OpenPaaS Database API

User Guide

REST VERSION

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1   Introduction

ODBAPI is a streamlined and a unified REST API enabling to execute CRUD operations on different NoSQL and relational databases. ODBAPI decouples cloud applications from data stores alleviating therefore their migration. Moreover, it relieves developers' task by removing the burden of managing different APIs.

ODBAPI exposes a generic interface that can be implemented according to the different data stores in a PaaS (e.g. MySQL, CouchDB, Riak, etc.). In this user guide, we present ODBAPI implementation including three types of heterogeneous data stores. In addition, we show how to use ODBAPI based on (1) a REST Web client and (2) ODBAPIClient.

2   Download and run the ODBAPI server

This user guide supposes that CouchDB, MySQL, and Riak DBMSs are already installed in your machine. It is worth noting that Riak is not currently supported Windows operating system. Hence, if you run ODBAPI on windows, you will interact only with MySQL and CouchDB data stores.

2.1   Run ODBAPI server

1- Import the ODBAPI project in Eclipse

2- Right click on the pom.xml

    a. Run As >> Maven clean

    b. Run As >> Maven install

3- Open the *MainClass* class and run it as a *Java Application* (If the server runs, you will see this message "`Starting the Simple [HTTP/1.1] server on port 8182`").
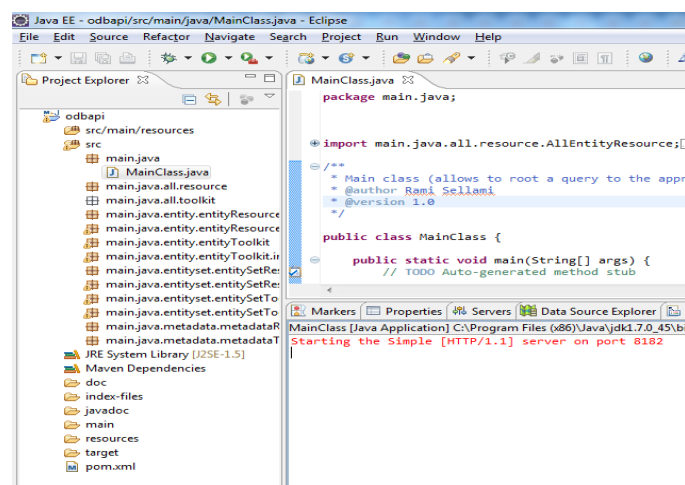
4- Keep the server running and head to the section 3 or 4 to test ODBAPI.

3   Test ODBAPI using REST Web client

To invoke the ODBAPI operations, one can use any REST client (eg. CURL). In this user guide, we use the Advanced REST client for Google Chrome [1].

Whether you will use the Advanced REST client, we provide a JSON file containing a list of queries. You can upload it directly in this client and select the query that you want to execute. We show below how to upload this JSON file.

1- Click on the button *Settings >> Import/export >> Manage*

2- In the Import/Export to file section, import the file by clicking on the "Choose File" button.

3- You will find the list of the imported queries in "Saved" tab.

3.1   Create a CouchDB Entity Set named « person »

Request

Response

3.2   Retrieve a CouchDB Entity Set named « person »

Request

Response

Status	200 OK 🔵 Loading time: 850 ms

Request headers
Accept: application/json
User-Agent: Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/35.0.1916.114 Safari/537.36
Database-Type: database/couchDB
Accept-Encoding: gzip,deflate,sdch
Accept-Language: fr-FR,fr;q=0.8,en-US;q=0.6,en;q=0.4,ar;q=0.2

Response headers
Content-Type: application/json; charset=UTF-8
Connection: keep-alive
Transfer-Encoding: chunked
Server: Restlet-Framework/2.1m3
Date: Wed, 04 Jun 2014 13:46:08 GMT
Vary: Accept-Charset, Accept-Encoding, Accept-Language, Accept

Raw	JSON	**Response**

Copy to clipboard Save as file

```
{
  -allDocuments: {
      total_rows: 3
      offset: 0
    -rows: [3]
        -0: {
            id: "1"
            key: "1"
          -value: {
              rev: "3-1d55cf0d2fa3c300c95ab3eee4f5035a"
          }
        }
        -1: {
            id: "2"
            key: "2"
          -value: {
              rev: "1-205b04ab704f7d5ff5e0fcc5f302fc41"
          }
        }
        -2: {
            id: "3"
            key: "3"
          -value: {
              rev: "1-205b04ab704f7d5ff5e0fcc5f302fc41"
          }
        }
    }
    documentCount: 3
    updateSeq: 18
    name: "person"
}
```

