

The zGUI (r)evolution - What is ZOWE going to do for me?

Roy Boxwell

Software Engineering GmbH

Session code: G09

Tuesday 22nd October 2019, 16:40 – 17:40

Platform: Db2 for z/OS



IDUG

Leading the Db2 User
Community since 1988

Agenda

- GUIs in the past
- Zowe ecosystem overview
- Zowe differentiation to prior GUIs
- Zowe components
- Zowe examples
- Hands-on usage based on a cloning example
- Summary of experience

New, ZOWE day, agenda

- What do I want to show you?
- Problems we had...
- Success!
- Q & A

New, ZOWE day, agenda

- What do I want to show you?
- Problems we had...
- Success!
- Q & A

What do I want to show you? (1:2)

- As a company we started with a purely green screen ISPF front-end
- This has evolved over the years to incorporate DataStudio plug-ins and RDz support, we also use ODBC in Excel for trending analysis
- If we can evolve - where can we go now? zOSMF, Browser, ZOWE ???

What do I want to show you? (2:2)

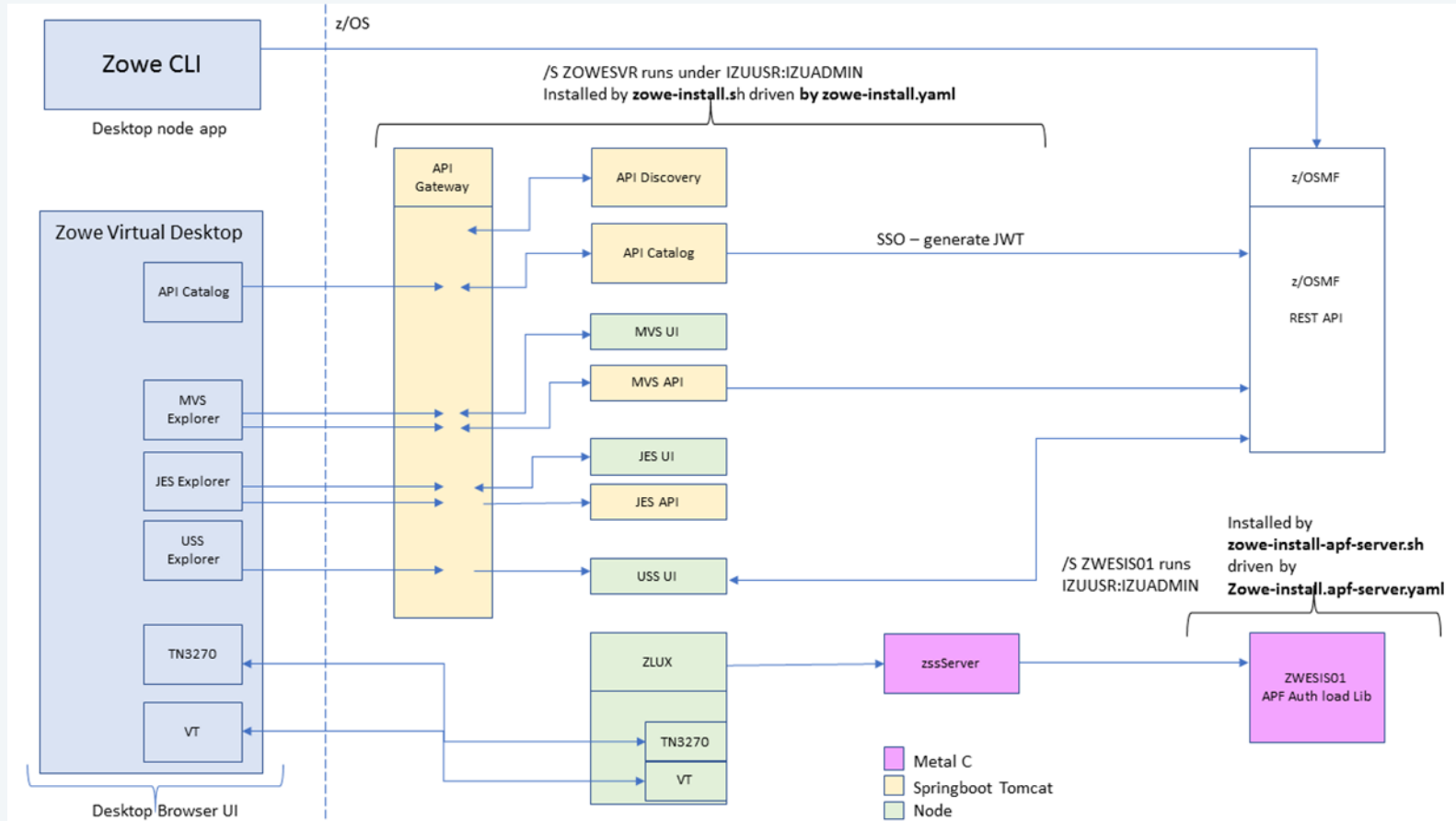
- ZOWE is a game changer for *all* of the employees and users in any company
- It does not matter if you are old and grey (like me!) or young and dynamic
- A unified GUI experience is the icing on the cake for the learning curve and integration and co-operation across IT boundaries!

