Abusiness

ABT_CI_005

Basics of OData APIs

Version – 1.0.0

Version Details – Initial

Date – 16/03/2022

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About the Author

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Agenda

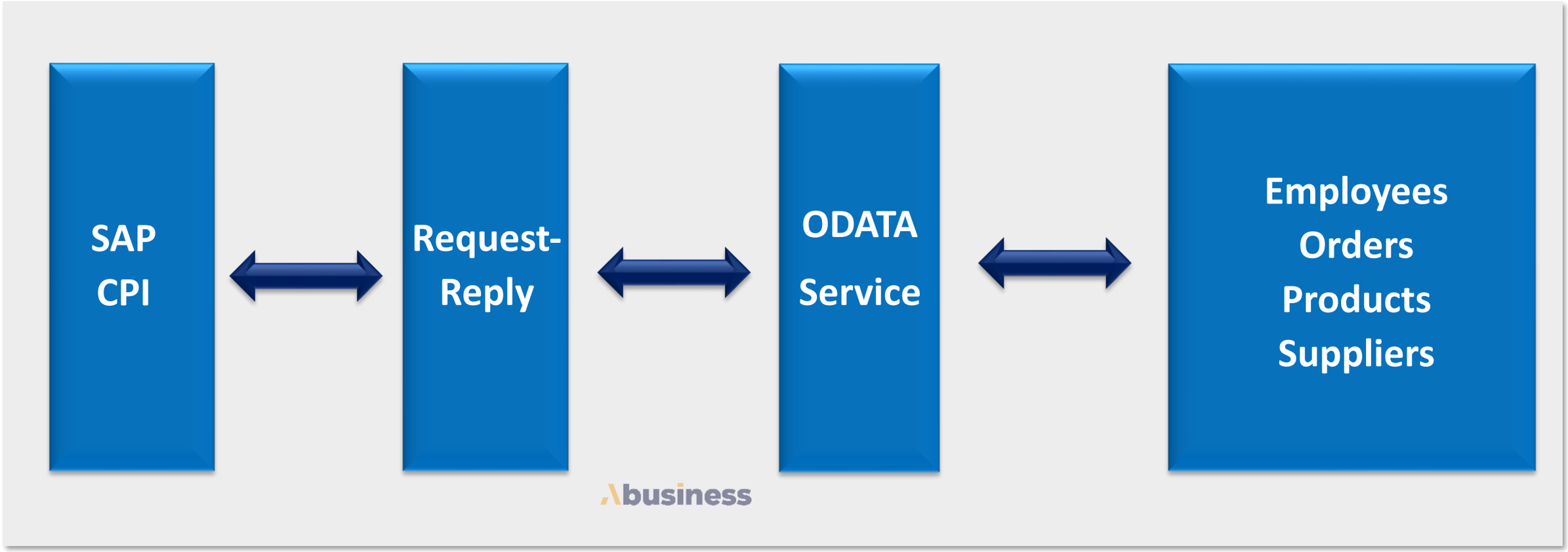
- OData – Overview
- Main HTTP Operations in OData
- Summary

OData

- OData, a short for Open Data Protocol, is an open protocol to allow the creation and consumption of the queryable and interoperable RESTful APIs in a simple and standard way via simple protocols like HTTP/HTTPs. More details about OData can be found on: https://www.odata.org/.

- Rest - Representational state transfer (REST) is a software architectural style that uses a subset of HTTP. It is commonly used to create interactive applications that use Web Services. A web service that follows these guidelines re called RESTful.