3.3 Delete a CouchDB Entity Set named « person »

Request

Advanced Rest Client

delete a CouchDB Entity Set "person"   ☁ Save   Open

▶ http://localhost:8182/odbapi/entityset/person

○ GET ○ POST ○ PUT ○ PATCH ◉ DELETE ○ HEAD ○ OPTIONS ○ Other [   ]

Raw	Form	**Headers**

Database-Type: database/couchDB
Accept: application/json

Raw	Form	Files (0)	Payload

Encode payload Decode payload

application/json ▼   *Set "Content-Type" header to overwrite this value.*

Clear   Send

Status	200 OK ❓ Loading time: 374 ms
Request headers	**Accept**: application/json **Origin**: chrome-extension://hgmloofddffdnphfgcellkdfbfbjeloo **Database-Type**: database/couchDB **User-Agent**: Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/35.0.1916.114 Safari/537.36 **Content-Type**: application/json **Accept-Encoding**: gzip,deflate,sdch **Accept-Language**: fr-FR,fr;q=0.8,en-US;q=0.6,en;q=0.4,ar;q=0.2
Response headers	**Content-Length**: 0 **Server**: Restlet-Framework/2.1m3 **Date**: Wed, 04 Jun 2014 13:52:17 GMT

Raw	**Response**

Word unwrap Copy to clipboard Save as file

Response does not contain any data.

3.4   Create a CouchDB Entity with id 1

Request

Advanced Rest Client

Create a CouchDB Entity with id 1   ☁ Save   Open

▸ | http://localhost:8182/odbapi/entityset/person/entity/1 |

Request
Socket
Projects
Saved
History
Settings
About

Rate this application ♥
Donate

○ GET ◉ POST ○ PUT ○ PATCH ○ DELETE ○ HEAD ○ OPTIONS ○ Other [   ]

| Raw | Form | **Headers** |

```
Database-Type: database/couchDB
Accept: application/json
```

| Raw | Form | Files (0) | **Payload** |

Encode payload Decode payload
```
{
"name": "john",
"surname": "Doe"
}
```

| application/json ▾ | Set "Content-Type" header to overwrite this value.

Clear   Send

Status	200 OK ❓ Loading time: 374 ms
Request headers	**Accept**: application/json **Origin**: chrome-extension://hgmloofddffdnphfgcellkdfbfbjeloo **Database-Type**: database/couchDB **User-Agent**: Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/35.0.1916.114 Safari/537.36 **Content-Type**: application/json **Accept-Encoding**: gzip,deflate,sdch **Accept-Language**: fr-FR,fr;q=0.8,en-US;q=0.6,en;q=0.4,ar;q=0.2
Response headers	**Content-Length**: 0 **Server**: Restlet-Framework/2.1m3 **Date**: Wed, 04 Jun 2014 13:52:17 GMT

Raw	**Response**

Word unwrap Copy to clipboard Save as file

Response does not contain any data.

3.5 Retrieve a CouchDB Entity with id 1

Request

Advanced Rest Client

Retrieve a CouchDB Entity with id 1   Save   Open

http://localhost:8182/odbapi/entityset/person/entity/1

Request

- ● GET ○ POST ○ PUT ○ PATCH ○ DELETE ○ HEAD ○ OPTIONS ○ Other

Socket | Raw | Form | **Headers**

Projects

Saved

```
Database-Type: database/couchDB
Accept: application/json
```

History

Settings

About   Clear   Send

Response

Status   **200** OK   Loading time: 30 ms

Request headers
- Accept: application/json
- User-Agent: Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/35.0.1916.114 Safari/537.36
- Database-Type: database/couchDB
- Accept-Encoding: gzip,deflate,sdch
- Accept-Language: fr-FR,fr;q=0.8,en-US;q=0.6,en;q=0.4,ar;q=0.2

Response headers
- Content-Type: application/json; charset=UTF-8
- Connection: keep-alive
- Transfer-Encoding: chunked
- Server: Restlet-Framework/2.1m3
- Date: Wed, 04 Jun 2014 14:09:40 GMT
- Vary: Accept-Charset, Accept-Encoding, Accept-Language, Accept

| Raw | **JSON** | **Response**

Copy to clipboard   Save as file

```
{
  _id: "1"
  _rev: "1-205b04ab704f7d5ff5e0fcc5f302fc41"
  name: "john"
  surname: "Doe"
}
```

3.6 Update a CouchDB Entity with id 1

Request

Advanced Rest Client

Update a CouchDB Entity with id 1   Save   Open

http://localhost:8182/odbapi/entityset/person/entity/1

Request

- ○ GET ○ POST ● PUT ○ PATCH ○ DELETE ○ HEAD ○ OPTIONS ○ Other

Socket | Raw | Form | **Headers**

Projects

Saved

```
Database-Type: database/couchDB
Accept: application/json
```

History

Settings

About | Raw | Form | Files (0) | **Payload**

Rate this application ♥

Encode payload   Decode payload

Donate
```
{
"name": "rami",
"surname": "toto"
}
```

application/json   ▼ Set "Content-Type" header to overwrite this value.

