



OData

Open Data Protocol

Agenda

Über-
sicht

Begriffe

Daten
abfragen

Daten
ändern

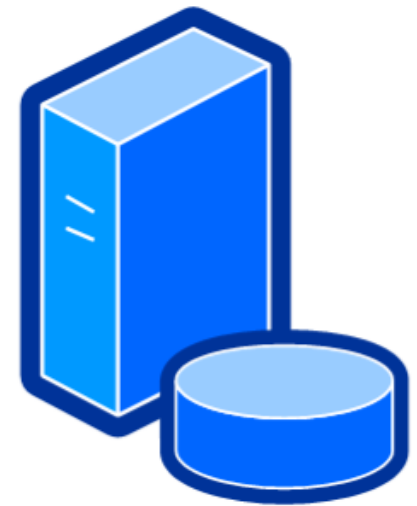
WCF
Data
Services

Weitere
Einsatz-
möglichkeiten

Die (ganz) „alte“ Welt



Windows Clients



SQL Server

Die „neue“ Welt

```
<?xml version="1.0" encoding="utf-8"?>
<feed xmlns="http://www.w3.org/2005/Atom">

  <title>Example Feed</title>
  <link href="http://example.org/" />
  <updated>2003-12-13T18:30:02Z</updated>
  <author>
    <name>John Doe</name>
  </author>
  <id>urn:uuid:60a76c80-d399-11d9-b93C-0003939e0af6</id>

  <entry>
    <title>Atom Entry</title>
    <link href="http://example.org/atom03" />
    <updated>2003-12-13/atom03</updated>
    <id>urn:uuid:60a76c80-d399-11d9-b93C-0003939e0af6</id>
  </entry>
</feed>
```

