



# Denodo OData Custom Wrapper - User Manual

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## 1 INTRODUCTION

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OData is a protocol to access data created by Microsoft. It provides CRUD operations and is similar to JDBC or ODBC but not limited to databases.

OData uses protocols ATOM and JSON and the requests use a REST model. For this reason, OData is an implementation of the RESTful API that describes the data and their model.

## 2 ODATA SERVICES

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There are several ways to access to an OData service from Virtual DataPort:

### 2.1 DENODO ODATA CUSTOM WRAPPER

The Denodo OData Custom Wrapper allows you to access OData services even if they require authentication (HTTP BASIC supported) or behind a proxy server (which might also be authenticated).

#### 2.1.1 Import the Custom Wrapper

To import the custom wrapper, follow these steps:

1. In the VDP Administration Tool, go to: File → Extensions → Jar management
2. Click on “Create” button and select the “denodo-odata-wrapper-5.0-{version}-jar-with-dependencies.jar” file downloaded from Denodo SupportSite.

#### 2.1.2 Create the OData data source

To create a new OData custom data source:

1. In the VDP Administration Tool, go to: File → New... → Data source → Custom
2. In the “Create a New Custom Data Source” window, do the following:
  - Set a name for the new OData data source in the “Name” field.
  - Click on “Select Jars” and select the file imported in the previous section.
  - The “Class name” field must be filled with:  
`com.denodo.connect.odata.wrapper.ODataWrapper`
3. Click on “Ok” button.

#### 2.1.3 Create the base view

To create a new base view using the OData data source:

1. Double-click on the OData data source and then click on “Create base view”.
2. Set the parameters as follows:
  - **Service Endpoint** (*mandatory*): is the URL to the OData service. Must be something like: `http://services.odata.org/OData/OData.svc/`
  - **Entity Collection** (*mandatory*): must be one of the collections defined into the OData service.
  - **Service Format** (*mandatory*): is the format used by the OData custom wrapper to access to the OData service. Must be one of these:
    - i. JSON
    - ii. XML-Atom
  - **Service Version**: if specified, the custom wrapper try to force the compatibility of the OData service with one of these versions:
    - i. V1
    - ii. V2
  - **Expand Related Entities**: if checked, the references to other entities appear directly in the main entity as arrays or registers.
  - **Enable Pagination**: if checked, two parameters are added to the view to permit the pagination of the results:
    - i. `fetch_size`
    - ii. `offset_size`
  - **User**: OData service user for HTTP Basic Authentication, this is an optional parameter.
  - **Password**: OData service password for HTTP Basic Authentication , this is an optional parameter.
  - **Proxy Host**: host to connect to the client through a proxy, this is an optional parameter.
  - **Proxy Port**: port to connect to the client through a proxy, this is an optional parameter.
  - **Proxy User**: user for the authentication proxy, this is an optional parameter.
  - **Proxy Password**: password for the authentication proxy, this is an optional parameter.

#### 2.1.4 Example

1. Create a base view over this test service:

a)

- ☐ Service Endpoint = [http://services.odata.org/V2/\(S\(gsrk2wcskjydxw2iixw3kvdr\)\)/OData/OData.svc/](http://services.odata.org/V2/(S(gsrk2wcskjydxw2iixw3kvdr))/OData/OData.svc/)
- ☐ Entity = Products
- ☐ Service Format = XML-Atom
- ☐ Expand Related Entities = false
- ☐ Enable Pagination = false

Edit parameter values

Service Endpoint *	<input type="text" value="http://services.odata.org/V2/(S(gsrk2wcskjydxw2iixw3kvdr))/OData/OData.svc/"/>
Entity Collection *	<input type="text" value="Products"/>
Service Format *	<input type="text" value="XML-Atom"/>
Service Version	<input type="text" value="V2"/>
Expand Related Entities	<input type="checkbox"/>
Enable Pagination	<input type="checkbox"/>
User	<input type="text"/>
Password	<input type="password"/>
Proxy Host	<input type="text"/>
Proxy Port	<input type="text"/>
Proxy User	<input type="text"/>
Proxy Password	<input type="password"/>

b) This is the same option but accessing with a proxy

- ☐ Service Endpoint = [http://services.odata.org/V2/\(S\(gsrk2wcskjydxw2iixw3kvdr\)\)/OData/OData.svc/](http://services.odata.org/V2/(S(gsrk2wcskjydxw2iixw3kvdr))/OData/OData.svc/)
- ☐ Entity = Products
- ☐ Service Format = XML-Atom
- ☐ Expand Related Entities = false
- ☐ Enable Pagination = false
- ☐ Proxy Host=proxy.denodo.com
- ☐ Proxy Port=3128
- ☐ Proxy User=guest
- ☐ Proxy Password=\*\*\*\*\*

