The Essbase Cloud REST API: What We Know Now

HURON

ODTUG Kscope19

SEATTLE, WASHINGTON • JUNE 23-27

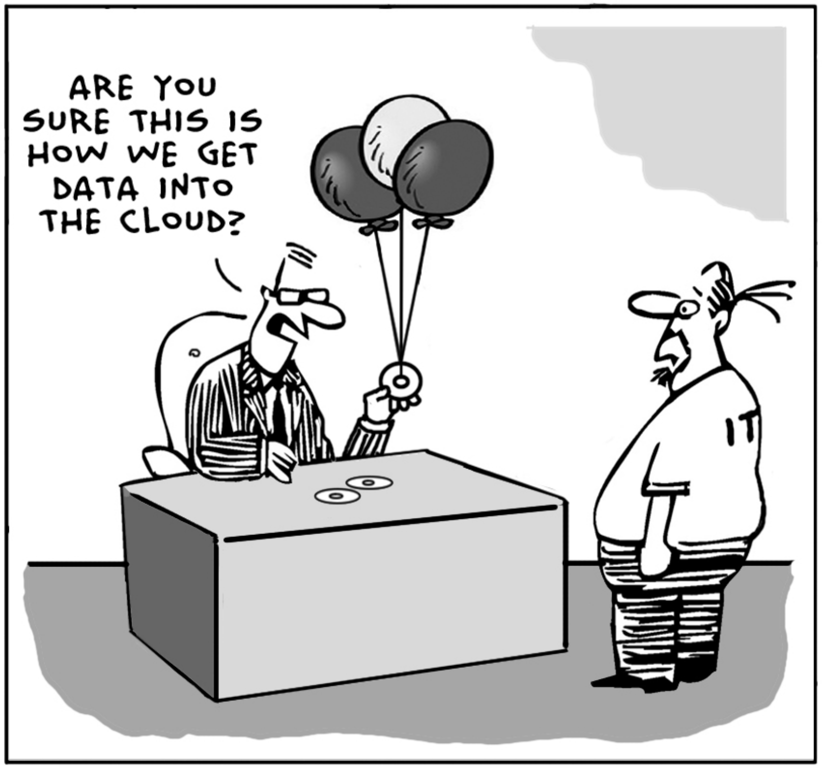
PLEASE FILL OUT YOUR EVALUATIONS

SEATTLE

Washington State Convention Center

Agenda

- Introductions
- REST
- Swagger
- Scripting



Vijay Kurian

- Huron Consulting Group
- 15+ years EPM Implementation Experience
- Certified in DRM, Planning, Essbase and ODI
- Co-author of theunlockedcube.com blog
- Pour over coffee enthusiast
- IPA snob

Will Andreelli

- Huron Consulting Group
- 8+ years EPM Implementation Experience
- Certified in Planning, Essbase and PBCS
- Co-author of theunlockedcube.com blog
- Football (   ) fanatic
- Newbie restaurant owner

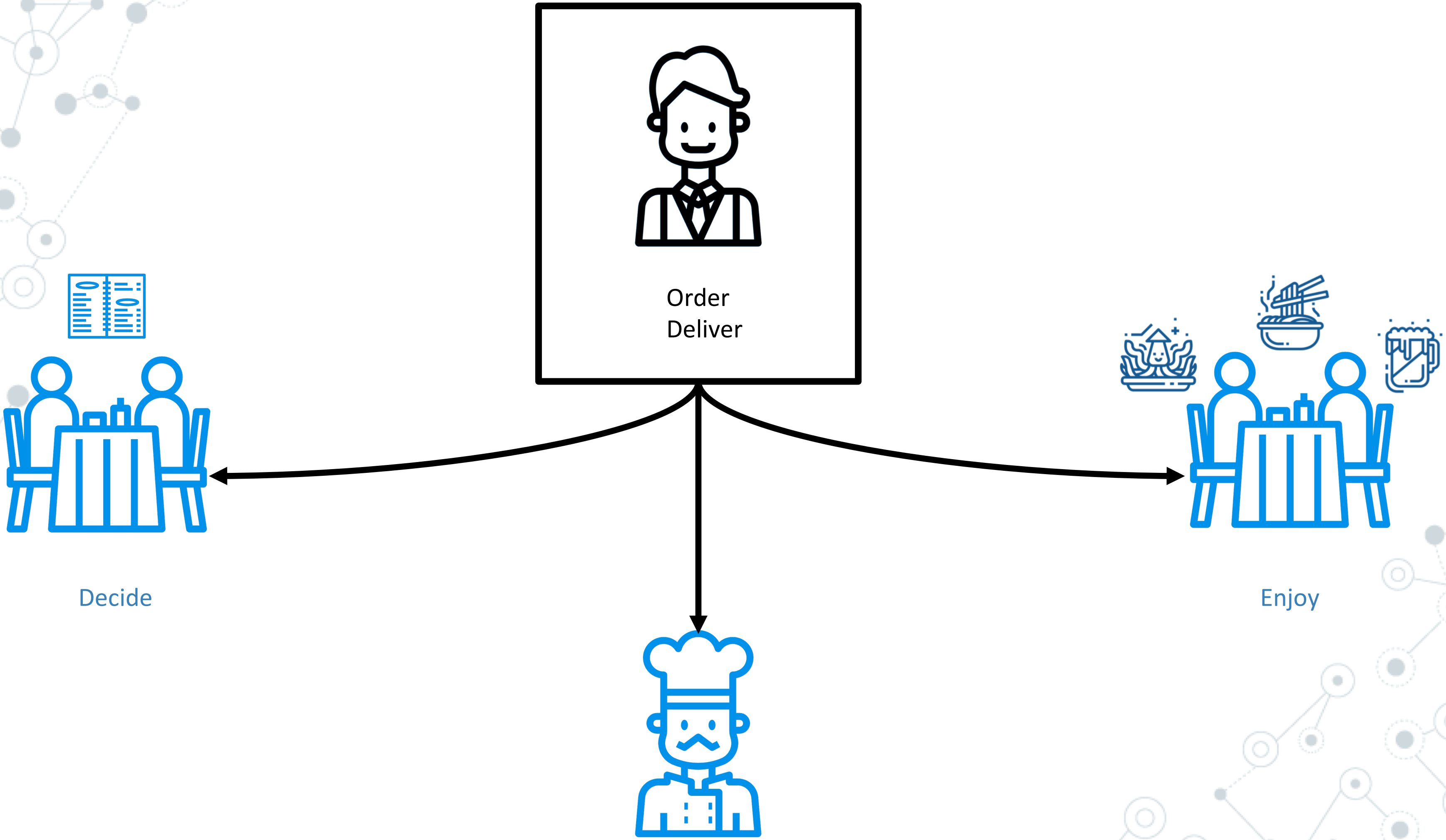
THE UNLOCKED CUBE

1.