ATOM
XML

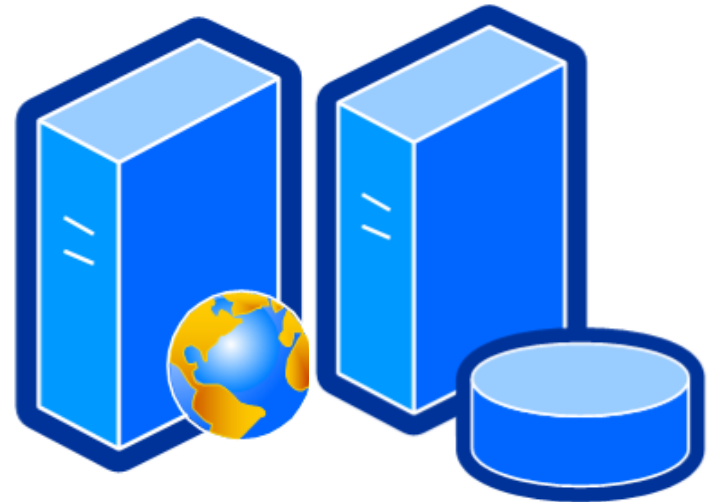
JSON

http

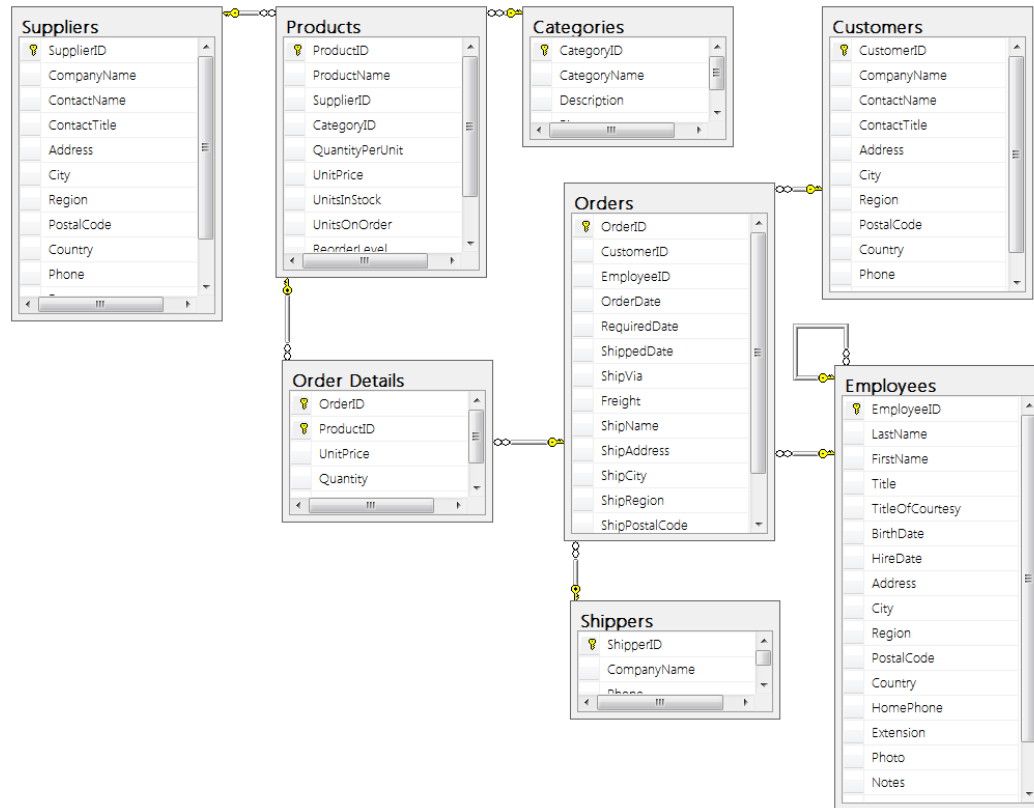
SQL Server



iOS



OData aus Datenbank-Sicht



Datenbank-Objekte und Atom-Feed

Datenbank

Tabelle

Spalten

Fremdschlüssel

Meta-Daten

Datensatz

Wert

Service

Feed/Collection

```
<?xml version="1.0" encoding="utf-8"?>
<feed xmlns="http://www.w3.org/2005/Atom">

  <title>Example Feed</title>
  <link href="http://example.org/" />
  <updated>2003-12-13T18:30:02Z</updated>
  <author>
    <name>John Doe</name>
  </author>
  <id>urn:uuid:60a76c80-d399-11d9-b93C-0003939e0af6</id>

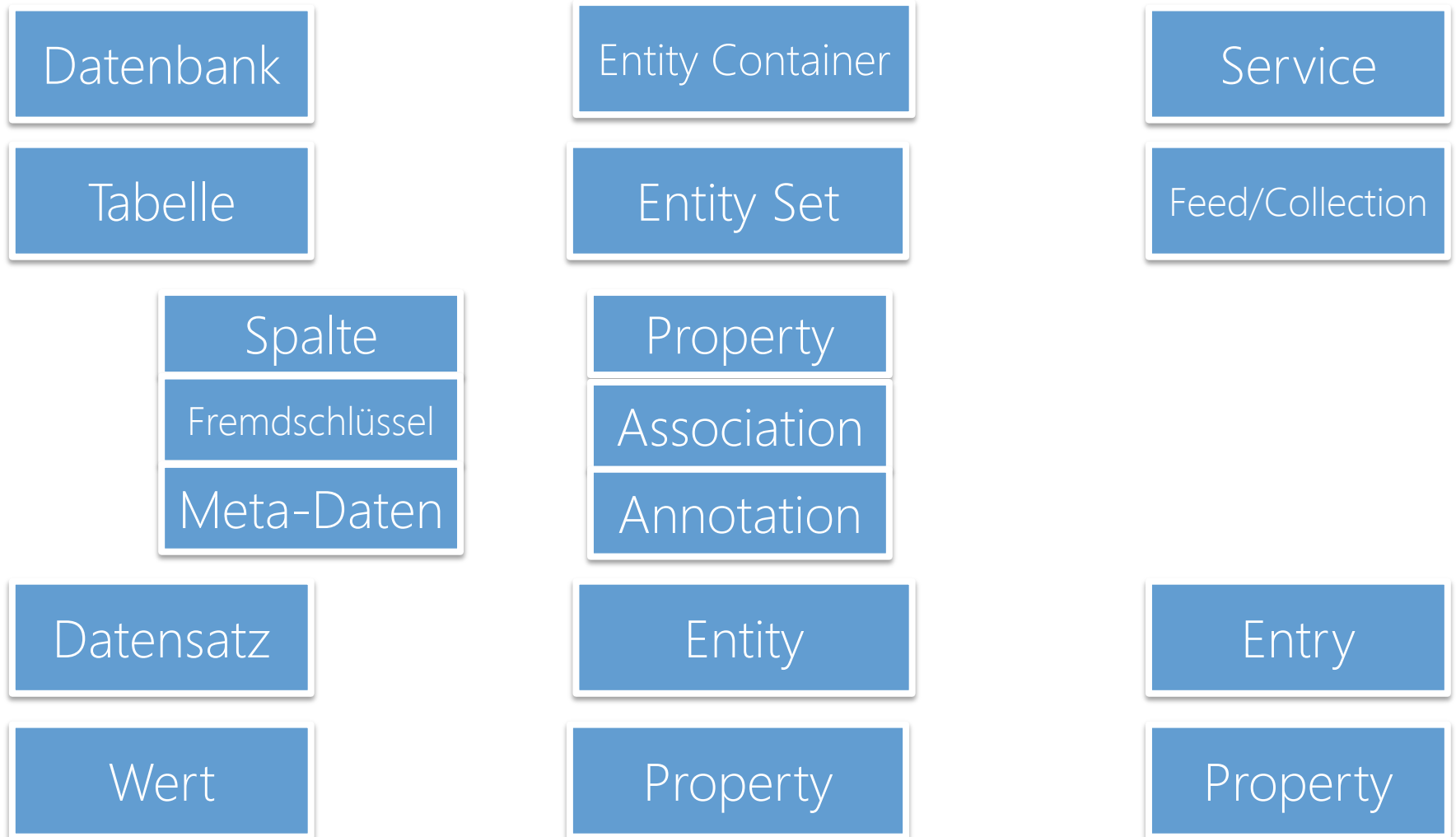
  <entry>
    <title>Atom-Powered Robots Run Amok</title>
    <link href="http://example.org/2003/12/13/atom03"/>
    <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
    <updated>2003-12-13T18:30:02Z</updated>
    <summary>Some text.</summary>
  </entry>

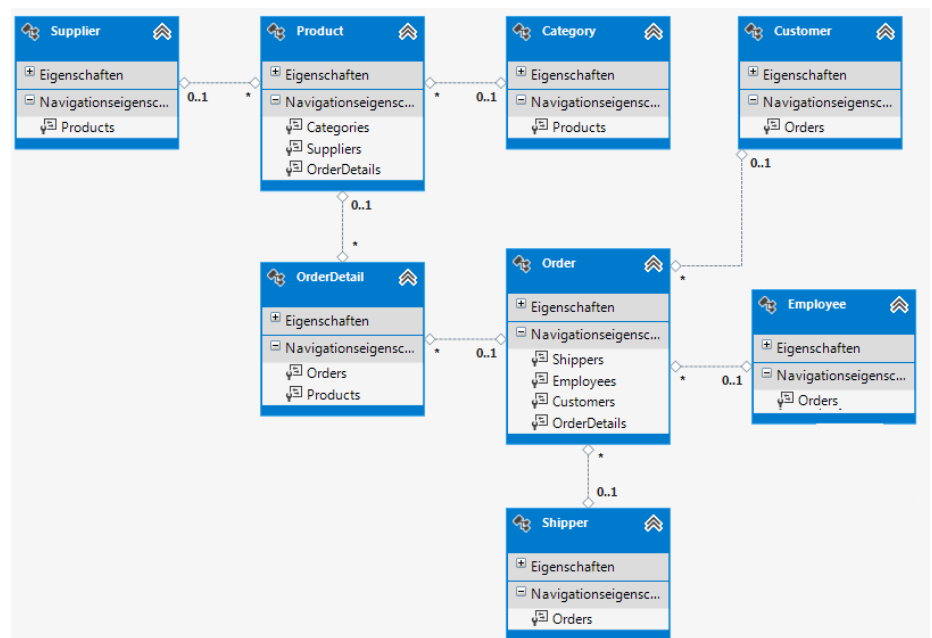
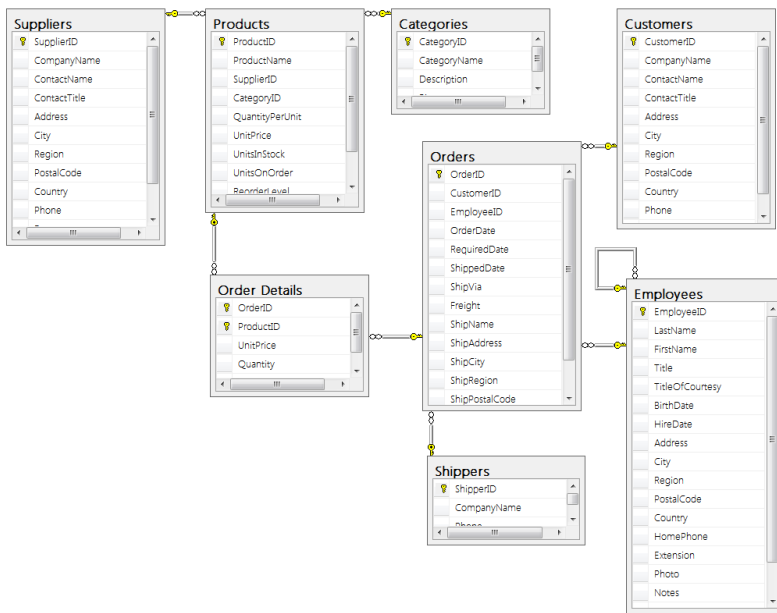
</feed>
```