**Edit parameter values**

Service Endpoint *	<input type="text" value="http://services.odata.org/V2/(S(gsrk2wcskijdxw2"/>
Entity Collection *	<input type="text" value="Products"/>
Service Format *	<input type="text" value="XML-Atom"/>
Service Version	<input type="text" value="V2"/>
Expand Related Entities	<input type="checkbox"/>
Enable Pagination	<input type="checkbox"/>
User	<input type="text"/>
Password	<input type="password"/>
Proxy Host	<input type="text" value="proxy.denodo.com"/>
Proxy Port	<input type="text" value="3128"/>
Proxy User	<input type="text" value="guest"/>
Proxy Password	<input type="password" value="•••••"/>

Ok Cancel

2. The schema of the base view is shown and you can rename it.

id	int	
name	text	
description	text	
releasedate	date	
discontinueddate	date	
rating	int	
price	double	

Set selected as PK

3. After clicking on “Ok”, you can execute queries (SELECT, INSERT, UPDATE or DELETE), for example:

- ☐ SELECT \* FROM products WHERE id = 6;
- ☐ INSERT INTO products (id,name,description,releasedate,rating,price) VALUES

```
(9, 'HDTV', '32 inch 720p television', NOW(), 2, 600);  
  
○ UPDATE products SET price = 800 WHERE id = 9;  
  
○ DELETE FROM products WHERE ID = 9;
```

### 2.1.5 Known Limitations

This custom data source currently only works with OData versions 1.0 or 2.0.

OData version 3.0 is partially supported interpreting it as a lower version, but this method may not work. More information:

<http://code.google.com/p/odata4j/wiki/Roadmap>

You can't filter elements specified obtained through "expand" related entities. VDP must post-filter these items using ROW syntax in the query.

## 2.2 OTHER WAYS TO CONSUME ODATA SOURCES

### 2.2.1 Using ATOM/XML

Is possible to access to OData server through an URL. For example, the following URL returns all the entities of the OData server:

<http://services.odata.org/OData/OData.svc/>

Using this URL you can access to all entities of one type:

<http://services.odata.org/OData/OData.svc/Products>

And you can access to one entity using the identifier:

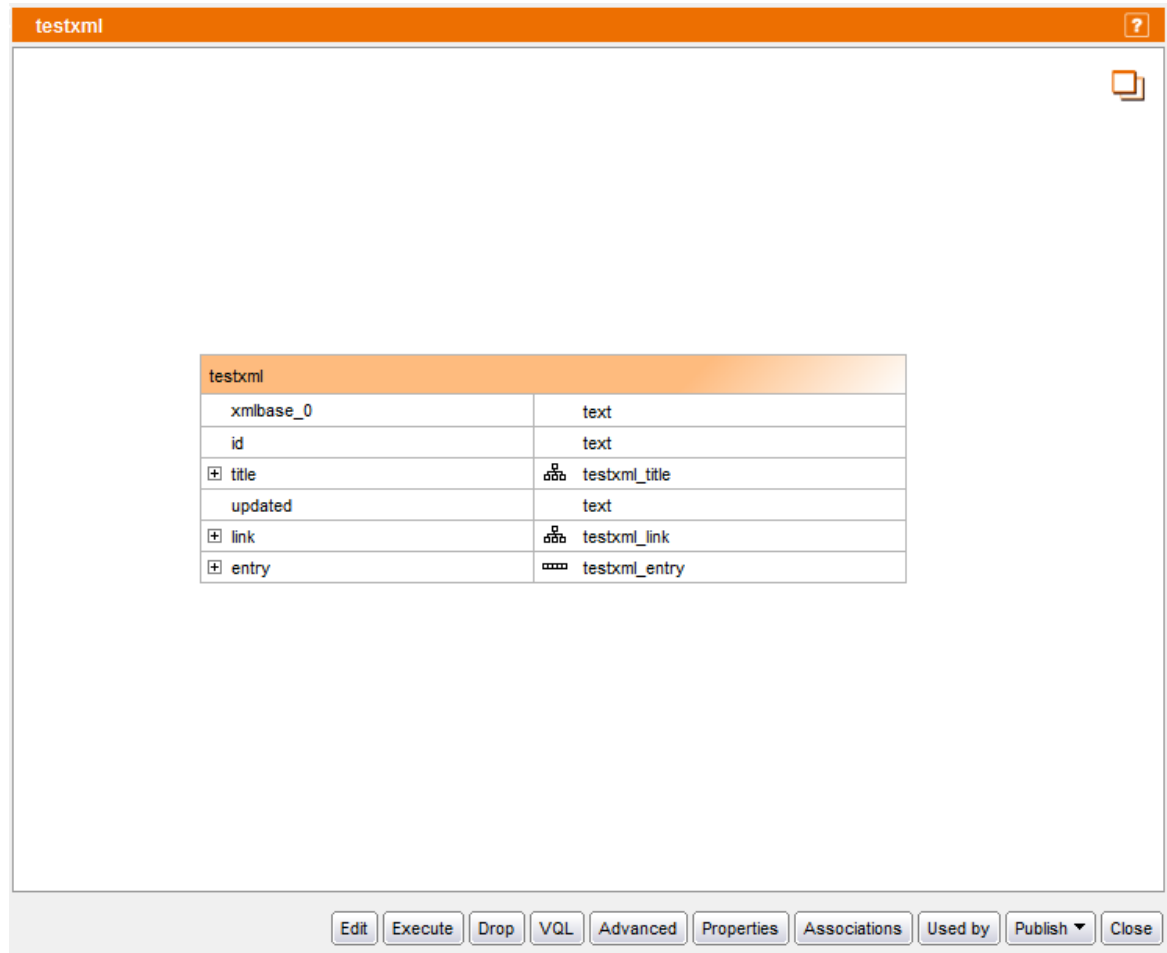
[http://services.odata.org/OData/OData.svc/Products\(0\)](http://services.odata.org/OData/OData.svc/Products(0))