REST

Previously on REST…

RESTaurant API



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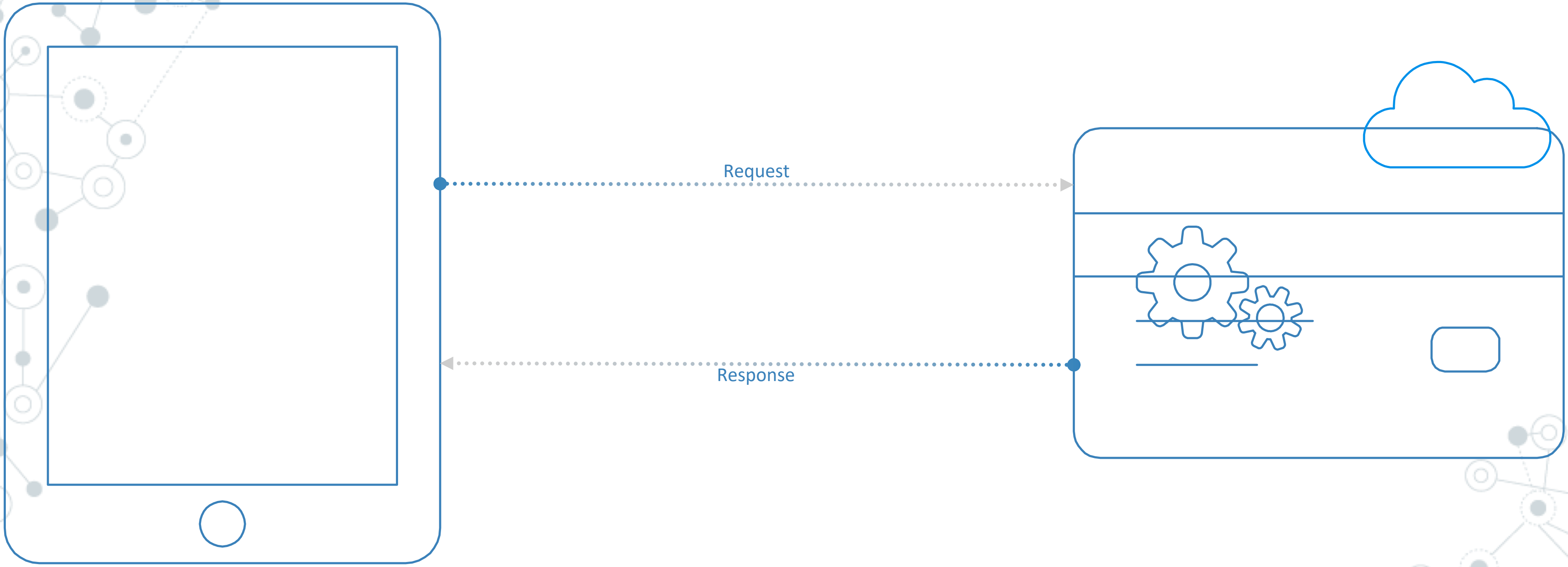
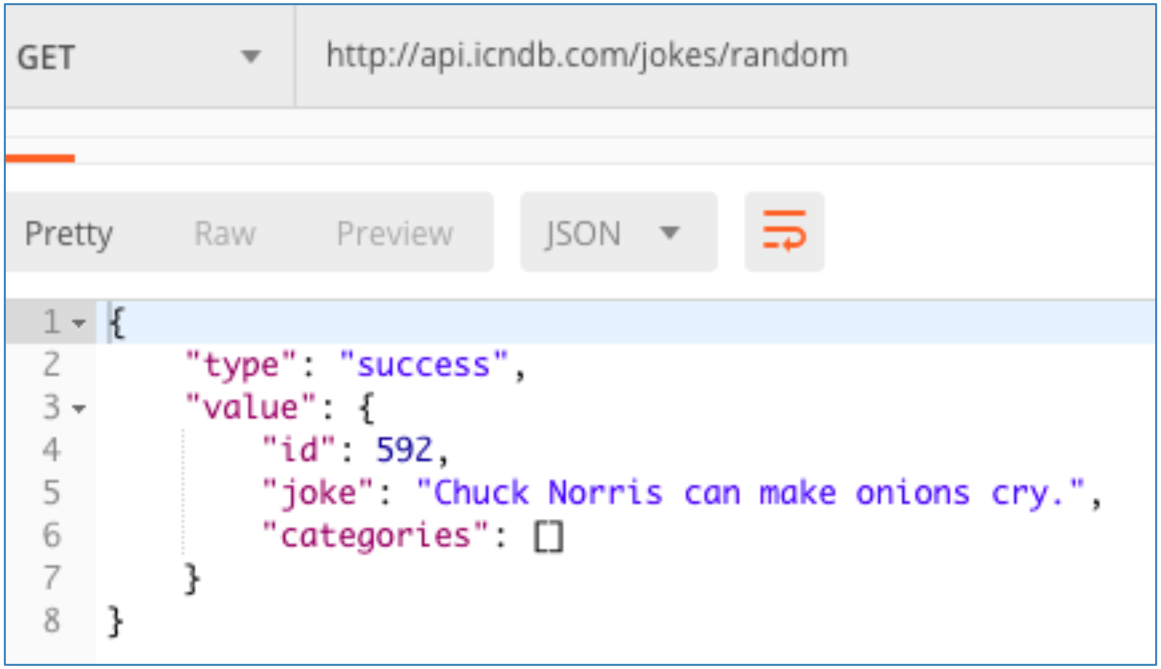
API



What is {REST}?

- *RE*presentational *S*tate *T*ransfer
- Set of constraints and properties for web applications.
- Easily understandable actions (verbs): GET/POST/DELETE/PUT.
- Widely used, understood and accepted.

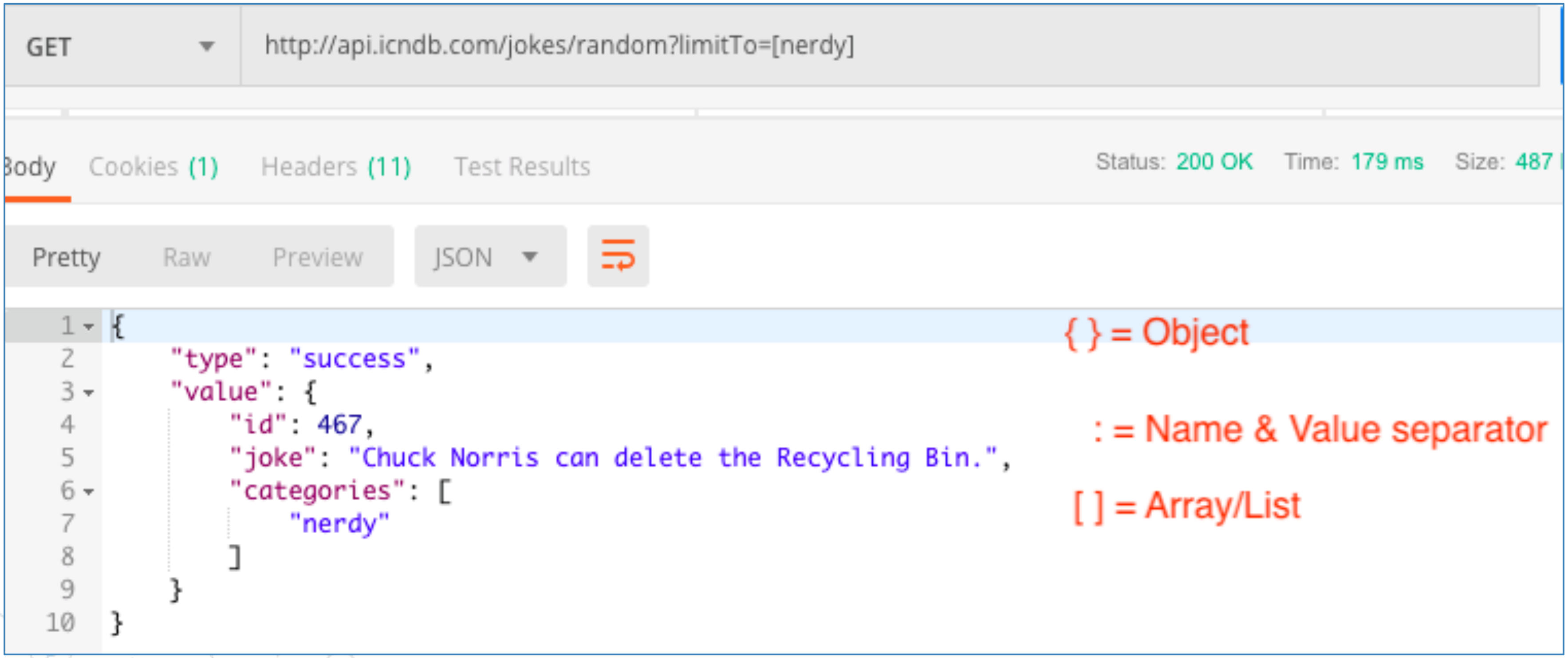
We mean widely used…



```
{
    "type": "success",
    "value": {
        "id": 592,
        "joke": "Chuck Norris can make onions cry.",
        "categories": []
    }
}
```

[JSON]

- ◎ *J*ava *S*cript *O*bject *N*otation.
- ◎ Lightweight & easily understandable



http://api.icndb.com/jokes/random?limitTo=[nerdy]

