

# Week 2 Unit 6: **Working with OData Services**

# Working with OData Services

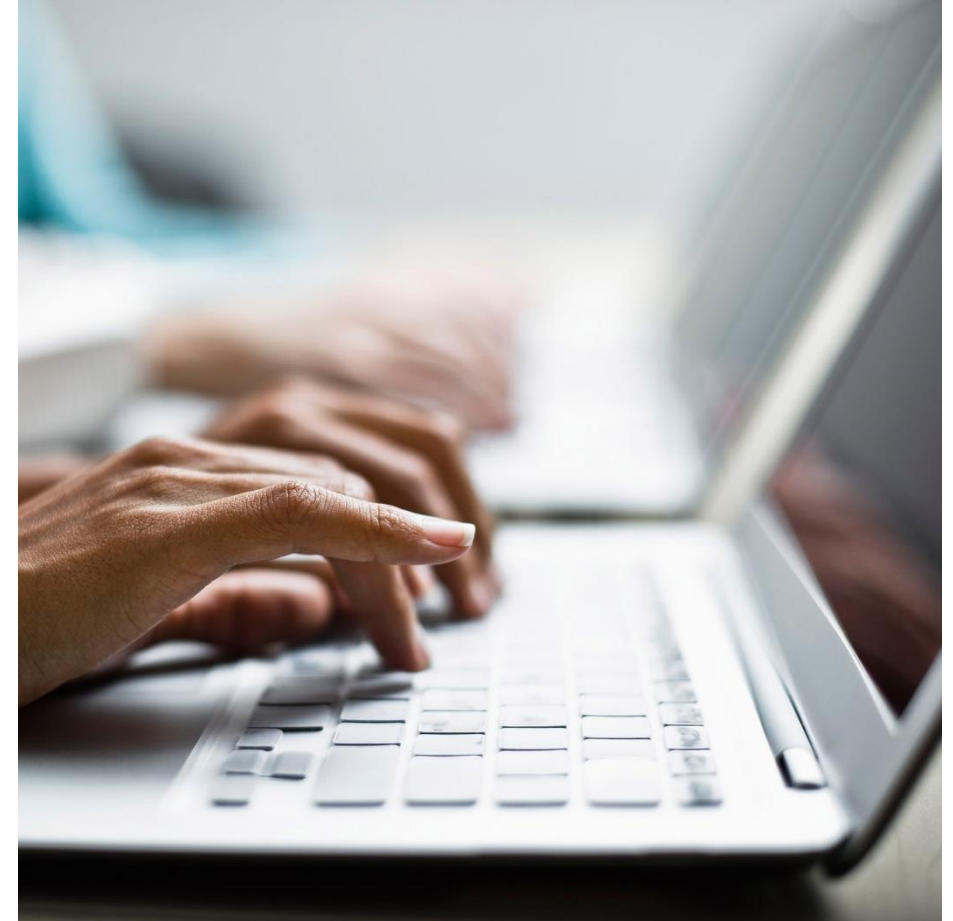
## OData – Open Data Protocol

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An **open protocol** to allow the creation and consumption of **queryable** and **interoperable RESTful APIs**

- Enables provision of data services based on REST principles
- Contains a complete description of the feeds, types, properties, and relationships exposed by the service in EDM (service metadata)
- Defines data formats representing resources like collections, entries, and properties

[Documentation at odata.org](http://odata.org)



# Working with OData Services

## Entity types and OData types



# Working with OData Services

## URI structure and data access and query options

OData	URI	Results
Service Document	<code>&lt;service_root_url&gt;</code>	Collection of entity sets, e.g. a list of available tables in a service
EDMX	<code>/\$metadata</code>	Definitions of the schema, like entity type, property type, associations, navigations
Entity Set	<code>/&lt;entityset&gt;</code>	All entities of an entity set, e.g. all rows of a table
Entity	<code>/&lt;entityset&gt;(&lt;key&gt;=&lt;value&gt;,&lt;key&gt;=&lt;value&gt;)</code>	Entity of an entity set, based on key fields
Property	<code>/&lt;entityset&gt;(&lt;key&gt;=&lt;value&gt;,&lt;key&gt;=&lt;value&gt;)/&lt;property&gt;</code>	Property of the entity, e.g. a field of a row

- The content of an OData service can be accessed directly in the browser
- You can browse entities, entity sets, and properties via URI

[GWSAMPLE\\_BASIC service on system ES4 \(requires login\)](#)

# Working with OData Services

## OData simple query language

`https://sapes4.sapdevcenter.com/sap/opu/odata/IWBEP/GWSAMPLE_BASIC/Entity?<query parameters>`