Entry

Property

Datenbank – Edm – Feed





Herstellen der Verbindung

- <http://server/service>
- Meta-Data über verfügbare „Collections“

```
<?xml version="1.0" encoding="UTF-8"?>
<service xmlns:atom="http://www.w3.org/2005/Atom" xmlns="http://www.w3.org/2007/app"
  - <workspace>                                xml:base="http://services.odata.org/V3/OData/OData.svc/">
    <atom:title>Default</atom:title>
    - <collection href="Products">
      <atom:title>Products</atom:title>
    </collection>
    - <collection href="Advertisements">
      <atom:title>Advertisements</atom:title>
    </collection>
    - <collection href="Categories">
      <atom:title>Categories</atom:title>
    </collection>
    - <collection href="Suppliers">
      <atom:title>Suppliers</atom:title>
    </collection>
  </workspace>
</service>
```

Informationen zum Datenmodell

■ \$metadata

```
<?xml version="1.0" encoding="UTF-8"?>
<edmx:Edmx xmlns:edmx="http://schemas.microsoft.com/ado/2007/06/edmx" Version="1.0">
  - <edmx:DataServices xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata" m:MaxDataServiceVersion="3.0" m:DataServiceVersion="3.0">
    - <Schema xmlns="http://schemas.microsoft.com/ado/2009/11/edm" Namespace="ODataDemo">
      - <EntityType Name="Product">
        - <Key>
          <PropertyRef Name="ID"/>
        </Key>
        <Property Name="ID" Nullable="false" Type="Edm.Int32"/>
        <Property Name="Name" Type="Edm.String" m:FC_KeepInContent="false" m:FC_ContentKind="text" m:FC_TargetPath="SyndicationTitle"/>
        <Property Name="Description" Type="Edm.String" m:FC_KeepInContent="false" m:FC_ContentKind="text" m:FC_TargetPath="SyndicationSummary"/>
        <Property Name="ReleaseDate" Nullable="false" Type="Edm.DateTime"/>
        <Property Name="DiscontinuedDate" Type="Edm.DateTime"/>
        <Property Name="Rating" Nullable="false" Type="Edm.Int32"/>
        <Property Name="Price" Nullable="false" Type="Edm.Decimal"/>
        <NavigationProperty Name="Category" FromRole="Product_Category" ToRole="Category_Products"
          Relationship="ODataDemo.Product_Category_Category_Products"/>
        <NavigationProperty Name="Supplier" FromRole="Product_Supplier" ToRole="Supplier_Products"
          Relationship="ODataDemo.Product_Supplier_Supplier_Products"/>
      </EntityType>
      + <EntityType Name="FeaturedProduct" BaseType="ODataDemo.Product">
      + <EntityType Name="Advertisement">
      + <EntityType Name="Category">
      + <EntityType Name="Supplier">
      - <ComplexType Name="Address">
        <Property Name="Street" Type="Edm.String"/>
        <Property Name="City" Type="Edm.String"/>
        <Property Name="State" Type="Edm.String"/>
        <Property Name="ZipCode" Type="Edm.String"/>
        <Property Name="Country" Type="Edm.String"/>
      </ComplexType>
      - <Association Name="Product_Category_Category_Products">
        <End Type="ODataDemo.Category" Multiplicity="0..1" Role="Category_Products"/>
        <End Type="ODataDemo.Product" Multiplicity="*" Role="Product_Category"/>
      </Association>
```