Status: 200 OK   Time: 179 ms   Size: 487

```
{
    "type": "success",
    "value": {
        "id": 467,
        "joke": "Chuck Norris can delete the Recycling Bin.",
        "categories": [
            "nerdy"
        ]
    }
}
```

{ } = Object

: = Name & Value separator

[ ] = Array/List

Previously with the Essbase Cloud REST API

- We said the API was undocumented
- We showcased how to:
  - Run calcs/jobs
  - Use Postman
  - Create groovy scripts calling the API
  - Create ODI integrations with the API

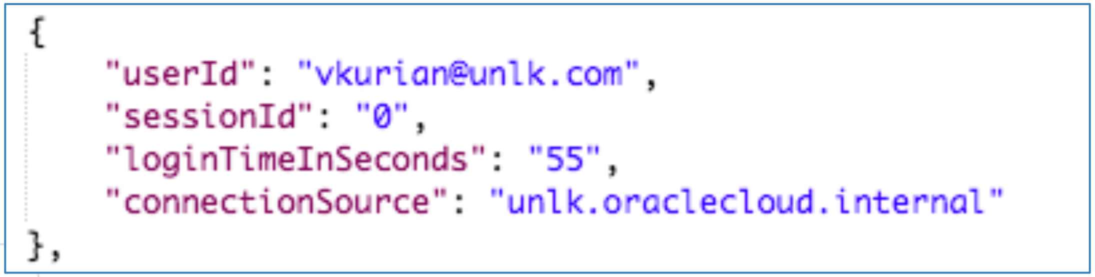
Check out the presentation here.

And now with the Essbase Cloud REST API

- Self-documented, with Swagger.
  - Try it out features.
- Understandable?
- Some API calls have changed over the last year.
  - Version 1 still.

Essbase Cloud REST API

- Authorization: Basic, like other EPM services.
  - username@domain.com
- Base URL:
  - http(s)://server/essbase/rest/(version)
- Current version: v1
- Responses: JSON



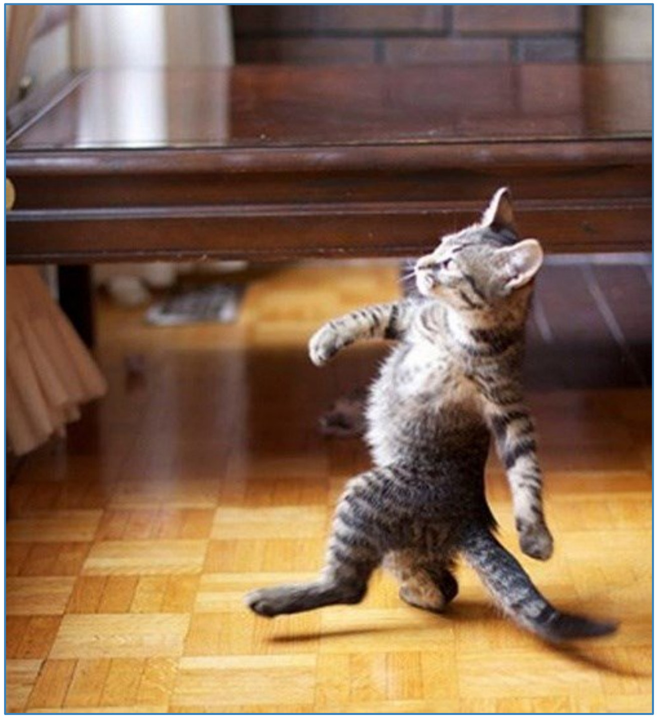
```
{
    "userId": "vkurian@unlk.com",
    "sessionId": "0",
    "loginTimeInSeconds": "55",
    "connectionSource": "unlk.oraclecloud.internal"
},
```

2.

Swagger

What means Swagger?

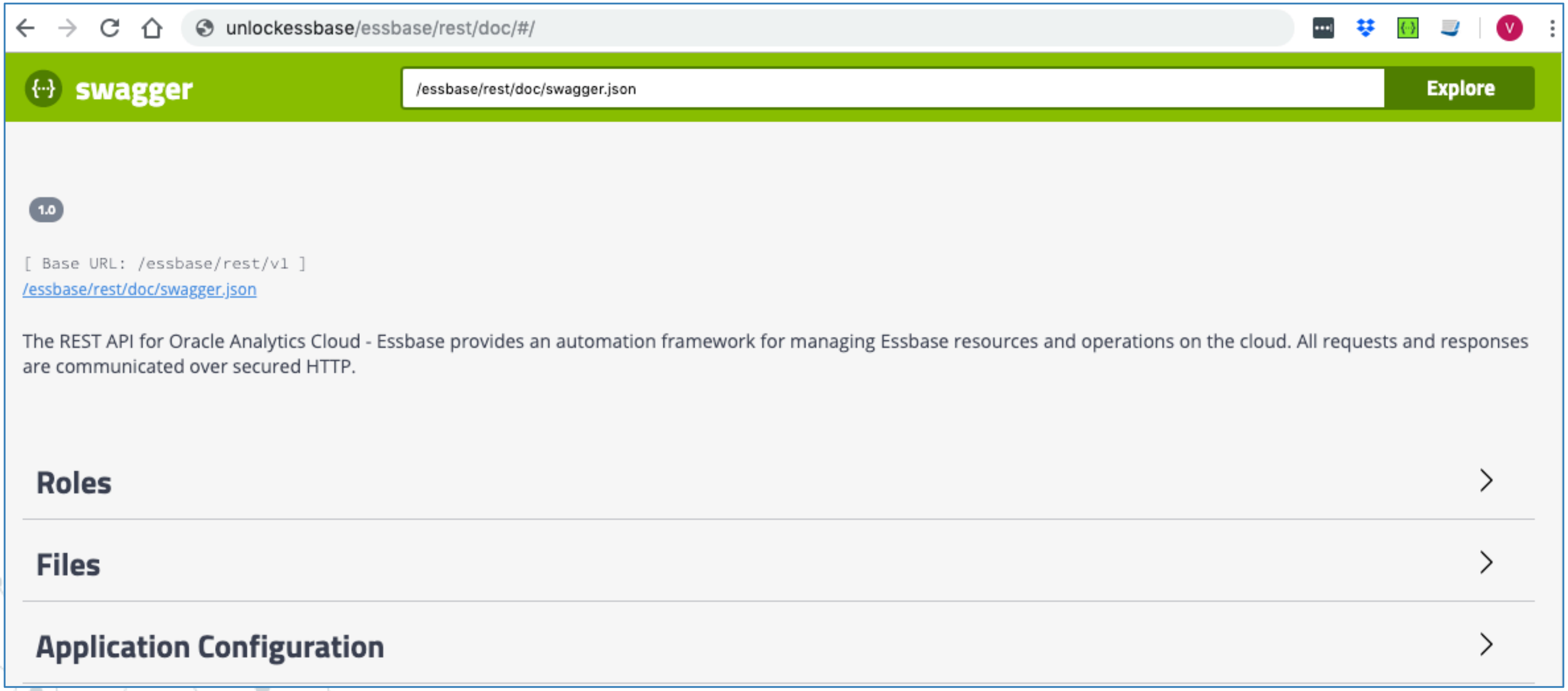
What Means {S}wagger?



- REST API Documentation
  - Human readable
  - Machine readable
- What operations are supported?
- Parameters?
- Authorization?