- Website which we'll be using in our example is: http://services.odata.org/V2/Northwind/Northwind.svc



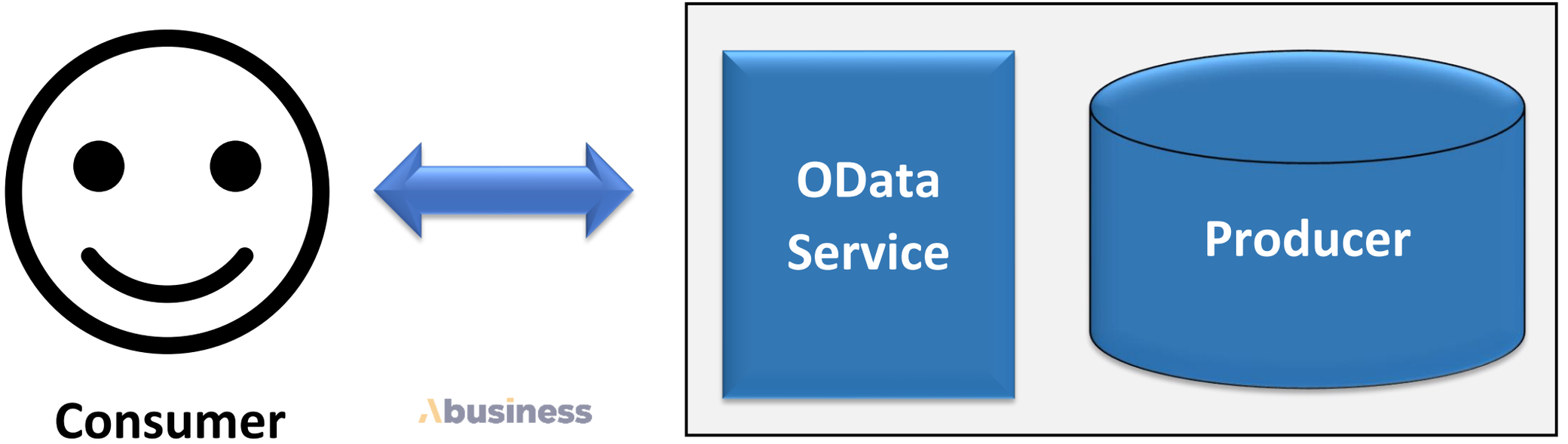
Main HTTP Operations in OData

Operations	Descriptions
GET	Read data from Entity Set
PUT	Update the data
POST	Creates new Record
DELETE	Deletes the record
MERGE	Read the Update

Consumer: The client that consumes the service to query and manipulates the data from OData services are called consumers.

Producers: Servers that expose ODATA service via. Endpoints are known as producers.

Further details about ODATA can be found on the website:
https://www.odata.org/documentation



Let’s try to send a request to the Northwind OData service and try to retrieve the details of the Order Number: 10248

http://services.odata.org/V2/Northwind/Northwind.svc/Order(10248)


```
<?xml version="1.0" encoding="utf-8" standalone="yes"?>
<entry xml:base="https://services.odata.org/V2/Northwind/Northwind.svc/" xmlns:d="http://schemas.microsoft.com/ado/2007/08/dataservices" xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata"
xmlns="http://www.w3.org/2005/Atom">
  <id>https://services.odata.org/V2/Northwind/Northwind.svc/Orders(10248)</id>
  <title type="text"></title>
  <updated>2022-05-26T19:53:00Z</updated>
  <author>
    <name />
  </author>
  <link rel="edit" title="Order" href="Orders(10248)" />
  <link rel="http://schemas.microsoft.com/ado/2007/08/dataservices/related/Customer" type="application/atom+xml;type=entry" title="Customer" href="Orders(10248)/Customer" />
  <link rel="http://schemas.microsoft.com/ado/2007/08/dataservices/related/Employee" type="application/atom+xml;type=entry" title="Employee" href="Orders(10248)/Employee" />
  <link rel="http://schemas.microsoft.com/ado/2007/08/dataservices/related/Order_Details" type="application/atom+xml;type=feed" title="Order_Details" href="Orders(10248)/Order_Details" />
  <link rel="http://schemas.microsoft.com/ado/2007/08/dataservices/related/Shipper" type="application/atom+xml;type=entry" title="Shipper" href="Orders(10248)/Shipper" />
  <category term="NorthwindModel.Order" scheme="http://schemas.microsoft.com/ado/2007/08/dataservices/scheme" />
  <content type="application/xml">
    <m:properties>
      <d:OrderID m:type="Edm.Int32">10248</d:OrderID>
      <d:CustomerID m:type="Edm.String">VINET</d:CustomerID>
      <d:EmployeeID m:type="Edm.Int32">5</d:EmployeeID>
      <d:OrderDate m:type="Edm.DateTime">1996-07-04T00:00:00</d:OrderDate>
      <d:RequiredDate m:type="Edm.DateTime">1996-08-01T00:00:00</d:RequiredDate>
      <d:ShippedDate m:type="Edm.DateTime">1996-07-16T00:00:00</d:ShippedDate>
      <d:ShipVia m:type="Edm.Int32">3</d:ShipVia>
      <d:Freight m:type="Edm.Decimal">32.3800</d:Freight>
      <d:ShipName m:type="Edm.String">Vins et alcools Chevalier</d:ShipName>
      <d:ShipAddress m:type="Edm.String">59 rue de l'Abbaye</d:ShipAddress>
      <d:ShipCity m:type="Edm.String">Reims</d:ShipCity>
      <d:ShipRegion m:type="Edm.String" m:null="true" />
      <d:ShipPostalCode m:type="Edm.String">51100</d:ShipPostalCode>
      <d:ShipCountry m:type="Edm.String">France</d:ShipCountry>
    </m:properties>
  </content>
</entry>
```