Metadaten 2

```
- <Association Name="FeaturedProduct_Advertisement_Advertisement_FeaturedProduct">
  <End Type="ODataDemo.Advertisement" Multiplicity="0..1" Role="Advertisement_FeaturedProduct"/>
  <End Type="ODataDemo.FeaturedProduct" Multiplicity="0..1" Role="FeaturedProduct_Advertisement"/>
</Association>
- <EntityContainer Name="DemoService" m:IsDefaultEntityContainer="true">
  <EntitySet Name="Products" EntityType="ODataDemo.Product"/>
  <EntitySet Name="Advertisements" EntityType="ODataDemo.Advertisement"/>
  <EntitySet Name="Categories" EntityType="ODataDemo.Category"/>
  <EntitySet Name="Suppliers" EntityType="ODataDemo.Supplier"/>
  - <FunctionImport Name="GetProductsByRating" m:HttpMethod="GET" EntitySet="Products" ReturnType="Collection(ODataDemo.Product)">
    <Parameter Name="rating" Nullable="false" Type="Edm.Int32"/>
  </FunctionImport>
  + <AssociationSet Name="Products_Advertisement_Advertisements"
    Association="ODataDemo.FeaturedProduct_Advertisement_Advertisement_FeaturedProduct">
  + <AssociationSet Name="Products_Category_Categories" Association="ODataDemo.Product_Category_Category_Products">
  + <AssociationSet Name="Products_Supplier_Suppliers" Association="ODataDemo.Product_Supplier_Supplier_Products">
</EntityContainer>
- <Annotations Target="ODataDemo.DemoService">
  <ValueAnnotation String="This is a sample OData service with vocabularies" Term="Org.OData.Display.V1.Description"/>
</Annotations>
+ <Annotations Target="ODataDemo.Product">
- <Annotations Target="ODataDemo.Product/Name">
  <ValueAnnotation String="Product Name" Term="Org.OData.Display.V1.DisplayName"/>
</Annotations>
- <Annotations Target="ODataDemo.DemoService/Suppliers">
  <ValueAnnotation String="Microsoft Corp." Term="Org.OData.Publication.V1.PublisherName"/>
  <ValueAnnotation String="MSFT" Term="Org.OData.Publication.V1.PublisherId"/>
  <ValueAnnotation String="Inventory, Supplier, Advertisers, Sales, Finance" Term="Org.OData.Publication.V1.Keywords"/>
  <ValueAnnotation String="http://www.odata.org/" Term="Org.OData.Publication.V1.AttributionUrl"/>
  <ValueAnnotation String="All rights reserved" Term="Org.OData.Publication.V1.AttributionDescription"/>
  <ValueAnnotation String="http://www.odata.org/" Term="Org.OData.Publication.V1.DocumentationUrl"/>
  <ValueAnnotation String="All rights reserved" Term="Org.OData.Publication.V1.TermsOfUseUrl"/>
  <ValueAnnotation String="http://www.odata.org/" Term="Org.OData.Publication.V1.PrivacyPolicyUrl"/>
  <ValueAnnotation String="4/2/2013" Term="Org.OData.Publication.V1.LastModified"/>
  <ValueAnnotation String="http://www.odata.org/" Term="Org.OData.Publication.V1.ImageUrl"/>
</Annotations>
</Schema>
```

Werkzeuge

- Browser
- Fiddler
- LinqPad

Daten abfragen (SELECT)

Ziel	Syntax	Beispiel
Tabelle	/tabelle	/Customers
Datensatz	/tabelle(schlüssel)	/Customers('ALFKI')
Detailsätze	/tabelle(schlüssel)/eigenschaft	/Orders(10248)/Order_Details
Einzelner Wert	/tabelle(schlüssel)/spalte	Customers('ALFKI')/City
Nur Wert	/tabelle(schlüssel)/spalte/\$value	/Customers('ALFKI')/City/\$value
Einzelne Spalten	/tabelle?\$select=spalte1,spalte2	/Customers('ALFKI')?\$select=CustomerID,City

Abfrageoptionen

SQL	Syntax	Beispiel
ORDER BY	\$orderby= <i>spalte</i> asc desc	\$orderby=UnitsInStock desc,ProductName
TOP	\$top= <i>anzahl</i>	\$top=5&\$skip=10&orderby=ProductName
Paging	\$skip= <i>anzahl</i>	
Inlinecount	\$inlinecount=allpages	\$inlinecount=allpages
Count	\$count	/Products/\$count
WHERE	\$filter= <i>bedingung</i>	\$filter=Region eq null
„JOIN“	\$expand= <i>eigenschaft</i>	/Categories(2)?\$expand=Product