Essbase REST Swagger

- Available at:
  - http(s)://youressbaseserver/essbase/rest/doc/swagger.json



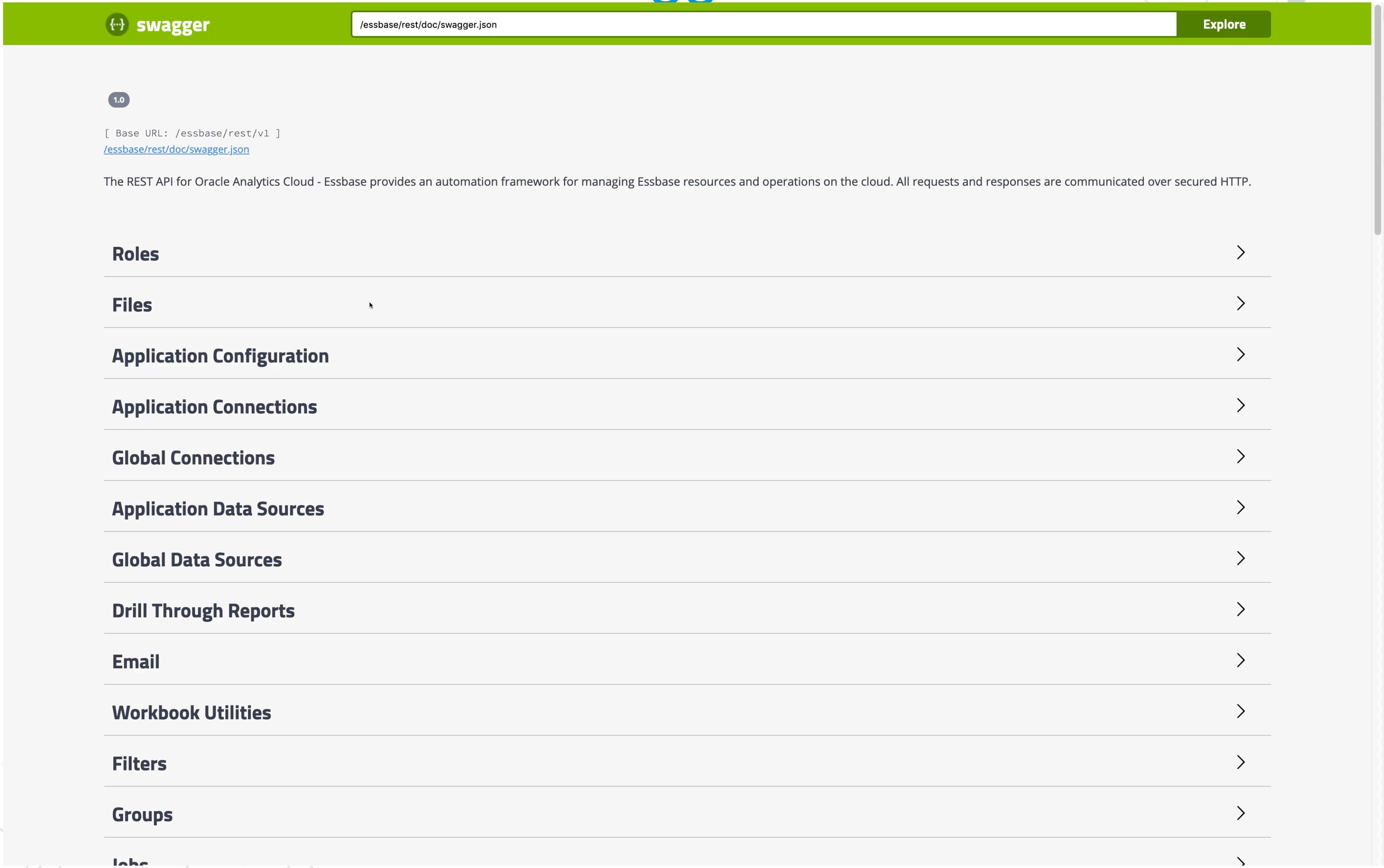
unlockessbase/essbase/rest/doc/#/
swagger
/essbase/rest/doc/swagger.json
Explore
1.0

[Base URL: /essbase/rest/v1]
/essbase/rest/doc/swagger.json

The REST API for Oracle Analytics Cloud - Essbase provides an automation framework for managing Essbase resources and operations on the cloud. All requests and responses are communicated over secured HTTP.

Roles
Files
Application Configuration

Essbase REST Swagger



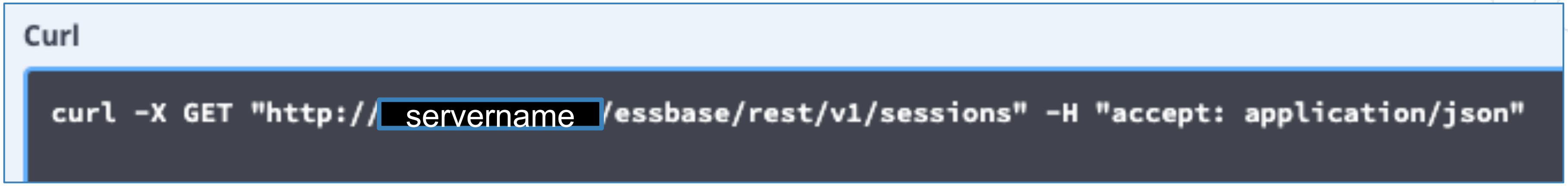
[Base URL: /essbase/rest/v1]
/essbase/rest/doc/swagger.json

The REST API for Oracle Analytics Cloud - Essbase provides an automation framework for managing Essbase resources and operations on the cloud. All requests and responses are communicated over secured HTTP.

- Roles
- Files
- Application Configuration
- Application Connections
- Global Connections
- Application Data Sources
- Global Data Sources
- Drill Through Reports
- Email
- Workbook Utilities
- Filters
- Groups
- Jobs

Essbase REST Swagger

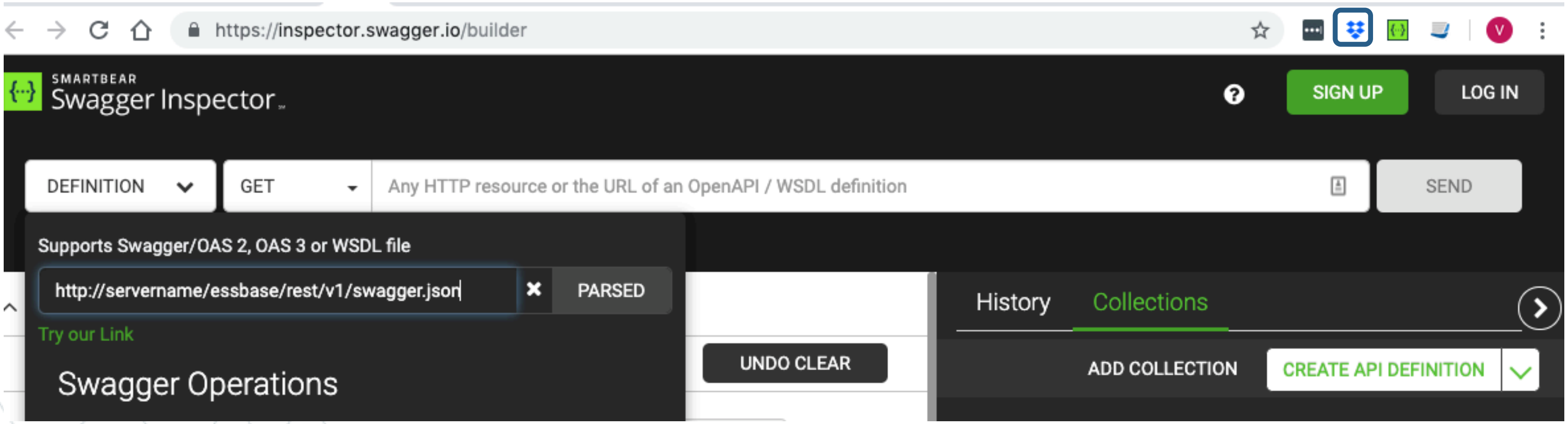
- Good starting point for scripts:



Curl

```
curl -X GET "http:// servername /essbase/rest/v1/sessions" -H "accept: application/json"
```

- Swagger Inspector plugin:



https://inspector.swagger.io/builder

SMARTBEAR
Swagger Inspector
SIGN UP
LOG IN
DEFINITION
GET
Any HTTP resource or the URL of an OpenAPI / WSDL definition
SEND

Supports Swagger/OAS 2, OAS 3 or WSDL file

http://servername/essbase/rest/v1/swagger.json

3.