New, ZOWE day, agenda

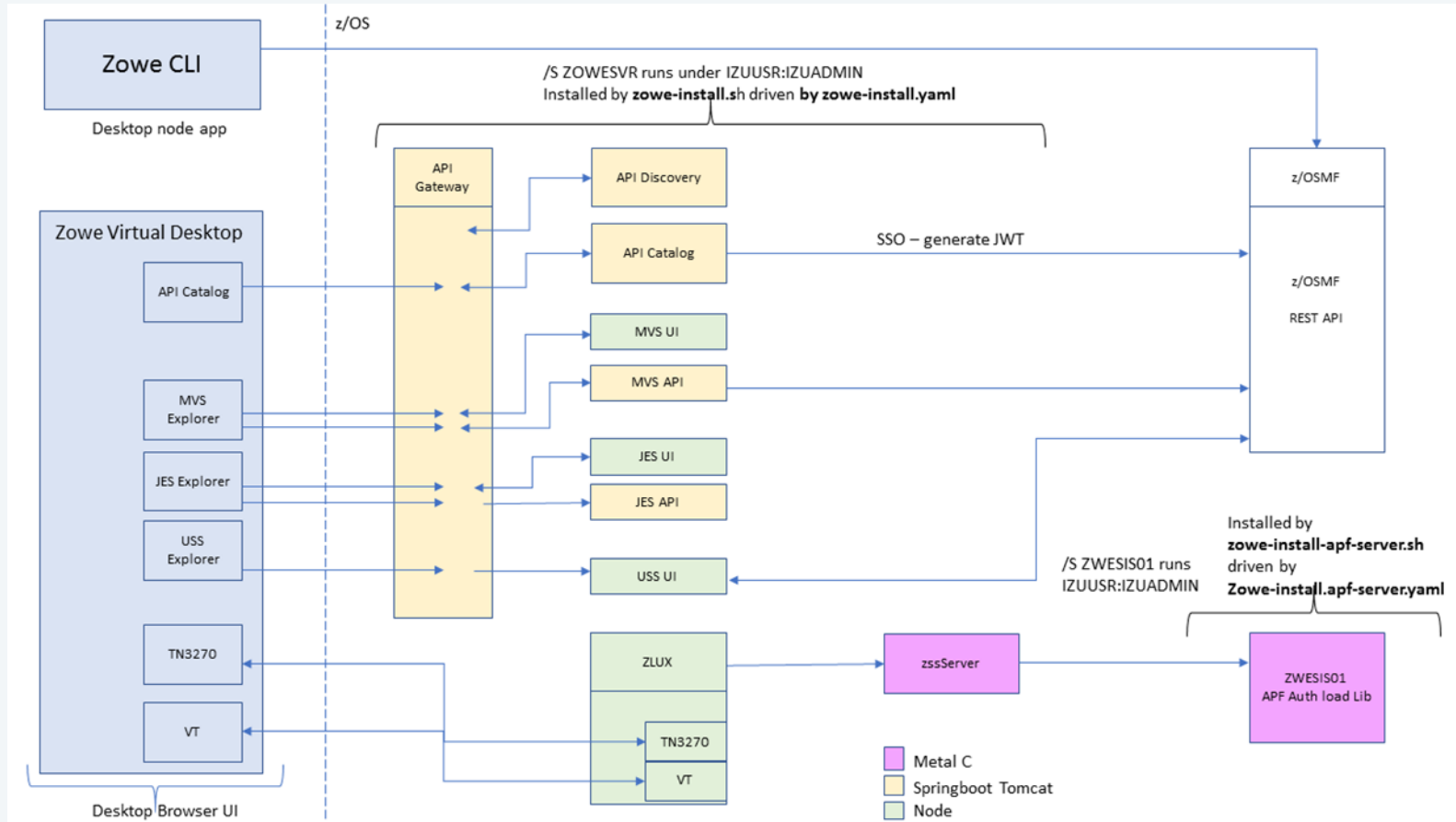
- What do I want to show you?
- Problems we had...
- Success!
- Q & A



