Unveiling new capabilities of the Oracle RESTFUL Data Services

Marcel Ochsendorf
SUPERVISORS
Antonio Nappi
Artur Wiecek
Database

Oracle Database Instance

PL/SQL - QUERY

SELECT * FROM Customers;

RESULT

<table>
<thead>
<tr>
<th>CustomerID</th>
<th>CustomerName</th>
<th>ContactName</th>
<th>Address</th>
<th>City</th>
<th>PostalCode</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alfredo Futterknecht</td>
<td>Maria Anders</td>
<td>Oberr Str. 57</td>
<td>Berlin</td>
<td>12062</td>
<td>Germany</td>
</tr>
<tr>
<td>2</td>
<td>Ana Trujillo Empanadas y Helados</td>
<td>Ana Trujillo</td>
<td>Avda. de la Constitución 2222</td>
<td>Mexico D.F.</td>
<td>03021</td>
<td>Mexico</td>
</tr>
<tr>
<td>3</td>
<td>Antonio Moreno Tuquerías</td>
<td>Antonio Moreno</td>
<td>Maradona 2312</td>
<td>Mexico D.F.</td>
<td>05023</td>
<td>Mexico</td>
</tr>
<tr>
<td>4</td>
<td>Around the Horn</td>
<td>Thomas Hardy</td>
<td>120 Hanover Sq.</td>
<td>London</td>
<td>W11 10P</td>
<td>UK</td>
</tr>
<tr>
<td>5</td>
<td>Berglunds småkök</td>
<td>Christina Berglund</td>
<td>Bergsövdegatan 8</td>
<td>Luleå</td>
<td>956 22</td>
<td>Sweden</td>
</tr>
</tbody>
</table>
CONTEXT | APEX

FEATURES

• Low Code Platform
• Drag&Drop building block system
• Templates for easy table modification
THE PROBLEM

How to automate an APEX application

CERN IT-DAR-Department uses an APEX application to manage entries in several database schemas.

• Easy to use
• No PL/SQL writing

Scripts and other apps uses direct database access [JDBC] to access tables.

• Complex to integrate
THE PROBLEM

How to automate an APEX application

Every third-party application or user needs the following things, to get data in and out of the database schema:

• User-account
• Direct database server access
• Table structure knowledge
• PL/SQL knowledge
**CONTEXT | ORDS**

**Oracle REST Data Service**

- Provides an RESTFUL API “Proxy“ between Database and User
- **Avoids the direct database access**
- **REST ENABLED SQL** translates given SQL queries inside of a HTTP Request and executes it on the database

![Diagram](image)
THE SOLUTION

Use ORDS

Implement a custom ORDS module, which maps the same functionality as the APEX application and offers this to a RESTFUL API endpoint

• GET and MODIFY table entries
• Implement several filter and sorting options
• Add SSO, logging, permissions
THE SOLUTION

basic implementation and structure of the solution

API DEFINITION

• Documentation for the User
• Basic structure of an API call
• Swagger for interactive testing

ORDS HANDLER

• Handles the incoming API call
• Executes the specified PL/SQL query
• return sql response as JSON

PL/SQL FUNCTIONS

• Dynamically build the SQL query statement
• Returns resultset
• user-friendly error messages
THE SOLUTION

basic implementation and structure of the solution

HTTP REQUEST

RESPONSE
SUMMING UP

• Implement a fully working and tested RESTFUL API based on the APEX application using a custom ORDS module

• Two python-based applications have already been successfully ported to use the newly created API

• After testing the API on the development database was also deployed on the production database.
QUESTIONS?