Postman

Postman

- Must-have tool for RESTful development.
- Free
  - Postman Pro allows collaboration (Paid)
- Sync across machines.
- Quickly run REST API requests
- Can create different environments with different connection details
- Can create and use variables
- Scripting samples

=> Refer to last year's presentation

https://www.getpostman.com/apps

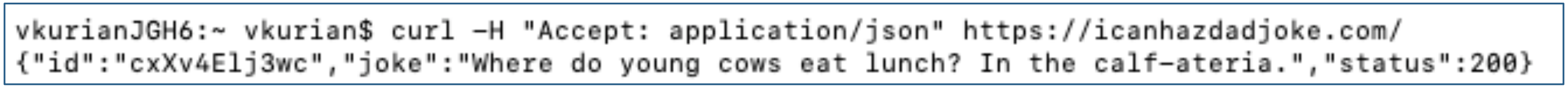
4.

Scripting

cURL

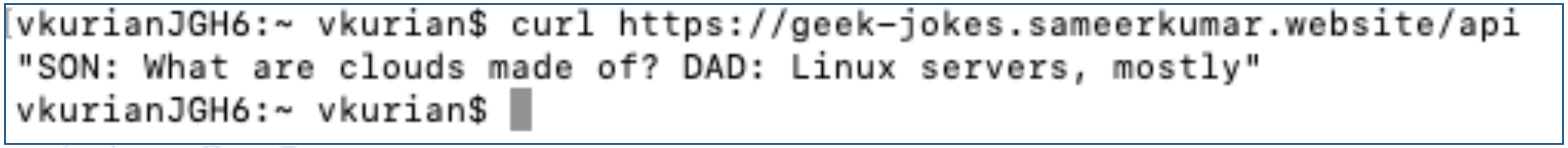
Scripting

- Install cURL, if needed.
  - “Client” URL
  - Command line tool (all OS)
  - Multiple protocol support (HTTP(S)/FTP/SOAP)
- Extremely useful tool:
  - For dad jokes



```
vkurianJGH6:~ vkurian$ curl -H "Accept: application/json" https://icanhazdadjoke.com/
{"id":"cxXv4Elj3wc","joke":"Where do young cows eat lunch? In the calf-ateria.","status":200}
```

  - …and more nerdy jokes



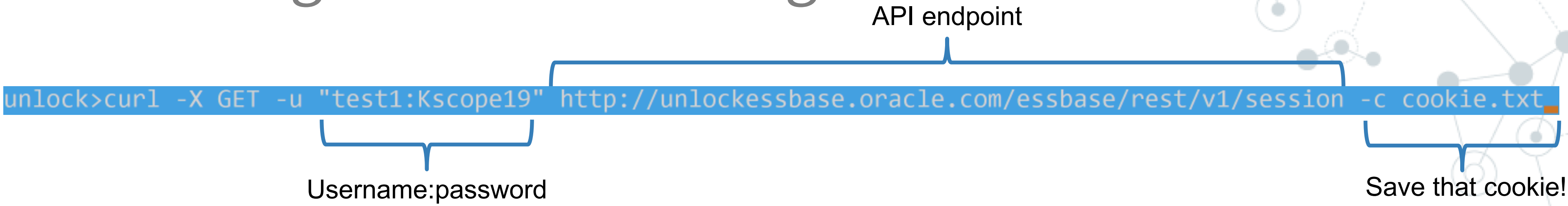
```
[vkurianJGH6:~ vkurian$ curl https://geek-jokes.sameerkumar.website/api
"SON: What are clouds made of? DAD: Linux servers, mostly"
vkurianJGH6:~ vkurian$ █
```

A Simple Script

- Log in
- Cookies
  - Allow you to persist a connection
  - Save the cookie
- Perform the needed action(s)
- Logout
- Delete that cookie

A Simple Script

- Log in + cookie storage



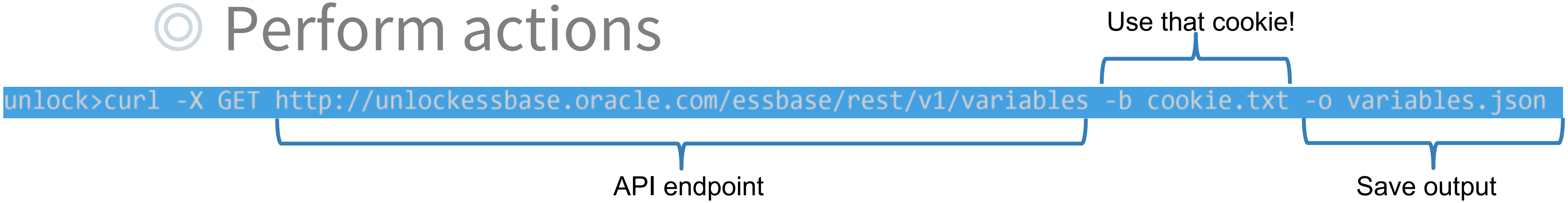
```
unlock>curl -X GET -u "test1:Kscope19" http://unlockessbase.oracle.com/essbase/rest/v1/session -c cookie.txt
```

API endpoint

Username:password

Save that cookie!

- Perform actions



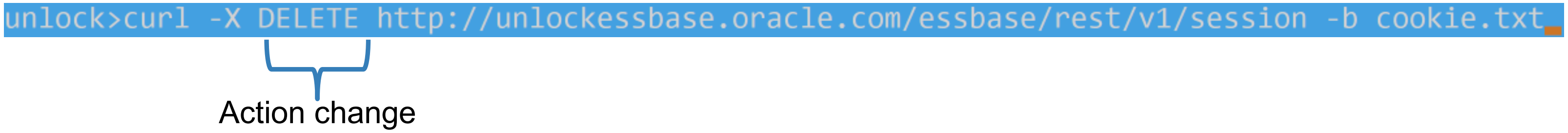
Use that cookie!

```
unlock>curl -X GET http://unlockessbase.oracle.com/essbase/rest/v1/variables -b cookie.txt -o variables.json
```

API endpoint

Save output

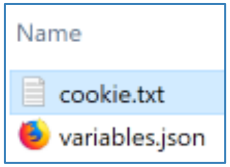
- Logout



```
unlock>curl -X DELETE http://unlockessbase.oracle.com/essbase/rest/v1/session -b cookie.txt
```

Action change

- Delete that cookie



Name

cookie.txt

variables.json

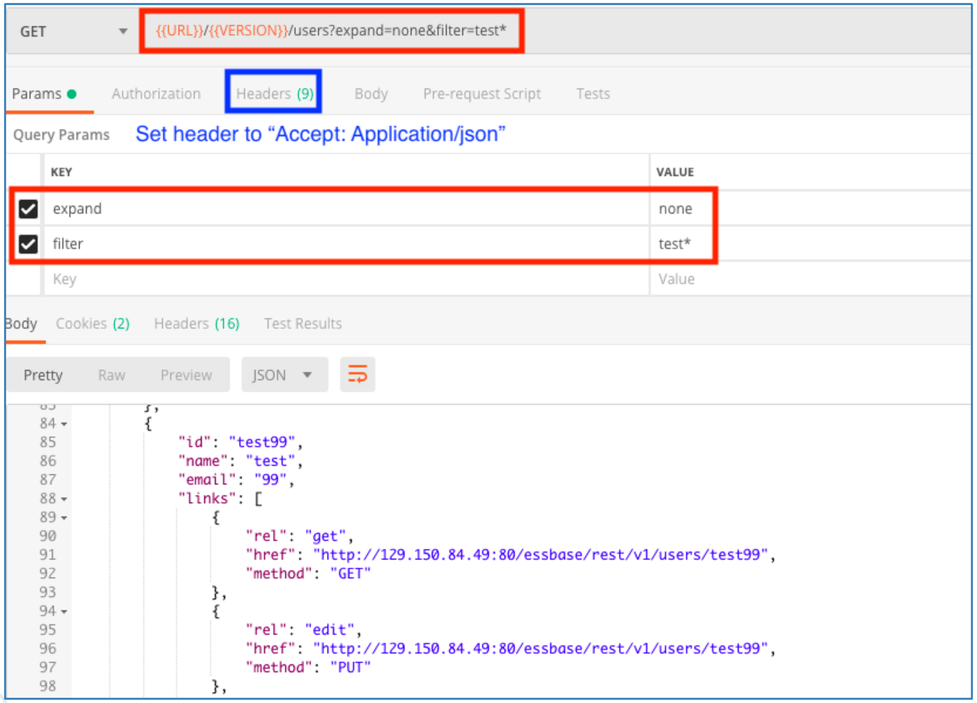
5.