Zowe components



Zowe components – which caused problems



Problems (1:4)

- ZOWE started as 0.9.5 and nodejs on the PC – That's all you need!
 - Mainframe was dead and response was very slow
 - Fix the WLM and get the Daemons working properly
- API Catalog looks good but where is Db2?
- USS and MVS Explorers pretty slow and a ton of UNIX permissions failed
- Editor has „interesting“ code page issues...
- Documentation is a dead dog... Written by coders for coders who already know what they are coding... Worst bit of ZOWE!

Problems (2:4)

- Iframe example should allow direct connection to Db2 without a middleware server...
 - It doesn't!
 - Angular and React are very strange for newbies
 - Angular is a typed version of Javascript with dodgy docu and bad versions
 - NodeJS? npm? You must register to find out what it offers before getting it??
- APIs with zOSMF a problem due to http vs https
 - Here the IBM zOSMF documentation saved the day as the services are there, just with slightly different addresses.

Problems (3:4)

- Using BIND SERVICE to get a RESTFUL call should work like a charm...
„Cross-Origin Request Blocked: The Same Origin Policy disallows reading the remote resource at `http://s0w1.fritz.box:5121/services`. (Reason: CORS header 'Access-Control-Allow-Origin' missing).“
- What is this? Seriously bad news... Any POST communication from within a browser coming from site#1 going to site#2 gets prepended with an OPTIONS call to the server in question. Even if the **only** change is the port number...
- Db2 chokes on this:

```
{  
  "StatusCode": 501,  
  "StatusDescription": "DB2 does not support this HTTP request. Error  
Location:DSNLJHPP:130"  
}
```

Problems (4:4)

- Looks like we need `ibm_db` but this needs `c++` which was not working
 - `ibm_db` installation fails with `ENOTDIR` errors from `npm`
- ZLUX needed `perl`, `unzip`, `vim`, `bash` and `git` all just for the tutorial app!
- PHP in an attempt to bypass the CORS error – didn't work either
- Create API is ok – Calling it is another matter! How to call one of the ZOWE desktop APIs appears impossible
- What about a RESTful service URL in a HTTP request saved as a js file?
 - Works in OMVS – fails in `main.js` of the `Iframe` sample...
 - Browser does not „know“ about the NodeJS environment (mainframe or local!)

Problems

But apart from that, what have the romans done for us?

Zowe components



Zowe

Open. Simple. Familiar.

Username

Password



Log in

v. 1.4.0+20190718

Zowe walk through...

When you start Zowe:



The image shows the Zowe login interface. At the top is the Zowe logo, a blue stylized 'Z' made of two overlapping triangles. Below the logo is the word 'Zowe' in a large, bold, black font. Underneath 'Zowe' is the tagline 'Open. Simple. Familiar.' in a smaller, black font. Below the tagline are two input fields: 'Username' with the text 'boxwell' and 'Password' which is empty. At the bottom of the form is a blue circular button with a white right-pointing arrow inside a circle, and the text 'Log in' below it. At the very bottom of the screen is the version number 'v. 1.4.0+20190718'.

Not so sure about the simple bit!