\$filter - Operatoren

OData	SQL	Beispiel
eq	=	/Suppliers?\$filter=Address/City eq 'Redmond'
ne	!=	/Suppliers?\$filter=Address/City ne 'London'
gt	>	/Products?\$filter=Price gt 20
ge	>=	/Products?\$filter=Price ge 10
lt	<	/Products?\$filter=Price lt 20
le	<=	/Products?\$filter=Price le 100
and	and	/Products?\$filter=Price le 200 and Price gt 3.5
or	or	/Products?\$filter=Price le 3.5 or Price gt 200
not	not	/Products?\$filter=not endswith(Description,'milk')
add	+	/Products?\$filter=Price add 5 gt 10
sub	-	/Products?\$filter=Price sub 5 gt 10
mul	*	/Products?\$filter=Price mul 2 gt 2000
div	/	/Products?\$filter=Price div 2 gt 4
mod	%	/Products?\$filter=Price mod 2 eq 0

\$filter – String Funktionen

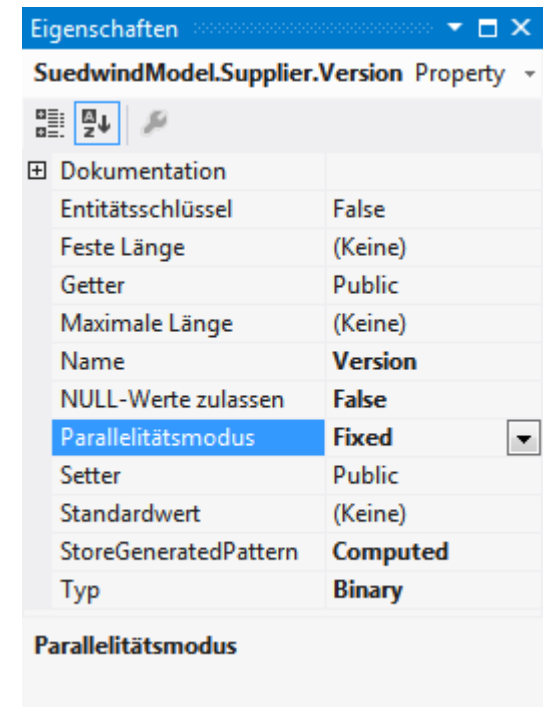
Syntax	Beispiel
<code>bool substringof(string searchString, string searchInString)</code>	<code>substringof('Alfreds',CompanyName)</code>
<code>bool endswith(string string, string suffixString)</code>	<code>endswith(CompanyName,'Futterkiste')</code>
<code>bool startswith(string string, string prefixString)</code>	<code>startswith(CompanyName,'Alfr')</code>
<code>int length(string string)</code>	<code>length(CompanyName) eq 19</code>
<code>int indexof(string searchInString, string searchString)</code>	<code>indexof(CompanyName,'lfreds') eq 1</code>
<code>string replace(string searchInString, string searchString, string replaceString)</code>	<code>replace(CompanyName,' ', '') eq 'AlfredsFutterkiste'</code>
<code>string substring(string string, int pos)</code>	<code>substring(CompanyName,1) eq 'lfreds Futterkiste'</code>
<code>string substring(string string, int pos, int length)</code>	<code>substring(CompanyName,1, 2) eq 'lf'</code>
<code>string tolower(string string)</code>	<code>tolower(CompanyName) eq 'alfreds futterkiste'</code>
<code>string toupper(string string)</code>	<code>toupper(CompanyName) eq 'ALFREDS FUTTERKISTE'</code>
<code>string trim(string string)</code>	<code>trim(CompanyName) eq 'Alfreds Futterkiste'</code>
<code>string concat(string string1, string string2)</code>	<code>concat(concat(City,', '), Country) eq 'Berlin, Germany'</code>

Daten aktualisieren

SQL	HTTP	Anmerkungen
INSERT	POST	PREFER: return-no-content
UPDATE	PUT, MERGE, PATCH	PUT – Alle Attribute werden aktualisiert MERGE/PATCH – nur geänderte Attribute PREFER: return-content
DELETE	DELETE	

Optimistisches Sperren

- SQL Server – rowversion/timestamp-Feld
- Entity Framework – Parallelitätsmodus „Fixed“
- OData
 - ETag
 - If-Match-Header



Batch-Aktualisierungen

- Mehrere Änderungen können in einem Batch an der Server gesendet werden

Beispiel - INSERT

POST

http://localhost:56051/SuedwindDataService.svc/Regions

Request Headers

User-Agent: Fiddler
Host: localhost:56051
Accept: application/json;odata=nometadata
Content-Length: 21
Content-Type: application/json

Request Body

{Description: "test"}

```
HTTP/1.1 201 Created
Cache-Control: no-cache
Content-Length: 324
Content-Type: application/json;odata=nometadata;streaming=true; charset=utf-8
ETag: W/"X'00000000000055F2'"
Location: http://localhost:56051/SuedwindDataService.svc/Regions(6)
Server: Microsoft-IIS/8.0
X-Content-Type-Options: nosniff
DataServiceVersion: 3.0;
X-AspNet-Version: 4.0.30319
X-SourceFiles: =?UTF-8?B?RDpcUHJvamVrdGVuU3VlZFdpbmREYXRhXFN1ZWw3aW5kRGF0YVZCXFN1ZWw3aW5kRGF0YVNiY2Uuc3ZjXFJlZ2lvdnM=?=
X-Powered-By: ASP.NET
Date: Thu, 16 May 2013 12:25:31 GMT

{"Id":6,"Guid":"61a879b7-3188-4d04-9f83-2590f48eec36","SelectKey":null,"Short":null,"Name":null,"Description":"test","Color":null,"Sort":null,"ValidFrom":null,"ValidTo":null}
```

Beispiel - Update

PATCH

[http://localhost:56051/SuedwindDataService.svc/Regions\(5\)](http://localhost:56051/SuedwindDataService.svc/Regions(5))