Recipe 1

Password change

Password Change

- Forcing password changes
    - Native security?
    - OAC Classic users?
- How to GET users with a filter?
    - http(s)://BaseURL/users



GET ▾ {{URL}}/{{VERSION}}/users?expand=none&filter=test*

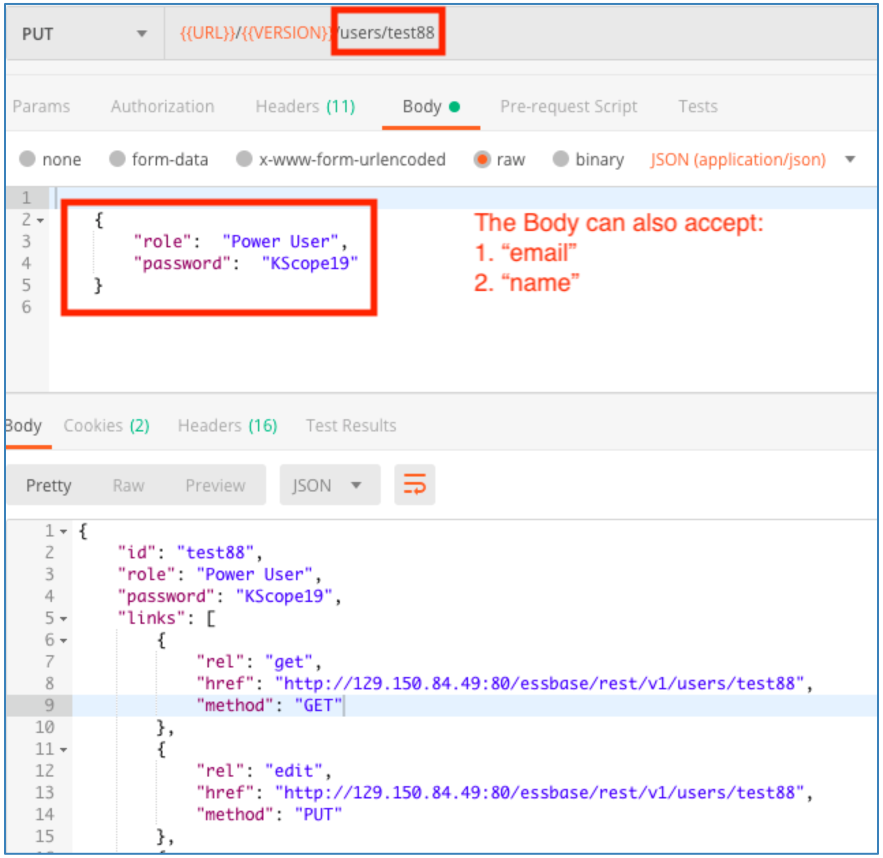
Set header to “Accept: Application/json”

	KEY	VALUE
☑	expand	none
☑	filter	test*
	Key	Value

```
        },
        {
            "id": "test99",
            "name": "test",
            "email": "99",
            "links": [
                {
                    "rel": "get",
                    "href": "http://129.150.84.49:80/essbase/rest/v1/users/test99",
                    "method": "GET"
                },
                {
                    "rel": "edit",
                    "href": "http://129.150.84.49:80/essbase/rest/v1/users/test99",
                    "method": "PUT"
                },
```

Password Change

- Simple PUT to change passwords from generated csv file
  - http(s)://BaseURL/users/userID (i.e. “vkurian”)



{{URL}}/{{VERSION}}/users/test88

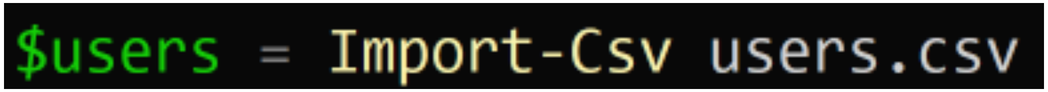
```

{
    "role":  "Power User",
    "password":  "KScope19"
}

```

The Body can also accept:
1. “email”
2. “name”

```
{
    "id": "test88",
    "role": "Power User",
    "password": "KScope19",
    "links": [
        {
            "rel": "get",
            "href": "http://129.150.84.49:80/essbase/rest/v1/users/test88",
            "method": "GET"
        },
        {
            "rel": "edit",
            "href": "http://129.150.84.49:80/essbase/rest/v1/users/test88",
            "method": "PUT"
        },
```

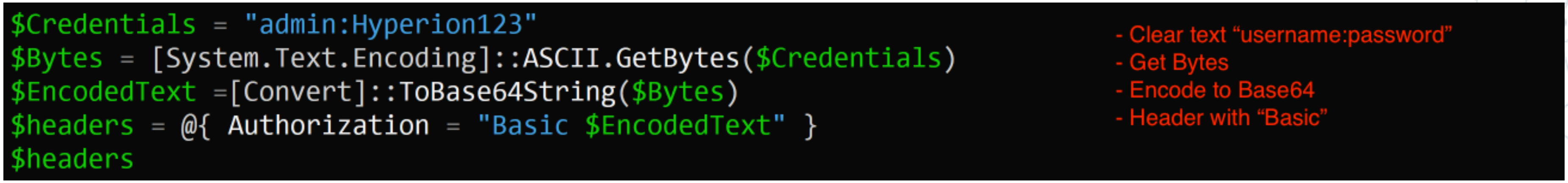
Enter PowerShell

- Ingest csv file



```
$users = Import-Csv users.csv
```

- Store credentials in Base64 form

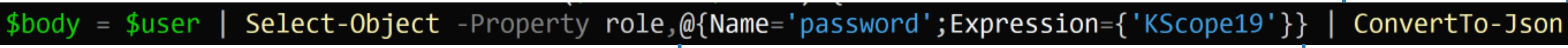


```
$Credentials = "admin:Hyperion123"
$Bytes = [System.Text.Encoding]::ASCII.GetBytes($Credentials)
$EncodedText =[Convert]::ToBase64String($Bytes)
$headers = @{ Authorization = "Basic $EncodedText" }
$headers
```

- Clear text "username:password"
- Get Bytes
- Encode to Base64
- Header with "Basic"

- Loop through each record in csv
  - ForEach
  - Convert csv record to JSON

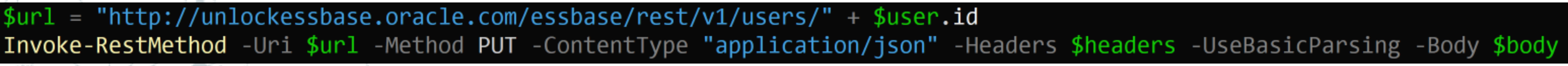
JSON conversion



```
$body = $user | Select-Object -Property role,@{Name='password';Expression={'KScope19'}} | ConvertTo-Json
```

Hardcoded password

  - Invoke-RestMethod performs the PUT action



```
$url = "http://unlockessbase.oracle.com/essbase/rest/v1/users/" + $user.id
Invoke-RestMethod -Uri $url -Method PUT -ContentType "application/json" -Headers $headers -UseBasicParsing -Body $body
```

6.