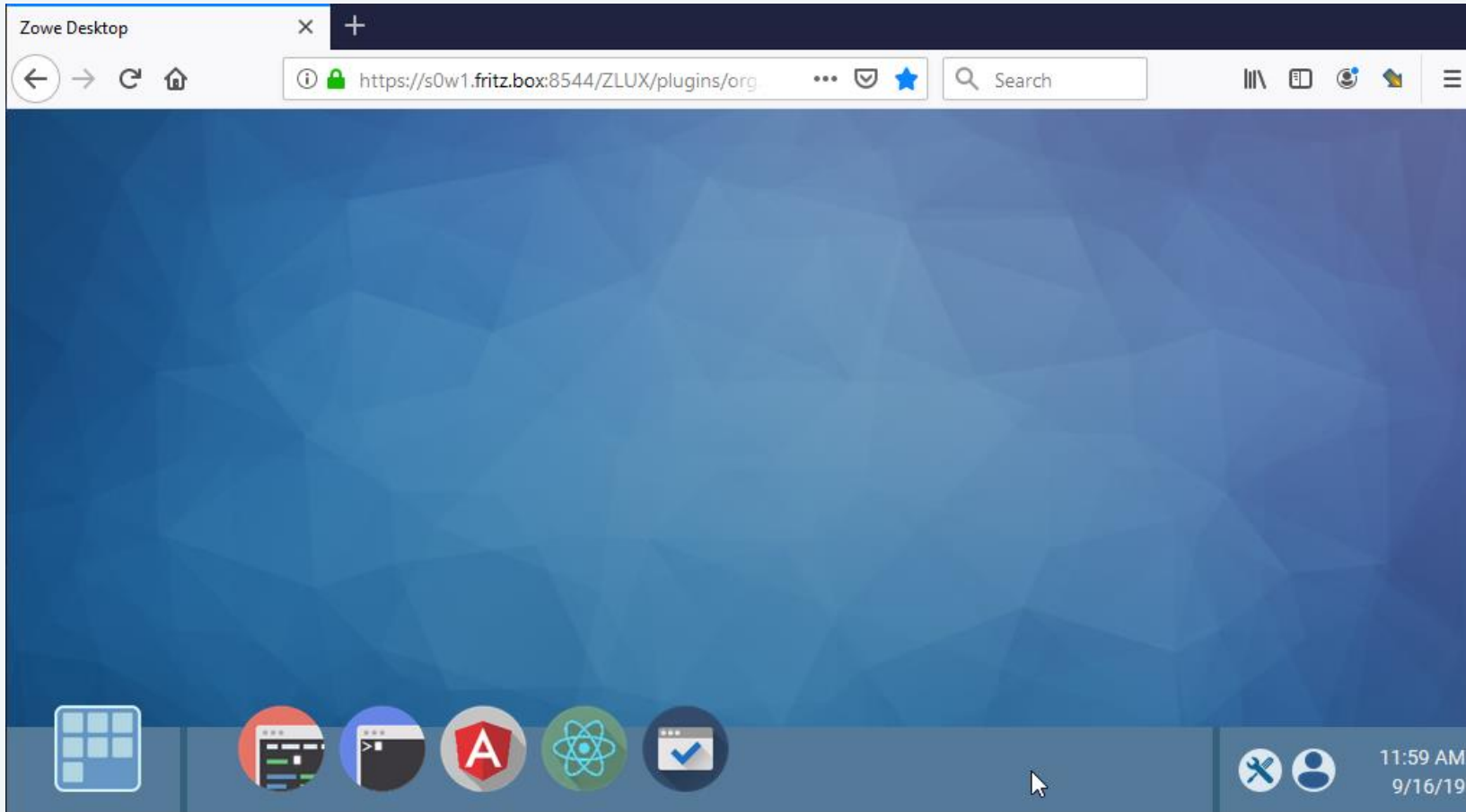


IDUG
Leading the Db2 User
Community since 1988

IDUG Db2 Tech Conference
Rotterdam, Netherlands | October 20-24, 2019

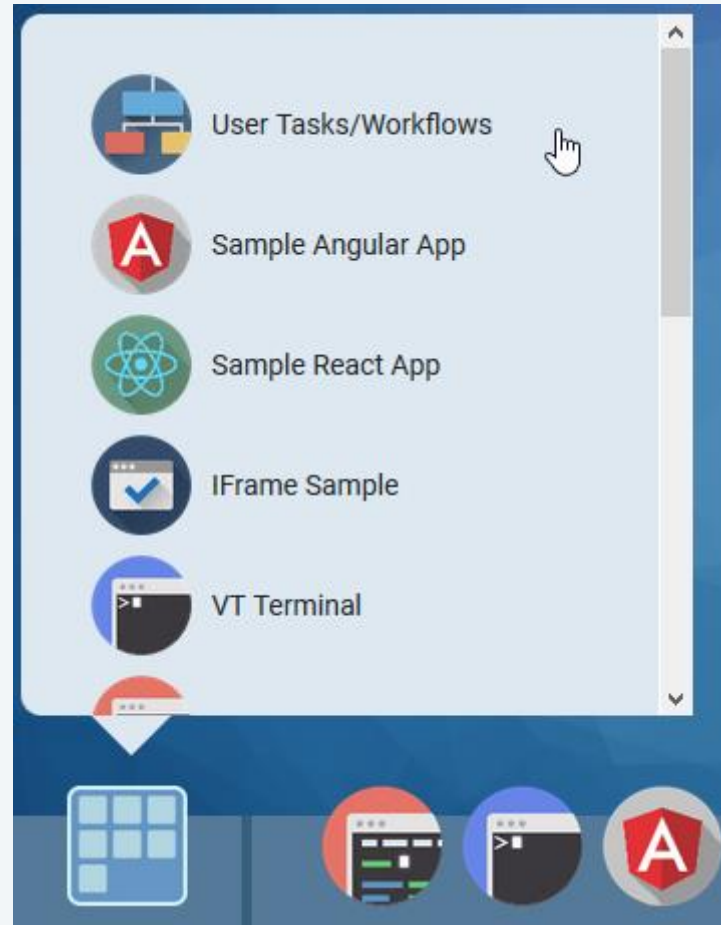