Request Headers

User-Agent: Fiddler
Host: localhost:56051
Accept: application/json;odata=fullmetadata
Content-Length: 14
Content-Type: application/json
If-Match: W/"X'00000000000055F1"

Request Body

{Name: "Name"}

Request Headers					
PATCH /SuedwindDataService.svc/Regions(6) HTTP/1.1					
Cache					
If-Match: *					
Client					
Accept: application/json;odata=fullmetadata					
User-Agent: Fiddler					
Entity					
Content-Length: 20					
Content-Type: application/json					
Transport					
Host: localhost:56051					

```
PATCH http://localhost:56051/SuedwindDataService.svc/Regions(6) HTTP/1.1
User-Agent: Fiddler
Host: localhost:56051
Accept: application/json;odata=fullmetadata
Content-Type: application/json
If-Match: w/"X'00000000000055F2'"
Content-Length: 20

{Name: "Neuer Name"}
```

Find... (press Ctrl+Enter to highlight all)

Get Syntax View	Transformer	Headers	TextView	ImageView	HexView	WebView	Auth	Cac
-----------------	-------------	---------	----------	-----------	---------	---------	------	-----

```
HTTP/1.1 412 Precondition Failed
Cache-Control: no-cache
Content-Length: 167
Content-Type: application/json;odata=fullmetadata;streaming=true;charset=utf-8
Server: Microsoft-IIS/8.0
X-Content-Type-Options: nosniff
DataServiceVersion: 3.0;
X-AspNet-Version: 4.0.30319
X-SourceFiles: =?UTF-8?B?RDpcUHJvamVr dGVCU3VlZFdpbmREYXRhXFNlZW R3aW5kRGFOYVZCXFNlZW
X-Powered-By: ASP.NET
Date: Thu, 16 May 2013 13:07:18 GMT

{"odata.error":{"code":"","message":{"lang":"de-DE","value":"Der etag-wert im Anforderungs-Header ist nicht mit dem etag-Wert der Ressource kompatibel."}}}
```

Beispiel - DELETE

DELETE [http://localhost:56051/SuedwindDataService.svc/Regions\(5\)](http://localhost:56051/SuedwindDataService.svc/Regions(5))

Request Headers

User-Agent: Fiddler
Host: localhost:56051
Accept: application/json;odata=fullmetadata
Content-Length: 0
Content-Type: application/json
If-Match: W/"X'00000000000055F3"
|

Request Headers

DELETE /SuedwindDataService.svc/Regions(5) HTTP/1.1

Cache
If-Match: W/"X'00000000000055F3"

Client
Accept: application/json;odata=fullmetadata
User-Agent: Fiddler

Entity
Content-Length: 0
Content-Type: application/json

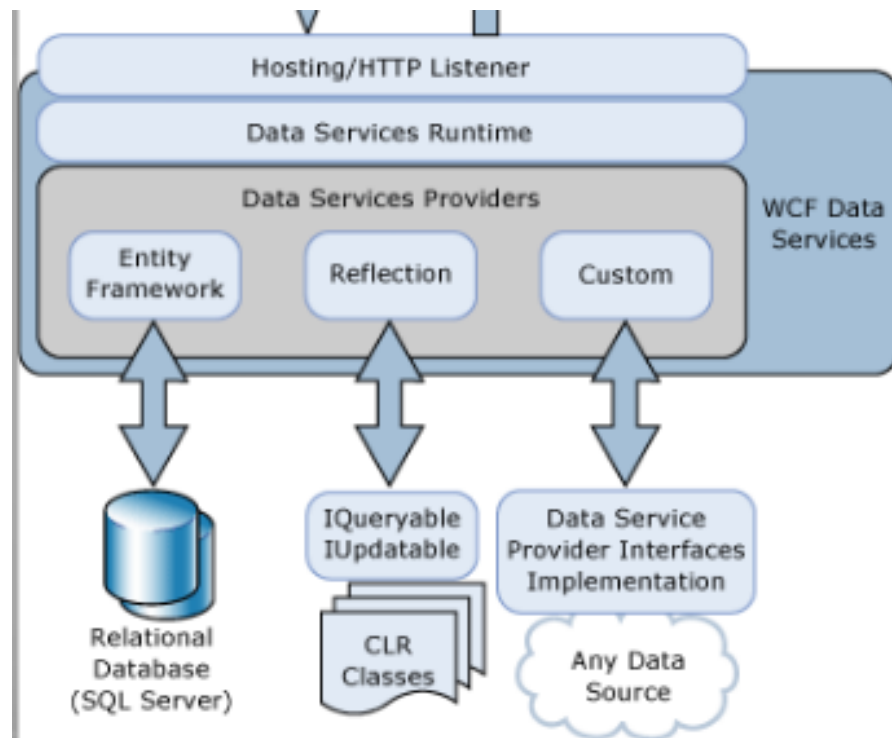
Transport
Host: localhost:56051

Get SyntaxView | Transformer | Headers | TextView | ImageView

XML

HTTP/1.1 204 No Content
Cache-Control: no-cache
Server: Microsoft-IIS/8.0
X-Content-Type-Options: nosniff
DataServiceVersion: 1.0;
X-AspNet-Version: 4.0.30319
X-SourceFiles: =?UTF-8?B?RDpcUHJvamVrdGVu3VlZFdpb
X-Powered-By: ASP.NET
Date: Thu, 16 May 2013 12:45:19 GMT

WCF Data Services



Eingriffsmöglichkeiten / Ereignisse

- ProcessingRequest
 - ProcessingChangeset
 - ProcessedChangeset
 - ProcessedRequest
-
- HandleException