- To read any specific Oder (or any other entity), give it in parenthesis at the end of the entity as shown below: http://services.odata.org/V2/Northwind/Northwind.svc/Order(10248)

- To see this in JSON format suffix **?$format=json** at the end as shown below https://services.odata.org/V2/Northwind/Northwind.svc/Orders(10248)?$format=json

- You can add the Chrome Extension JSON viewer to display the JSON Format better.

```
// 20220527014116
// https://services.odata.org/V2/Northwind/Northwind.svc/Orders(10248)?$format=json

{
  "d": {
    "__metadata": {
      "uri": "https://services.odata.org/V2/Northwind/Northwind.svc/Orders(10248)",
      "type": "NorthwindModel.Order"
    },
    "OrderID": 10248,
    "CustomerID": "VINET",
    "EmployeeID": 5,
    "OrderDate": "/Date(836438400000)/",
    "RequiredDate": "/Date(838857600000)/",
    "ShippedDate": "/Date(837475200000)/",
    "ShipVia": 3,
    "Freight": "32.3800",
    "ShipName": "Vins et alcools Chevalier",
    "ShipAddress": "59 rue de l'Abbaye",
    "ShipCity": "Reims",
    "ShipRegion": null,
    "ShipPostalCode": "51100",
    "ShipCountry": "France",
    "Customer": {
      "__deferred": {
        "uri": "https://services.odata.org/V2/Northwind/Northwind.svc/Orders(10248)/Customer"
      }
    },
```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- If you want to retrieve data for only specific columns, you could use the “$select” query option. You can also combine multiple query options using the & operator (as shown below).

  https://services.odata.org/V2/Northwind/Northwind.svc/Orders(10248)?$select=CustomerID,EmployeeID,ShipPostalCode,ShipCountry&$format=json

```
// 20220527014854
// https://services.odata.org/V2/Northwind/Northwind.svc/Orders(10248)?$select=CustomerID,EmployeeID,ShipPostalCode,ShipCountry&$format=json

{
  "d": {
    "__metadata": {
      "uri": "https://services.odata.org/V2/Northwind/Northwind.svc/Orders(10248)",
      "type": "NorthwindModel.Order"
    },
    "CustomerID": "VINET",
    "EmployeeID": 5,
    "ShipPostalCode": "51100",
    "ShipCountry": "France"
  }
}
```

Summary

- Here, you have retrieved only the information for fields CustomerID, EmployeeID, ShipPostalCode, and ShipCountry; formatted the output to JSON format.

- “ALL operations in Cloud Integration take place on the Entity Set.”

- Using the OData service, you can perform all the database's CRUD (Create, Read, Update and Delete) operations.

Thank You for reading

SAP Integration Experts

Contact us

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