 **#IDUGDb2**

Zowe walk through...



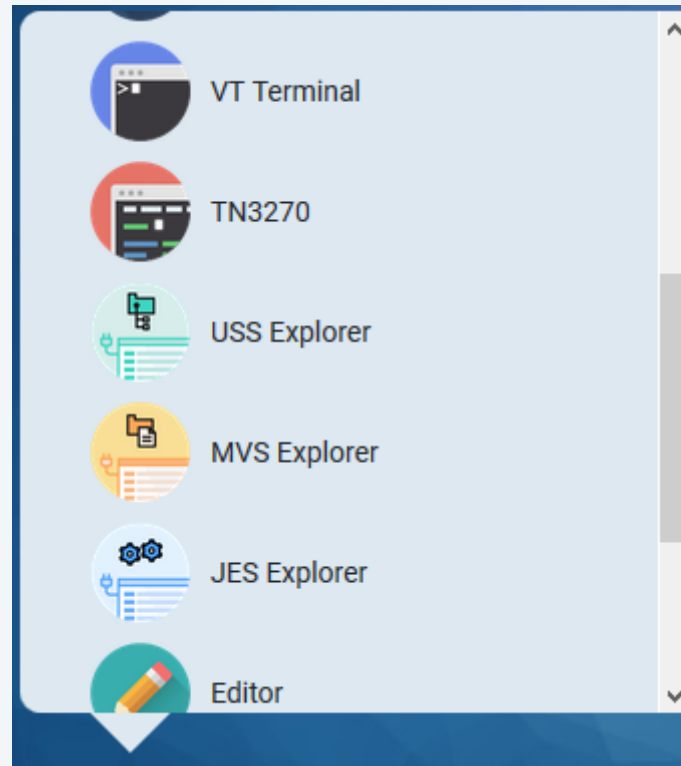
Zowe walk through...

Delivered Apps



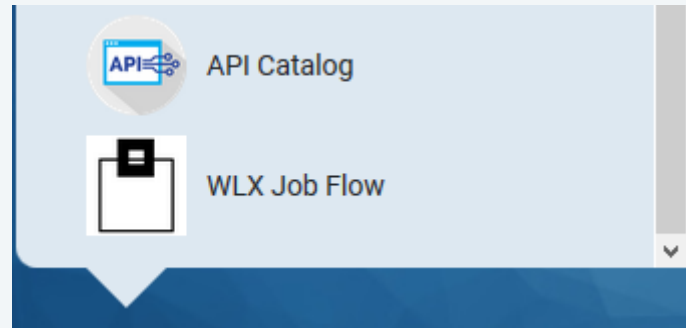
Zowe walk through...

Delivered Apps



Zowe walk through...