Service Root URI

Resource path

Query options

- The names of all query string parameters defined by OData are prefixed with a \$ character

Operation	Query Option	SQL Equivalent	Out-of-the-Box Support
Filtering	\$filter	Where clause	Aggregation filter
Projecting	\$select	Field selection	On demand usage
Sorting	\$orderby	Sort	Aggregation sort
Paging	\$top	Up to .. rows	sap.m.List growing
	\$skip	-	sap.m.List growing
Inlining	\$expand	Innerjoin	On demand usage
Count	\$count	Count(..)	Aggregation binding
	\$inlinecount	-	On demand usage

List of (most important) Query options: <http://www.odata.org/developers/protocols/uri-conventions#QueryStringOptions>



# Working with OData Services

## OData debugging tool for SAP NetWeaver OData services

- URL parameter:  
*sap-ds-debug=true*
- Can be used to analyze and explore your service
- Provides additional information on queries, performance, and the back end itself

ProductSet entity on  
GWSAMPLE\_BASIC  
(requires login)

Body	Request	Response	Server	URI	Runtime
<pre>&lt;feed xmlns="http://www.w3.org/2005/Atom" xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata" xmlns:d="http://schemas.micro xml:base="https://SAPE54.SAPDEVCENTER.COM:443/sap/opu/odata/IWBEP/GWSAMPLE_BASIC/"&gt;   &lt;id&gt;https://SAPE54.SAPDEVCENTER.COM:443/sap/opu/odata/IWBEP/GWSAMPLE_BASIC/ProductSet&lt;/id&gt;   &lt;title type="text"&gt;ProductSet&lt;/title&gt;   &lt;updated&gt;2016-02-17T13:57:42Z&lt;/updated&gt; - &lt;author&gt;   &lt;name/&gt; &lt;/author&gt; &lt;link href="ProductSet" rel="self" title="ProductSet"/&gt; - &lt;entry m:etag="W/"datetime'2016-02-16T22%3A30%3A51.0000000'"&gt;   &lt;id&gt;https://SAPE54.SAPDEVCENTER.COM:443/sap/opu/odata/IWBEP/GWSAMPLE_BASIC/ProductSet('HT-1000')&lt;/id&gt;   &lt;title type="text"&gt;ProductSet('HT-1000')&lt;/title&gt;   &lt;updated&gt;2016-02-17T13:57:42Z&lt;/updated&gt;   &lt;category term="//IWBEP/GWSAMPLE_BASIC.Product" scheme="http://schemas.microsoft.com/ado/2007/08/dataservices/scheme"/&gt;   &lt;link href="ProductSet('HT-1000')" rel="edit" title="Product"/&gt;   &lt;link href="ProductSet('HT-1000')/ToSalesOrderLineItems" rel="http://schemas.microsoft.com/ado/2007/08/dataservices/related/ToSalesOrderLin   &lt;link href="ProductSet('HT-1000')/ToSupplier" rel="http://schemas.microsoft.com/ado/2007/08/dataservices/related/ToSupplier" type="applicat - &lt;content type="application/xml"&gt;   - &lt;m:properties xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata" xmlns:d="http://schemas.microsoft.com/ado/2007/08/     &lt;d:ProductID&gt;HT-1000&lt;/d:ProductID&gt;     &lt;d:TypeCode&gt;PR&lt;/d:TypeCode&gt;     &lt;d:Category&gt;Notebooks&lt;/d:Category&gt;     &lt;d:Name&gt;Notebook Basic 15&lt;/d:Name&gt;     &lt;d:NameLanguage&gt;EN&lt;/d:NameLanguage&gt;     &lt;d:Description&gt;Notebook Basic 15 with 2,80 GHz quad core, 15" LCD, 4 GB DDR3 RAM, 500 GB Hard Disc, Windows 8 Pro&lt;/d:Description&gt;     &lt;d:DescriptionLanguage&gt;EN&lt;/d:DescriptionLanguage&gt;     &lt;d:SupplierID&gt;0100000000&lt;/d:SupplierID&gt;     &lt;d:SupplierName&gt;SAP&lt;/d:SupplierName&gt;     &lt;d:TaxTarifCode&gt;1&lt;/d:TaxTarifCode&gt;     &lt;d:MeasureUnit&gt;EA&lt;/d:MeasureUnit&gt;     &lt;d:WeightMeasure&gt;4.200&lt;/d:WeightMeasure&gt;     &lt;d:WeightUnit&gt;KG&lt;/d:WeightUnit&gt;     &lt;d:CurrencyCode&gt;EUR&lt;/d:CurrencyCode&gt;     . . . . .</pre>					



# Thank you

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