#### 2.2.1.1 Importing ATOM/XML into VDP

1. In the VDP Administration Tool, go to: File → New... → Data source → XML
2. Set the parameters as follows:
  1. **Name:** the name of the new XML data source.
  2. **Data route:** "HTTP Client" configured as:
    1. HTTP method: GET
    2. URL: URL to the entities. For example:  
<http://services.odata.org/OData/OData.svc/Products>
3. Create a new base view:



1. We can only recover data selecting “entry” in the section “Stream output at level”.
4. When clicking “Ok” we have a similar base view to the next one:



The screenshot shows a web interface for a table named 'testxml'. The table has the following structure:

testxml	
xmlbase_0	text
id	text
+ title	testxml_title
updated	text
+ link	testxml_link
+ entry	testxml_entry

At the bottom of the interface, there is a toolbar with the following buttons: Edit, Execute, Drop, VQL, Advanced, Properties, Associations, Used by, Publish (with a dropdown arrow), and Close.

5. If we execute the view, the results are located into the field “entry”:

Compound type values						
RESULT -> entry						
id	category	link	title	summary	updated	content
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...
http://services.o...	[Register]...	[Array]...	[Register]...	[Register]...	2013-07-26T06:...	[Register]...

### 2.2.2 Using JSON

To access OData using JSON only is necessary to add the following parameter to the URL:  
 ?\$format=JSON

It's also possible to access OData using JSON adding the following parameters to the HTTP header when doing a GET:

Accept: application/json

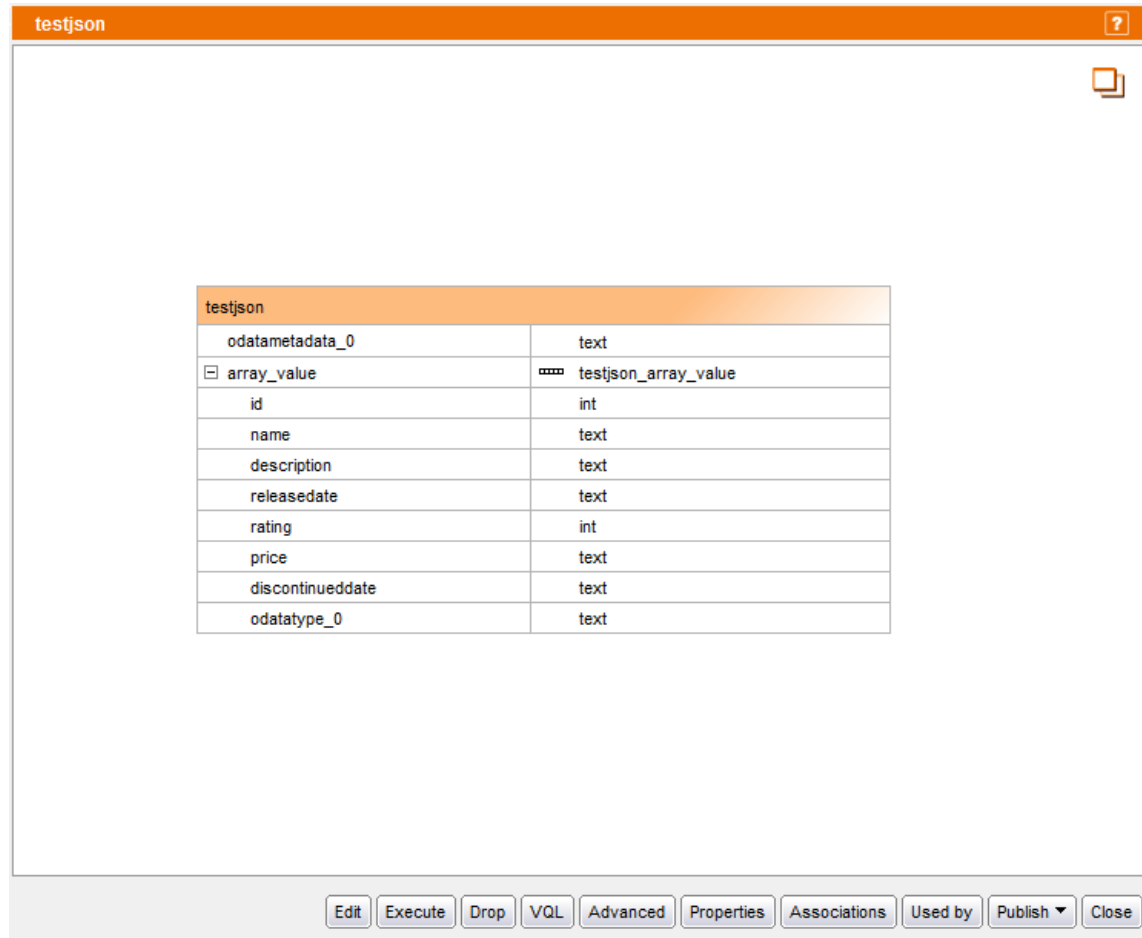
The following is an example of using the URL to access to OData thought JSON:

[http://services.odata.org/OData/OData.svc/Products?\\$format=json](http://services.odata.org/OData/OData.svc/Products?$format=json)

#### 2.2.2.1 Importing JSON into VDP

The steps to access to OData using JSON are:

1. In the VDP Administration Tool, go to: File → New... → Data source → JSON
2. Set the parameters as follows:
  1. **Name:** the name of the new data source.
  2. **Data route:** “HTTP Client” configured as:
    1. HTTP method: GET
    2. URL: URL to the entities in JSON format. For example:  
[http://services.odata.org/OData/OData.svc/Products?\\$format=json](http://services.odata.org/OData/OData.svc/Products?$format=json)
3. Create a base view from the new datasource:
  1. We can get only the data setting the JSON root as: /JSONFile/value
4. When clicking “Ok” we have a similar base view to the next one:



The screenshot shows a web application window titled 'testjson'. Inside the window, there is a table with the following structure:

testjson	
odatametadata_0	text
<input checked="" type="checkbox"/> array_value	testjson_array_value
id	int
name	text
description	text
releasedate	text
rating	int
price	text
discontinueddate	text
odatatype_0	text

At the bottom of the window, there is a toolbar with the following buttons: Edit, Execute, Drop, VQL, Advanced, Properties, Associations, Used by, Publish (with a dropdown arrow), and Close.

5. Data are located in the field “array\_value”:

Compound type values							
RESULT -> array_value							
id	name	description	releasedate	rating	price	discontinued...	odatatype_0
0	Bread	Whole grain b...	1992-01-01T...	4	2.5	<null>	<null>
1	Milk	Low fat milk	1995-10-01T...	3	3.5	<null>	<null>
2	Vint soda	Americana Va...	2000-10-01T...	3	20.9	<null>	<null>
3	Havina Cola	The Original ...	2005-10-01T...	3	19.9	2006-10-01T0...	<null>
4	Fruit Punch	Mango flavor, ...	2003-01-05T...	3	22.99	<null>	<null>
5	Cranberry Juice	16-Ounce Pla...	2006-08-04T...	3	22.8	<null>	<null>
6	Pink Lemona...	36 Ounce Ca...	2006-11-05T...	3	18.8	<null>	<null>
7	DVD Player	1080P Upcon...	2006-11-15T...	3	35.88	<null>	<null>
8	LCD HDTV	42 inch 1080...	2008-05-08T...	3	1088.8	<null>	<null>
9	Lemonade	Classic, refre...	1970-01-01T...	7	1.01	<null>	ODataDemo....
10	Coffee	Bulk size can ...	1982-12-31T...	1	6.99	<null>	ODataDemo....