Delivered Apps



After all that scrolling we end up at the test app that we created



Zowe walk through...

```

X - □ TN3270 - 127.0.0.1:23
Menu Utilities Compilers Options Status Help
ISPF Primary Option Menu
Option ==>
0 Settings      Terminal and user parameters
1 View          Display source data or listings
2 Edit          Create or change source data
3 Utilities      Perform utility functions
4 Foreground    Interactive language processing
5 Batch         Submit job for language processing
6 Command       Enter TSO or Workstation commands
7 Dialog Test   Perform dialog testing
9 IBM Products  IBM program development products
10 SCLM         SW Configuration Library Manager
11 Workplace    ISPF Object/Action Workplace
M More          Additional IBM Products
S SE           Software Engineering Menu

          < Calendar >
          September 2019
          Su Mo Tu We Th Fr Sa
            1  2  3  4  5  6  7
            8  9 10 11 12 13 14
           15 16 17 18 19 20 21
           22 23 24 25 26 27 28
           29 30
          Time . . . . : 12:03
          Day of year. : 259

      Enter X to Terminate using log/list defaults

*ISR@PRI
```

Zowe walk through...


**So here I wanted to use ENTER to step through some lines.
New Line for the young ones...**

Zowe walk through...

Didn't work of course...

Off to the internet to find this handy look-up table

Zowe walk through...

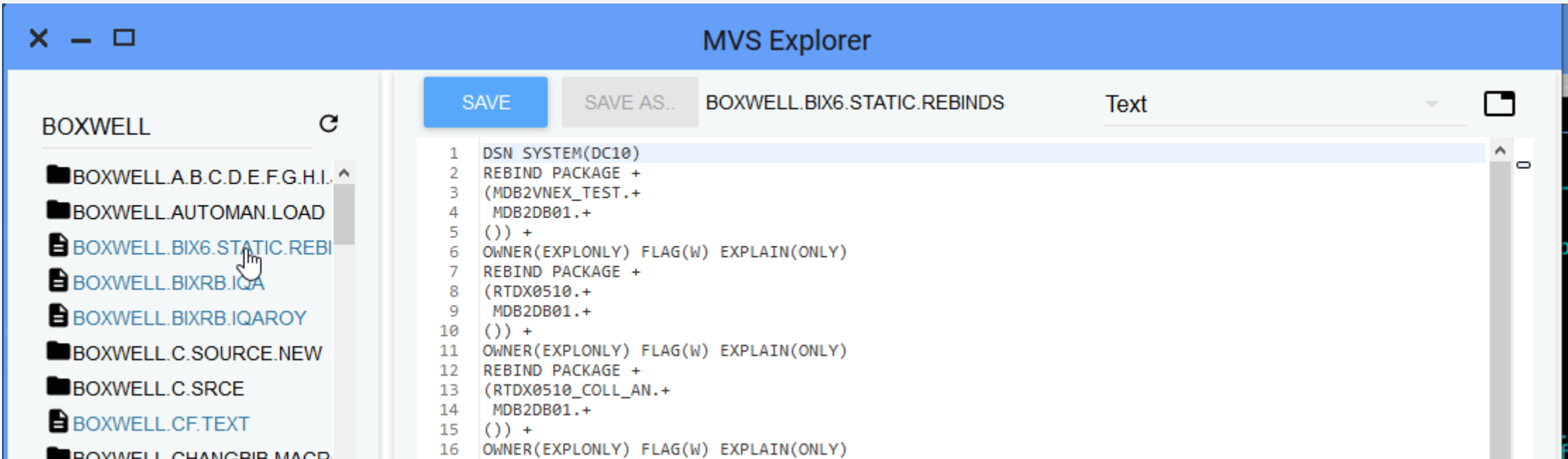
Enter	Enter, NumpadEnter	
Erase End of Field (EOF)	Ctrl+e	Erases from cursor position to end of field
Erase Field	Ctrl+l	Erases entire field
Erase Input		Erases contents of all input fields
Erase Word		Erases until next word, including whitespace
Home	Home, NumpadHome	
Insert	Insert, NumpadInsert	Toggles insert text mode
New Line 	Shift+Enter, Shift+NumpadEnter	Moves cursor to field on next row

Zowe walk through...

Didn't work of course...

So then I found out by trial-and-error that they meant CNTL and ENTER...

Zowe walk through...



The screenshot displays the Zowe MVS Explorer interface. On the left, a file tree under the 'BOXWELL' directory lists several folders and files, including 'BOXWELL.BIX6.STATIC.REBI'. A mouse cursor is hovering over this file. The main area on the right shows the content of the selected file, 'BOXWELL.BIX6.STATIC.REBINDS', which is a text file containing JCL code. The code is displayed in a text editor with line numbers from 1 to 16. The interface includes standard window controls at the top and a 'SAVE' button above the code editor.