Recipe 2

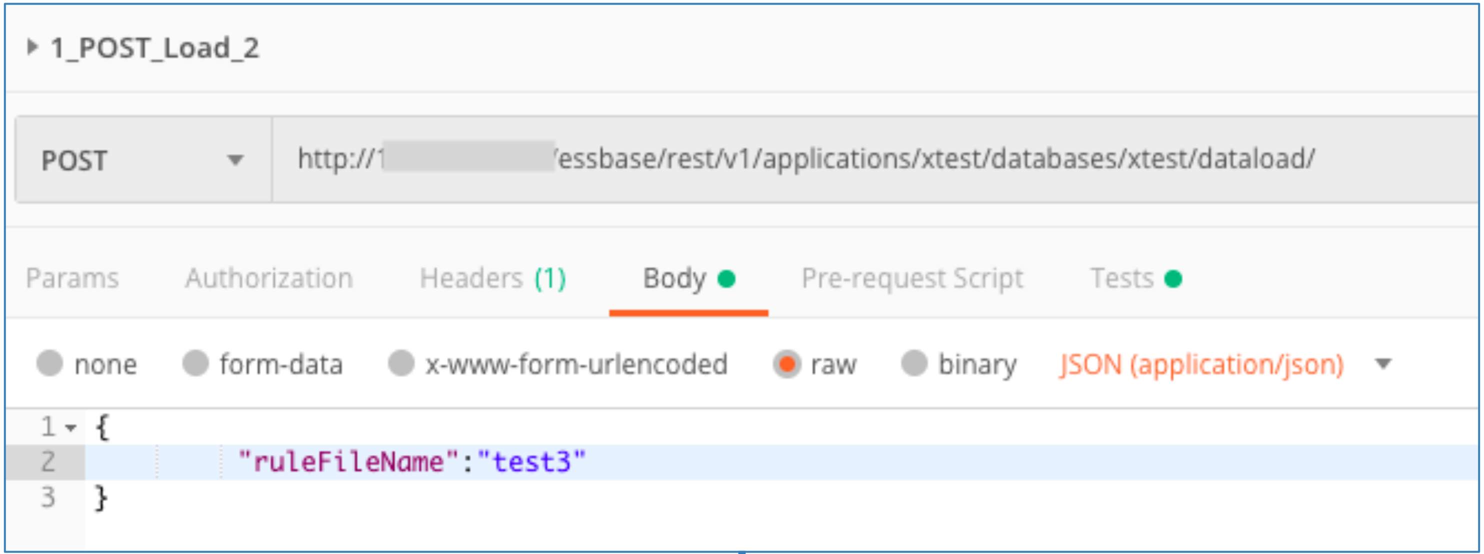
Streaming Data Loads

Streaming Data Loads

- Why do this?
  - Move EPBCS data to Essbase Cloud?
  - Orchestrate an integration using OIC/ODI?
  - Other applications?
- Steps involved:
  - {POST}: Generate a data load session and retrieve a stream ID.
  - {POST}: Start the data load with the stream ID.
  - {DELETE}: Terminate the load session.
- DELETE step is important, as data will not be committed otherwise.

Ingredient 1: Generate a session

- POST action
  - http(s)://BaseURL/applications/{appname}/databases/{dbname}/dataload/
  - Add the load rule you want to use.
  - Gather the stream ID.

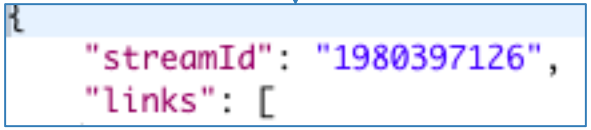


▸ 1_POST_Load_2

POST ▾ http://1[redacted]essbase/rest/v1/applications/xtest/databases/xtest/dataload/

○ none ○ form-data ○ x-www-form-urlencoded ● raw ○ binary JSON (application/json) ▾

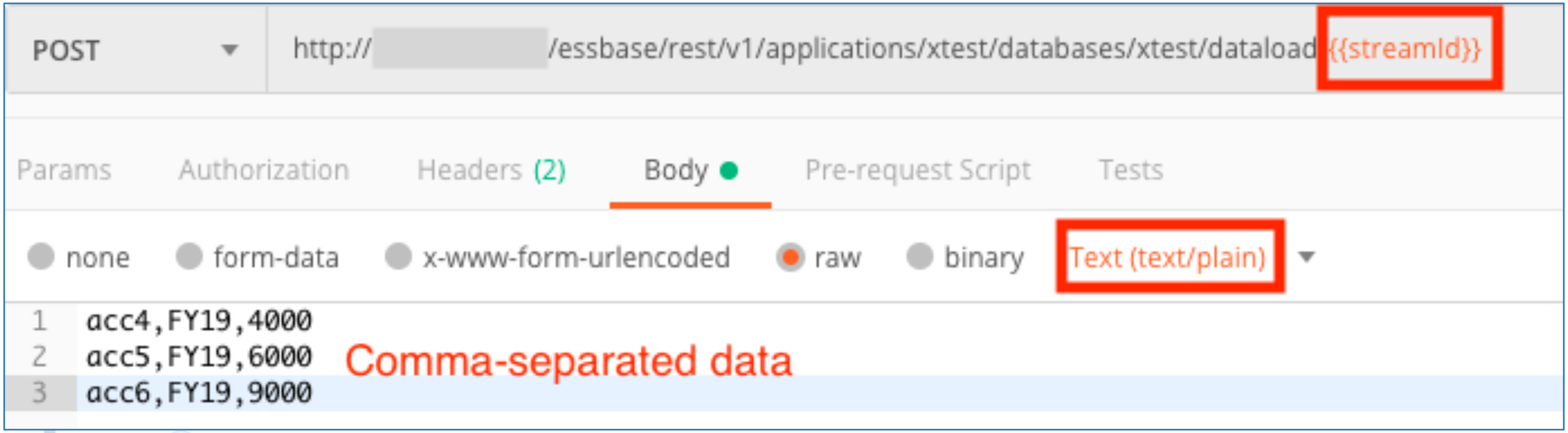
```
{
	"ruleFileName":"test3"
}
```



```
{
    "streamId": "1980397126",
    "links": [
```

Ingredient 2: Generate a session

- POST action
  - http(s)://BaseURL/applications/{appname}/databases/{dbname}/dataload/
  - Start the load to the generated streamID.
  - Content-Type should be “text/plain”.



POST ▾ http://[redacted]/essbase/rest/v1/applications/xtest/databases/xtest/dataload{{streamId}}

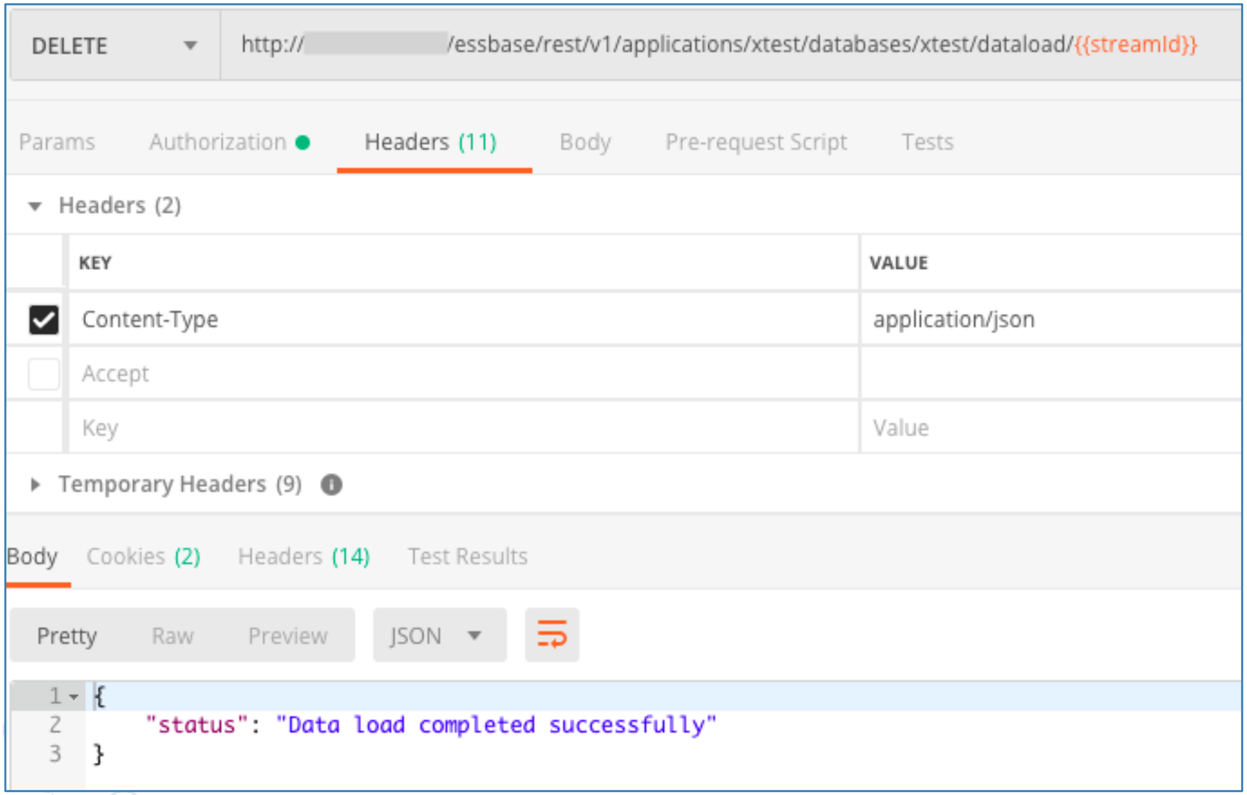
○ none ○ form-data ○ x-www-form-urlencoded ● raw ○ binary Text (text/plain) ▾

```
acc4,FY19,4000
acc5,FY19,6000
acc6,FY19,9000
```