Interceptors

- Abfangen von Anfragen je Entity
 - QueryInterceptor
 - bei jeder Abfrage
 - ChangeInterceptor
 - bei Änderungen

- Azure Marketplace
- PowerPivot
- SQL Server Reporting Services

Hallo Sven Hammesfahr |
 Deutschland |
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 [Abmelden](#)

[Informationen](#) |
 [Anwendungen](#) |
 [Daten](#) |
 [Mein Konto](#) |
 [Veröffentlichen](#)

[Marketplace durchsuchen](#)

START > DATEN > COUNTRY CODES

Country Codes

Daten

Veröffentlicht von: oh22information services GmbH

Kategorien: Referenz

Datum hinzugefügt: 21.02.2013

Support für dieses Angebot erhalten

Uneingeschränkt

Transaktionen/Monat

0,00 €
pro Monat

REGISTRIEREN

RESSOURCEN

Microsoft PowerPivot for Excel 2010 –
Hier finden Sie weitere Informationen zum Verwenden von Microsoft PowerPivot für Excel 2010 mit diesen und anderen DataMarket-Daten, um beeindruckende BI-Self-Service-Lösungen zu erstellen.

Weitere Informationen zur Verwendung dieser Daten in Visual Studio (nur englischsprachig) –
Hier finden Sie weitere Informationen zur nahtlosen Nutzung von DataMarket-Daten in Visual Studio mit stark typisiertem Datenzugriff sowie vollständiger IntelliSense-Unterstützung.

Beispielbilder
Details
Angebotsbedingungen des Herausgebers

Country ID	Country Name	ISO2	ISO3	ISO Number	FIPS	Continent	TLD	Country Code	Country Calling Code	ISO 3166-1 Alpha-3	Coin Country Code	Coin Country Prefix	ISO315	ISO3163	Language	Name	Pronunciation
A	AF	AG	AI	AK	AL	AM	AN	AO	AR	AS	AT	AW	AX	AY	BA	BH	BI
Albanien	AL	ALA	008	NA	EJ	AF	NL	+355	376	ALA	AL	AL	ALA	albanian	albanian	albanian	
Ägypten	EG	EGY	833	NA	EF	AF	NO	+20	20	EGY	EG	EG	EGY	egyptian	egyptian	egyptian	
Andorra	AD	AND	020	NA	EJ	EU	ES	+376	376	AND	AD	AD	AND	catalan	catalan	catalan	
Angola	AO	AGO	024	NA	EF	AF	NO	+244	244	AGO	AO	AO	AGO	portuguese	portuguese	portuguese	
Antigua und Barbuda	AG	ATG	028	NA	EJ	AF	NO	+1268	268	ATG	AG	AG	ATG	english	english	english	
Argentinien	AR	ARG	032	NA	EF	SA	LA	+54	54	ARG	AR	AR	ARG	spanish	spanish	spanish	
Armenien	AM	ARM	031	NA	EJ	EU	AS	+374	374	ARM	AM	AM	ARM	armenian	armenian	armenian	
Australien	AU	AUS	036	NA	EF	OC	OC	+61	61	AUS	AU	AU	AUS	australian	australian	australian	
Österreich	AT	AUT	040	NA	EJ	EU	DE	+43	43	AUT	AT	AT	AUT	austrian	austrian	austrian	
Azerbaidschan	AZ	AZE	031	NA	EJ	AS	LA	+994	994	AZE	AZ	AZ	AZE	azerbaijani	azerbaijani	azerbaijani	
Bahamas	BS	BHS	044	NA	EJ	AF	NO	+1242	242	BHS	BS	BS	BHS	bahamian	bahamian	bahamian	
Bangladesch	BD	BGD	050	NA	EJ	AS	LA	+880	880	BGD	BD	BD	BGD	bengali	bengali	bengali	
Barbados	BB	BRB	052	NA	EJ	AF	NO	+1246	246	BBM	BB	BB	BBM	barbadian	barbadian	barbadian	
Belarus	BY	BLR	112	NA	EJ	EU	AS	+375	375	BLR	BY	BY	BLR	belarusian	belarusian	belarusian	
Belgien	BE	BEL	056	NA	EJ	EU	DE	+32	32	BEL	BE	BE	BEL	dutch	dutch	dutch	
Belize	BZ	BZL	084	NA	EJ	AF	NO	+501	501	BZL	BZ	BZ	BZL	mayan	mayan	mayan	
Benin	BJ	BJA	054	NA	EJ	AF	NO	+229	229	BJA	BJ	BJ	BJA	fongbe	fongbe	fongbe	
Bermudainseln	BM	BMU	060	NA	EJ	AF	NO	+1441	441	BMU	BM	BM	BMU	bermudian	bermudian	bermudian	
Bhutan	BT	BHU	064	NA	EJ	AS	LA	+975	975	BHU	BT	BT	BHU	tibetan	tibetan	tibetan	
Brasilien	BR	BRA	030	NA	EJ	SA	LA										

Beispielaufrufe

- <http://services.odata.org/V3/Northwind/Northwind.svc/>
- [http://services.odata.org/V3/Northwind/Northwind.svc/\\$metadata](http://services.odata.org/V3/Northwind/Northwind.svc/$metadata)
- <http://services.odata.org/V3/Northwind/Northwind.svc/Customers>
- [http://services.odata.org/V3/Northwind/Northwind.svc/Customers\('ALFKI'\)/](http://services.odata.org/V3/Northwind/Northwind.svc/Customers('ALFKI')/)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Customers\('ALFKI'\)/City](http://services.odata.org/V3/Northwind/Northwind.svc/Customers('ALFKI')/City)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Customers\('ALFKI'\)?\\$select=CustomerID,City,CompanyName](http://services.odata.org/V3/Northwind/Northwind.svc/Customers('ALFKI')?$select=CustomerID,City,CompanyName)