MVS Explorer

SAVE SAVE AS.. BOXWELL.BIX6.STATIC.REBINDS Text

BOXWELL

- BOXWELL.A.B.C.D.E.F.G.H.I.
- BOXWELL.AUTOMAN.LOAD
- BOXWELL.BIX6.STATIC.REBI
- BOXWELL.BIXRB.IQA
- BOXWELL.BIXRB.IQAROY
- BOXWELL.C.SOURCE.NEW
- BOXWELL.C.SRCE
- BOXWELL.CF.TEXT
- BOXWELL.CHANGRIR.MACB

```
1 DSN SYSTEM(DC10)
2 REBIND PACKAGE +
3 (MDB2VNEX_TEST.+
4   MDB2DB01.+
5   ()) +
6 OWNER(EXPONLY) FLAG(W) EXPLAIN(ONLY)
7 REBIND PACKAGE +
8 (RTDX0510.+
9   MDB2DB01.+
10  ()) +
11 OWNER(EXPONLY) FLAG(W) EXPLAIN(ONLY)
12 REBIND PACKAGE +
13 (RTDX0510_COLL_AN.+
14   MDB2DB01.+
15   ()) +
16 OWNER(EXPONLY) FLAG(W) EXPLAIN(ONLY)
```

Zowe walk through...

✕ — □
JES Explorer

Owner= BOXWELL
Prefix= * Jobid= *

Job Filters

- BOXWELL:TSU03094
- BOXWELLX:JOB03120
- JESMSGGLG
- JESJCL
- JESYSMSG
- SYSPRINT

BOXWELLX - JOB03120 - SYSPRINT

```

1  |DSNU000I  259 09:35:38.12 DSNUGUTC - OUTPUT START FOR UTILITY, UTILID = RUNSTAT01
2  |DSNU1044I  259 09:35:38.13 DSNUGTIS - PROCESSING SYSIN AS EBCDIC
3  |0DSNU050I  259 09:35:38.13 DSNUGUTC - RUNSTATS TABLESPACE DSND06.SYSTSCOL TABLE(ALL) INDEX(ALL KEY
4  |TABLESAMPLE SYSTEM AUTO SHRLEVEL CHANGE REGISTER NO REPORT NO UPDATE ALL INVALIDATECACHE NO
5  |DSNU610I  -DC10 259 09:35:40.50 DSNUSUTP - SYSTABLEPART CATALOG UPDATE FOR DSND06.SYSTSCOL SUCCESSFUL
6  |DSNU610I  -DC10 259 09:35:40.50 DSNUSUPT - SYSTABSTATS CATALOG UPDATE FOR SYSIBM.SYSCOLUMNS SUCCESSFUL
7  |DSNU610I  -DC10 259 09:35:40.56 DSNUSUPC - SYSCOLSTATS CATALOG UPDATE FOR SYSIBM.SYSCOLUMNS SUCCESSFUL
8  |DSNU610I  -DC10 259 09:35:40.56 DSNUSUTB - SYSTABLES CATALOG UPDATE FOR SYSIBM.SYSCOLUMNS SUCCESSFUL
9  |DSNU610I  -DC10 259 09:35:40.59 DSNUSUCO - SYSCOLUMNS CATALOG UPDATE FOR SYSIBM.SYSCOLUMNS SUCCESSFUL
10 |DSNU610I  -DC10 259 09:35:40.59 DSNUSUTS - SYSTABLESPACE CATALOG UPDATE FOR DSND06.SYSTSCOL SUCCESSFUL
11 |DSNU1374I  -DC10 259 09:35:40.59 DSNUSEF2 - SAMPLE SIZE USED :
12 |    ROWS SAMPLED    = 162797
13 |    PAGES SAMPLED    = 3742
14 |    SAMPLE RATE USED = 100.00
15 |    REPEATABLE       = 0
16 |DSNU610I  -DC10 259 09:35:42.94 DSNUSUIP - SYSINDEXPART CATALOG UPDATE FOR SYSIBM.DSND06.SYSTSCOL SUCCESSFUL
17 |DSNU610I  -DC10 259 09:35:43.04 DSNUSUIP - SYSINDEXPART CATALOG UPDATE FOR SYSIBM.DSND06.SYSTSCOL SUCCESSFUL
          
```