6. Data can be directly accessed if you specified the root “/JSONFile/value”:

Execute view testjisonroot

Total rows received: 11 (shown 11)

odatametad...	id	name	description	releasedate	rating	price	discontinue...	odatatype_0
http://service...	0	Bread	Whole grain ...	1992-01-01...	4	2.5	<null>	<null>
http://service...	1	Milk	Low fat milk	1995-10-01...	3	3.5	<null>	<null>
http://service...	2	Vint soda	Americana V...	2000-10-01...	3	20.9	<null>	<null>
http://service...	3	Havina Cola	The Original ...	2005-10-01...	3	19.9	2006-10-01...	<null>
http://service...	4	Fruit Punch	Mango flavor...	2003-01-05...	3	22.99	<null>	<null>
http://service...	5	Cranberry Ju...	16-Ounce Pl...	2006-08-04...	3	22.8	<null>	<null>
http://service...	6	Pink Lemon...	36 Ounce C...	2006-11-05...	3	18.8	<null>	<null>
http://service...	7	DVD Player	1080P Upco...	2006-11-15...	3	35.88	<null>	<null>
http://service...	8	LCD HDTV	42 inch 108...	2008-05-08...	3	1088.8	<null>	<null>
http://service...	9	Lemonade	Classic, refr...	1970-01-01...	7	1.01	<null>	<null>
http://service...	10	Coffee	Bulk size ca...	1982-12-31...	1	6.99	<null>	<null>

Stop

View execution trace

New query

Save Output

Close

### 3 REFERENCES

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Odata official page

1. Documentation:
  1. <http://www.odata.org/docs/>
2. Libraries:
  1. <http://www.odata.org/libraries/>

Wikipedia article:

1. [http://en.wikipedia.org/wiki/Open\\_Data\\_Protocol](http://en.wikipedia.org/wiki/Open_Data_Protocol)

OData references into the Microsoft webpage:

1. Create and Consume JSON-Formatted OData:
  1. <http://msdn.microsoft.com/es-es/magazine/jj190799.aspx>
2. Building Rich Internet Apps with the Open Data Protocol:
  1. <http://msdn.microsoft.com/es-es/magazine/ff714561.aspx>
3. OData Operations:
  1. <http://www.odata.org/documentation/odata-v2-documentation/operations/>
4. Examples:
  1. <http://msdn.microsoft.com/en-us/library/ff478141.aspx>

Web pages with OData examples:

1. Example read-only service in the official web site:
  1. <http://services.odata.org/OData/OData.svc/>
  2. [http://services.odata.org/OData/OData.svc/\\$metadata](http://services.odata.org/OData/OData.svc/$metadata)
  3. <http://services.odata.org/OData/OData.svc/Products>
  4. [http://services.odata.org/OData/OData.svc/Products\(0\)](http://services.odata.org/OData/OData.svc/Products(0))
  5. [http://services.odata.org/OData/OData.svc/Products?\\$format=json](http://services.odata.org/OData/OData.svc/Products?$format=json)
  6. [http://services.odata.org/OData/OData.svc/Products\(0\)?\\$format=json](http://services.odata.org/OData/OData.svc/Products(0)?$format=json)
2. Example read-write service in the official web site:
  1. [http://services.odata.org/V2/\(S\(gsrk2wckjydxw2iixw3kvdr\)\)/OData/OData.svc/](http://services.odata.org/V2/(S(gsrk2wckjydxw2iixw3kvdr))/OData/OData.svc/)
  2. [http://services.odata.org/V2/\(S\(gsrk2wckjydxw2iixw3kvdr\)\)/OData/OData.svc/Categories](http://services.odata.org/V2/(S(gsrk2wckjydxw2iixw3kvdr))/OData/OData.svc/Categories)
  3. [http://services.odata.org/V2/\(S\(gsrk2wckjydxw2iixw3kvdr\)\)/OData/OData.svc/Products](http://services.odata.org/V2/(S(gsrk2wckjydxw2iixw3kvdr))/OData/OData.svc/Products)
  4. [http://services.odata.org/V2/\(S\(gsrk2wckjydxw2iixw3kvdr\)\)/OData/OData.svc/Suppliers](http://services.odata.org/V2/(S(gsrk2wckjydxw2iixw3kvdr))/OData/OData.svc/Suppliers)
3. Example OData installing the module odata-server of JayData server
  1. You can install locally this module to test the Basic Authentication, the intructions in this url: <https://www.npmjs.org/package/odata-server>