Weitere Abfragen

- [http://services.odata.org/V3/Northwind/Northwind.svc/Orders\(10248\)/Order_Details](http://services.odata.org/V3/Northwind/Northwind.svc/Orders(10248)/Order_Details)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Orders\(10248\)?\\$expand=Order_Details](http://services.odata.org/V3/Northwind/Northwind.svc/Orders(10248)?$expand=Order_Details)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Categories\(2\)?\\$expand=Products](http://services.odata.org/V3/Northwind/Northwind.svc/Categories(2)?$expand=Products)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Orders\(10248\)/Order_Details](http://services.odata.org/V3/Northwind/Northwind.svc/Orders(10248)/Order_Details)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Orders\(10248\)/Order_Details\(OrderID=10248,ProductID=11\)](http://services.odata.org/V3/Northwind/Northwind.svc/Orders(10248)/Order_Details(OrderID=10248,ProductID=11))
- [http://services.odata.org/V3/Northwind/Northwind.svc/Orders\(10248\)/Order_Details\(OrderID=10248,ProductID=11\)/UnitPrice](http://services.odata.org/V3/Northwind/Northwind.svc/Orders(10248)/Order_Details(OrderID=10248,ProductID=11)/UnitPrice)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Orders\(10248\)/Order_Details\(OrderID=10248,ProductID=11\)/UnitPrice/\\$value](http://services.odata.org/V3/Northwind/Northwind.svc/Orders(10248)/Order_Details(OrderID=10248,ProductID=11)/UnitPrice/$value)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Categories\(1\)](http://services.odata.org/V3/Northwind/Northwind.svc/Categories(1))
- [http://services.odata.org/V3/Northwind/Northwind.svc/Categories\(1\)/Products?\\$orderby=UnitsInStock desc,ProductName&\\$select=ProductName,UnitsInStock](http://services.odata.org/V3/Northwind/Northwind.svc/Categories(1)/Products?$orderby=UnitsInStock desc,ProductName&$select=ProductName,UnitsInStock)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Products?\\$top=5&\\$skip=10&orderby=ProductName](http://services.odata.org/V3/Northwind/Northwind.svc/Products?$top=5&$skip=10&orderby=ProductName)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Products?\\$top=5&\\$skip=10&orderby=ProductName&\\$inline count=allpages](http://services.odata.org/V3/Northwind/Northwind.svc/Products?$top=5&$skip=10&orderby=ProductName&$inline count=allpages)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Customers?\\$filter=CompanyName eq 'ALFKI'](http://services.odata.org/V3/Northwind/Northwind.svc/Customers?$filter=CompanyName eq 'ALFKI')
- [http://services.odata.org/V3/Northwind/Northwind.svc/Customers?\\$filter=startswith\(CompanyName,'A'\)&\\$select=Co mpanyName](http://services.odata.org/V3/Northwind/Northwind.svc/Customers?$filter=startswith(CompanyName,'A')&$select=CompanyName)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Customers?\\$filter=Region eq null&\\$select=CompanyName,Region](http://services.odata.org/V3/Northwind/Northwind.svc/Customers?$filter=Region eq null&$select=CompanyName,Region)
- [http://services.odata.org/V3/Northwind/Northwind.svc/Customers?\\$filter=Region ne null&\\$select=CompanyName,Region](http://services.odata.org/V3/Northwind/Northwind.svc/Customers?$filter=Region ne null&$select=CompanyName,Region)

Hilfreiche Links

- [OData Website](#)
- [Adventureworks OData Service Sample](#)
- [Custom OData Providers](#)
- [Data.js – Clientbibliothek](#)
- [Jaydata Clientbibliothek](#)
- [Fiddler](#)
- [Linqpad](#)

Was noch fehlt

- SSIS-Komponente

- CREATE VIEW [itrain].[ExtendedTableProperties]
- WITH VIEW_METADATA
- AS
- SELECT CAST(SCHEMA_NAME(Schema_id) AS nvarchar(255)) [SCHEMA_NAME] ,
- CAST(tab.name AS nvarchar(255)) [TABLE_NAME],
- CAST(MS_Description.value AS nvarchar(4000))
- [MS_Description],
- CAST(itrain_Name.value AS nvarchar(4000))
- itrain_Name,
- CAST(itrain_Prefix.value AS nvarchar(4000))
- itrain_Prefix,
- CAST(itrain_SetName.value AS nvarchar(4000))
- itrain_SetName,
- CAST(itrain_ScaffoldTable.value as nvarchar(4000))
- itrain_ScaffoldTable,
- CAST(itrain_DisplayColumn.value AS nvarchar(4000))
- itrain_DisplayColumn,
- CAST(itrain_DisplayName.value AS nvarchar(4000))
- itrain_DisplayName,
- CAST(itrain_SortColumn.value AS nvarchar(4000))
- itrain_SortColumn,
- CAST(itrain_SortDescending.value AS nvarchar(4000))
- itrain_SortDescending
- FROM sys.tables tab
- OUTER APPLY ::fn_listextendedproperty('MS_Description', 'schema', SCHEMA_NAME(schema_id), 'table',
- tab.name, DEFAULT, DEFAULT) MS_Description
- OUTER APPLY ::fn_listextendedproperty('itrain_Name', 'schema', SCHEMA_NAME(schema_id), 'table',