Comma-separated data

Ingredient 3: Terminate the session

- DELETE action
  - http(s)://BaseURL/applications/{appname}/databases/{dbname}/dataload/
  - Terminate the session.



DELETE ▾ http://[redacted]/essbase/rest/v1/applications/xtest/databases/xtest/dataload/{{streamId}}

▾ Headers (2)

	KEY	VALUE
☑	Content-Type	application/json
□	Accept	
	Key	Value

▸ Temporary Headers (9)

```
{
    "status": "Data load completed successfully"
}
```

Demo Time

Recipe 2

Demo: Streaming Load

Video can be found on the unlocked cube Youtube channel
Video Name: Stream data to Essbase Cloud using the REST API
Video Link: https://www.youtube.com/watch?v=TI1g0mwZyNA&feature=youtu.be

7.

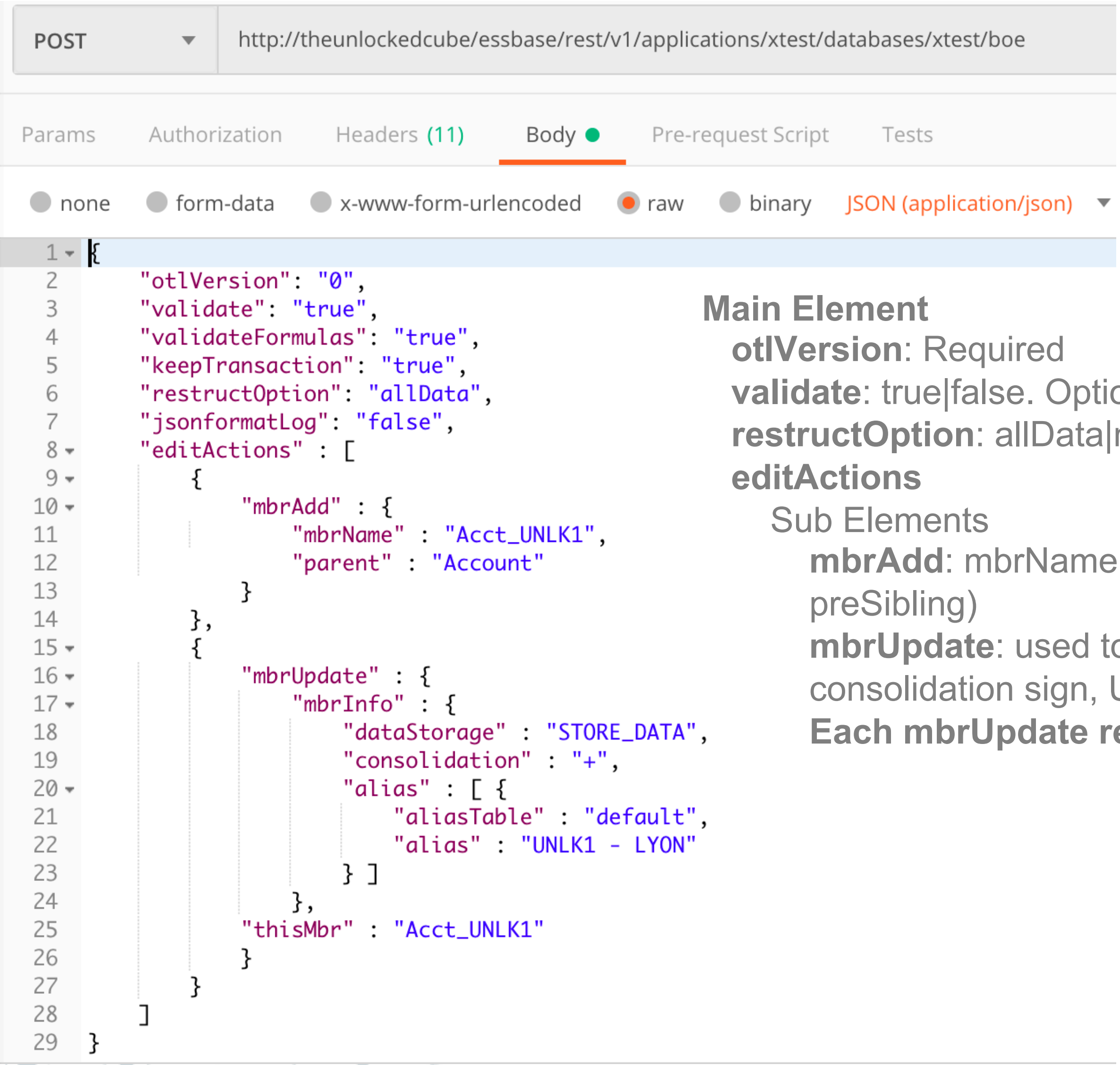
Recipe 3

Create and/or update dimension members

Create and/or update dimension members

- Why do this?
  - Orchestrate an integration using OIC/ODI
  - Other applications?
- Ingredients:
  - Type of Request: POST
  - Request URL: http(s)://BaseURL/applications/{AppName}/databases/{dbName}/boe
    (Boe stands for batch outline edit)
  - JSON body

Create and/or update dimension members



POST http://theunlockedcube/essbase/rest/v1/applications/xtest/databases/xtest/boe

○ none ○ form-data ○ x-www-form-urlencoded ● raw ○ binary JSON (application/json)

```
{
    "otlVersion": "0",
    "validate": "true",
    "validateFormulas": "true",
    "keepTransaction": "true",
    "restructOption": "allData",
    "jsonformatLog": "false",
    "editActions" : [
        {
            "mbrAdd" : {
                "mbrName" : "Acct_UNLK1",
                "parent" : "Account"
            }
        },
        {
            "mbrUpdate" : {
                "mbrInfo" : {
                    "dataStorage" : "STORE_DATA",
                    "consolidation" : "+",
                    "alias" : [ {
                        "aliasTable" : "default",
                        "alias" : "UNLK1 - LYON"
                    } ]
                },
            "thisMbr" : "Acct_UNLK1"
            }
        }
    ]
}
```

Main Element

- **otlVersion**: Required
- **validate**: true|false. Optional. Default = true
- **restructOption**: allData|noData|lowData|inData. Default = allData
- **editActions**
  - Sub Elements
    - **mbrAdd**: mbrName & Parent (additional options available like preSibling)
    - **mbrUpdate**: used to update properties like aliases, data Storage consolidation sign, UDAs, Time balance, formula, mbrID, etc.
    - **Each mbrUpdate requires thisMbr to be defined**

Demo Time

Recipe 3

Demo: Create and/or update dimension members

Video can be found on the unlocked cube Youtube channel
Video Name: Update dimension in Essbase Cloud using the REST API
Video Link: https://www.youtube.com/watch?v=umiLSCkM_CA&feature=youtu.be

Summary

- REST
- Swagger
- Postman
- Scripts

Thanks!

Any questions?

You can find us at:

@theunlockedcube

www.theunlockedcube.com

vkurian@huronconsultinggroup.com

wandreelli@huronconsultinggroup.com

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