Clear   Send

Status	200 OK ⓘ Loading time: 25 ms
Request headers	**Accept**: application/json **Origin**: chrome-extension://hgmloofddffdnphfgcellkdfbfbjeloo **Database-Type**: database/couchDB **User-Agent**: Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/35.0.1916.114 Safari/537.36 **Content-Type**: application/json **Accept-Encoding**: gzip,deflate,sdch **Accept-Language**: fr-FR,fr;q=0.8,en-US;q=0.6,en;q=0.4,ar;q=0.2
Response headers	**Content-Type**: application/json; charset=UTF-8 **Connection**: keep-alive **Content-Length**: 42 **Server**: Restlet-Framework/2.1m3 **Date**: Wed, 04 Jun 2014 14:14:57 GMT **Vary**: Accept-Charset, Accept-Encoding, Accept-Language, Accept

Raw	JSON	**Response**

Word unwrap Copy to clipboard Save as file

```
Document1 has been updated successfully...
```

3.7   Delete a CouchDB Entity with id 1

Advanced Rest Client

Delete a CouchDB Entity with id 1   Save   Open

http://localhost:8182/odbapi/entityset/person/entity/1

- Request
- Socket
- Projects
- Saved
- History
- Settings
- About

○ GET ○ POST ○ PUT ○ PATCH ● DELETE ○ HEAD ○ OPTIONS ○ Other

Raw	Form	**Headers**

```
Database-Type: database/couchDB
Accept: application/json
```

Rate this application ♥
Donate

Raw	Form	Files (0)	**Payload**

Encode payload Decode payload

application/json ▼   Set "Content-Type" header to overwrite this value.

Clear   Send

Status	200 OK ⓘ Loading time: 29 ms
Request headers	**Accept**: application/json **Origin**: chrome-extension://hgmloofddffdnphfgcellkdfbfbjeloo **Database-Type**: database/couchDB **User-Agent**: Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/35.0.1916.114 Safari/537.36 **Content-Type**: application/json **Accept-Encoding**: gzip,deflate,sdch **Accept-Language**: fr-FR,fr;q=0.8,en-US;q=0.6,en;q=0.4,ar;q=0.2
Response headers	**Content-Length**: 0 **Server**: Restlet-Framework/2.1m3 **Date**: Wed, 04 Jun 2014 14:19:46 GMT

Raw	**Response**

Word unwrap Copy to clipboard Save as file

```
Response does not contain any data.
```

4   Test ODBAPI using ODBAPIClient

1- Import the ODBAPIClient project in Eclipse

2- Right click on the pom.xml

    a. Run As >> Maven clean

    b. Run As >> Maven install

3- Open the *MainClass* class and run it as a *Java Application*.

We show below examples of use of the ODBAPIClient interacting with MySQL data store.

Create an Entity Set named "test" in the database "world"	```CreateEntitySetImpl ces = new CreateEntitySetImpl();```
	```InputStream is1 = new FileInputStream("file/EntitySetMySQL.json");```
	```InputStreamReader isr1 =new InputStreamReader(is1);```
	```JSONTokener tokener1 = new JSONTokener(isr1);```
	```JSONObject jsonEntity1 = new JSONObject(tokener1);```
	```ces.createEntitySet("http://localhost:8182/odbapi/entityset/test"," database/MySQL", "world", jsonEntity1);```

Create an Entity with the id 1 in the Entity Set named "test"	```CreateEntityImpl ce = new CreateEntityImpl();```
	```InputStream is = new FileInputStream("file/EntityMySQL.json");```
	```InputStreamReader isr=new InputStreamReader(is);```
	```JSONTokener tokener = new JSONTokener(isr);```
	```JSONObject jsonEntity = new JSONObject(tokener);```
	```ce.createEntity("http://localhost:8182/odbapi/ entityset/test/ entity/1","database/MySQL", "world", jsonEntity);```

Retrieve the Entity with the id 1 in the Entity Set named "test"	```RetrieveEntityImpl re = new RetrieveEntityImpl();``` ```re.retrieveEntity("http://localhost:8182/odbapi/ entityset/test/ entity/1","datbase/MySQL", "world");```
Delete the Entity with the id 1 in the Entity Set named "test"	```DeleteEntitySetImpl des = new DeleteEntitySetImpl();``` ```des.deleteEntitySet("http://localhost:8182/odbapi/ en-tityset/test","database/MySQL", "world");```

References

[1] https://chrome.google.com/webstore/detail/advanced-rest-client/hgmloofddffdnphfgcellkdfbfbjeloo/related