	Minor editorial changes
14.1.5 Attribute <code>AppliesTo</code>	676	Clarified client expectations around <code>AppliesTo</code>
14.2.1 Attribute <code>Target</code>	672	Removed unnecessary reference to <code>TargetPath</code> section

	639	Called out that the Schema element can be annotated by inline annotations
	668	Minor editorial changes
	700	Described targeting property of an entity type within an entityset
14.3 Element <code>edm:Annotation</code>	544	Included missing <code>ReturnType</code> in annotatable elements
14.5.1 Comparison and Logical Operators	668	Minor editorial changes
14.5.6 Expression <code>edm:If</code>	668	Minor editorial changes
14.5.11 Expression <code>edm:NavigationPropertyPath</code>	620	Consistent use of "structural"
14.5.13 Expression <code>edm:PropertyPath</code>	620	Consistent use of "structural"
14.5.15 Expression <code>edm:UrlRef</code>	570	Consistent description of relative reference handling
	625	Added example
15.1 Entity Model Wrapper	668	Minor editorial changes
15.2 Schema	668	Minor editorial changes
15.3 Types	661	Added enumeration member name syntax from [OData-ABNF]
	652	Fixed typo to match defined term name
15.6 Entity Container	641	Added missing <code>IncludeInServiceDocument</code> property in example
16.1 Products and Categories Example	652	Corrected vocabulary URIs in example.
17.5 <code>TargetPath</code>	672	Removed unused path expression
	668	Minor editorial changes
17.6 Boolean	668	Minor editorial changes

5 ABNF Construction Rules

Line	Issue	Comment
167	569	Optional type-cast segment for boundComplexColFuncCall, ABNF was more restrictive than normative prose text / boundComplexColFuncCall ["/" qualifiedComplexTypeName] [collectionPath]
245	604	Optional cast to complex type, ABNF was more restrictive than normative prose text expandPath = [(_qualifiedEntityTypeName / qualifiedComplexTypeName) "/"]
261	590	Discourage leading zeroes in \$levels levels = '\$levels' EQ (oneToNine ± *DIGIT / 'max')
299	604	Optional cast to complex type, ABNF was more restrictive than normative prose text / [(_qualifiedEntityTypeName / qualifiedComplexTypeName) "/"]
426	723	/ streamProperty_____ [singlePathExpr]
522	720	Made hasExpr more precise hasExpr = RWS 'has' RWS commonExpr enum
662	668	Added comment that forward slash literal is allowed in query part of URLs / ("/" / "%2F") ; solidus U+002F - literal form is allowed in the query part of a URL
897	567	Hour value 22 is allowed / "2" ("0" / "1" / "2" / "3")
992	668	Refactored header rules to use new rule EQ-h for equal signs in headers ; / token [EQ-h BWS "-" BWS word] *(OWS ";" [OWS parameter])
996	668	Refactored header rules to use new rule EQ-h for equal signs in headers callbackPreference = "odata.callback" OWS ";" OWS "url" EQ-h BWS "-" BWS DQUOTE URI DQUOTE
1000	668	Refactored header rules to use new rule EQ-h for equal signs in headers includeAnnotationsPreference = "odata.include-annotations" EQ-h BWS "-" BWS DQUOTE annotationsList DQUOTE
1008	668	Refactored header rules to use new rule EQ-h for equal signs in headers maxpagesizePreference = "odata.maxpagesize" EQ-h BWS "-" BWS oneToNine *DIGIT
1012	668	Refactored header rules to use new rule EQ-h for equal signs in headers returnPreference = "return" EQ-h BWS "-" BWS ('representation' / 'minimal')

1016	668	Refactored header rules to use new rule EQ-h for equal signs in headers waitPreference = "wait" <u>EQ-h</u> BWS "-" BWS 1*DIGIT
1018	668	Refactored header rules to use new rule EQ-h for equal signs in headers ;parameter = token [<u>EQ-h</u> BWS "-" BWS word]
1029	668	Rule OWS is only used in headers where no percent-encoding is allowed <u>OWS = *(SP / HTAB) ; "optional" whitespace</u>
	668	Added rule BWS-h for discouraged whitespace in headers <u>BWS-h = *(SP / HTAB) ; "bad" whitespace in header values</u>
	668	Added rule EQ-h for equal sign with discouraged whitespace in headers <u>EQ-h = BWS-h EQ BWS-h</u>
1034	668	Rule OWS moved to header section OWS = *(SP / HTAB / "%20" / "%09") ; "optional" whitespace
1036	668	Rule BWS now explicitly defined BWS = OWS <u>*(SP / HTAB / "%20" / "%09")</u> ; "bad" whitespace
1125	633	Typo unintentionally excluded %70 to %7f pct-encoded-unescape = "%" ("0" / "1" / "3" / "4" / "6" / <u>"7"</u> / "8" / "9" / A-to-F) HEXDIG

6 ABNF Test Cases

Line	Issue	Comment
67	668	<p>Copied overview text from file header to XML comment below document root</p> <pre><!-- This document contains positive and negative test cases for the OData ABNF Construction Rules Version 4.0. Positive test cases consist of the rule to test, the input string to parse, and a description of the test case, often starting with a section number referring to OData Version 4.0 Part 2: URL Conventions. Negative test cases in addition state the character position at which the invalid portion of input text starts, 0 meaning the whole input string. These test cases can be automatically executed with the ABNF test tool available at https://github.com/SAP/abnf-test-tool. This tool is neither required for interpreting the test cases, nor is it part of the OData work product. --></pre>
73	668	<p>Removed TODO comment</p> <pre><!-- TODO: remove constraints that were only needed for data aggregation --></pre>
255	668	<p>Added new primitiveNonKeyProperty value</p> <pre><Match>State</Match></pre>
260	668	<p>Added new primitiveNonKeyProperty value</p> <pre><Match>ZipCode</Match></pre>
361	567	<p>Hour value 22</p> <pre><Input>2012-09-03T0822:09:02Z</Input></pre>
932	569	<p>Test cases for bound complex collection function with cast segment</p> <pre><TestCase Name="4.5.2 Call bound complex collection function with cast" Rule="odataRelativeUri"> <Input>Customers/Model.MostPopularAddresses()/Model.AddressW ithLocation</Input></pre>

		<pre> </TestCase> <TestCase Name="4.5.2 Call bound complex collection function with cast" Rule="odataRelativeUri"> <Input>Customers/Model.MostPopularAddresses()/Model.AddressW ithLocation/\$count</Input> </TestCase> </pre>
1085	604	<p>Test case for \$expand with complex type cast</p> <pre> <TestCase Name="4.9 Inheritance - \$expand on complex resource" Rule="odataRelativeUri"> <Input>TheMostPopularAddresses()? \$expand=Model.AddressWithLo cation/Country</Input> </TestCase> </pre>
1176	723	<p>Test case for function bound to stream property</p> <pre> <TestCase Name="5.1.1 Filter - member expressions - stream" Rule="firstMemberExpr"> <Input>Thumbnail/Model.Available()</Input> </TestCase> </pre>
1217	668	<p>Test case for comparing complex times</p> <pre> <TestCase Name="5.1.1.1.1 comparing complex types" Rule="filter"> <Input>\$filter=Address eq {"Street": "NE 40th", "City": "Redmond", "State": "WA", "ZipCode": "98052"}</Inpu t> </TestCase> </pre>
1692	590	<p>Negative test case for \$levels with leading zeroes</p> <pre> <TestCase Name="5.1.2 Expand - levels without leading zeroes" Rule="expand" FailAt="25"> <Input>\$expand=Category(\$levels=04)</Input> </TestCase> </pre>
1720	604	<p>Test case for \$select with complex type cast</p> <pre> <TestCase Name="5.1.3 Select on complex resource - with cast and property of sub-type" Rule="select"> <Input>\$select=Model.AddressWithLocation/Location</Input> </TestCase> </pre>
2046	668	<p>Added test case for \$filter with geometry literals</p> <pre> <TestCase Name="\$filter with geometry" Rule="filter"> <Input>\$filter=geo.intersects(geometry'SRID=0;Point(142.1 </pre>

		<pre>64.1) ',geometry'SRID=0;Polygon((1 1,1 1),(1 1,2 2,3 3,1 1))')</Input> </TestCase></pre>
2487	668	<p>Added test case for <code>wait</code> with unnecessary whitespace</p> <pre><TestCase Name="Preferences - wait with bad whitespace" Rule="preference"> <Input>wait = 0</Input> </TestCase></pre>
2487	633	<p>Test case for percent-encoded hex pairs starting with 7</p> <pre><TestCase Name="ODATA-633 hex pair bug" Rule="stringInJSON"> <Input>"b%75g"</Input> </TestCase></pre>

7 XSD Schema: edm

Line	Issue	Comment
183	544	Added Annotation to TActionFunctionReturnType <pre><xs:complexType name="TActionFunctionReturnType"> <xs:sequence> <xs:element ref="edm:Annotation" minOccurs="0" maxOccurs="unbounded" /> </xs:sequence> <xs:attribute name="Type" type="edm:TTypeName" use="required" /> <xs:attribute name="Nullable" type="xs:boolean" use="optional" /> <xs:attributeGroup ref="edm:TFacetAttributes" /> </xs:complexType></pre>
734	544	Added ReturnType to list of values for TAppliesTo <pre><xs:enumeration value="ReturnType" /></pre>

8 EDMX Schema: MetadataService

Line	Issue	Comment
283	641	Added property IncludeInServiceDocument <code><Property Name="IncludeInServiceDocument" Type="Edm.Boolean" Nullable="false" /></code>
297	640	Removed property Annotations <code><Property Name="Annotations" Type="Collection(Edm.Metadata.InlineAnnotation)" /></code>

Appendix A. Acknowledgments

The contributions of the OASIS OData Technical Committee members, enumerated in **[OData-Protocol]**, are gratefully acknowledged.

Appendix B. Revision History

Revision	Date	Editor	Changes Made
WD01	2014-05-16	Michael Pizzo Ralf Handl Martin Zurmuehl Hubert Heijkers	First version