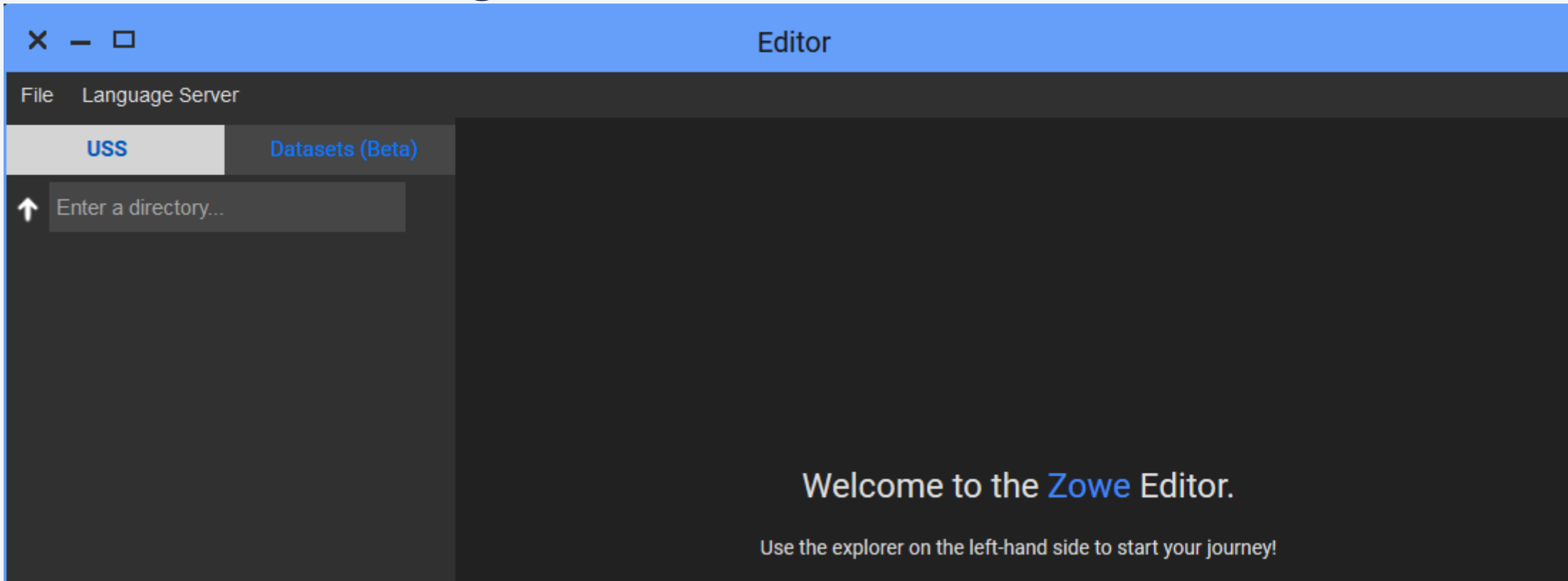


IDUG
Leading the Db2 User
Community since 1988

IDUG Db2 Tech Conference
Rotterdam, Netherlands | October 20-24, 2019

 **#IDUGDb2**

Zowe walk through...





IDUG
Leading the Db2 User
Community since 1988

IDUG Db2 Tech Conference
Rotterdam, Netherlands | October 20-24, 2019

 **#IDUGDb2**

Zowe walk through...

✕

—

□

Editor

File

Language Server

USS

Datasets (Beta)

↑ Enter a directory...

📁 S0W1

^

📁 t

📁 u

📁 VERSYSB

📁 was

📁 wascfg

📁 web

📁 websphere

📁 Z23A

📁 **zowe**

📁 builds




📁 paxes

📁 save



Welcome to the **Zowe** Editor.

Use the explorer on the left-hand side to start your journey!

Zowe walk through...

API Catalog

 **API Catalog** 

Available API services

API Mediation Layer API

The API Mediation Layer for z/OS internal API services. The API Mediation Layer provides a single point of access to mainframe REST APIs and offers enterprise cloud-like feature...

◆ 1 of 2 services are running

z/OS Datasets and Unix Files services

IBM z/OS Datasets and Unix Files REST services

● All services are running

Zowe walk through...

z/OS Jobs services

IBM z/OS Jobs REST services



● All services are running

z/OSMF services

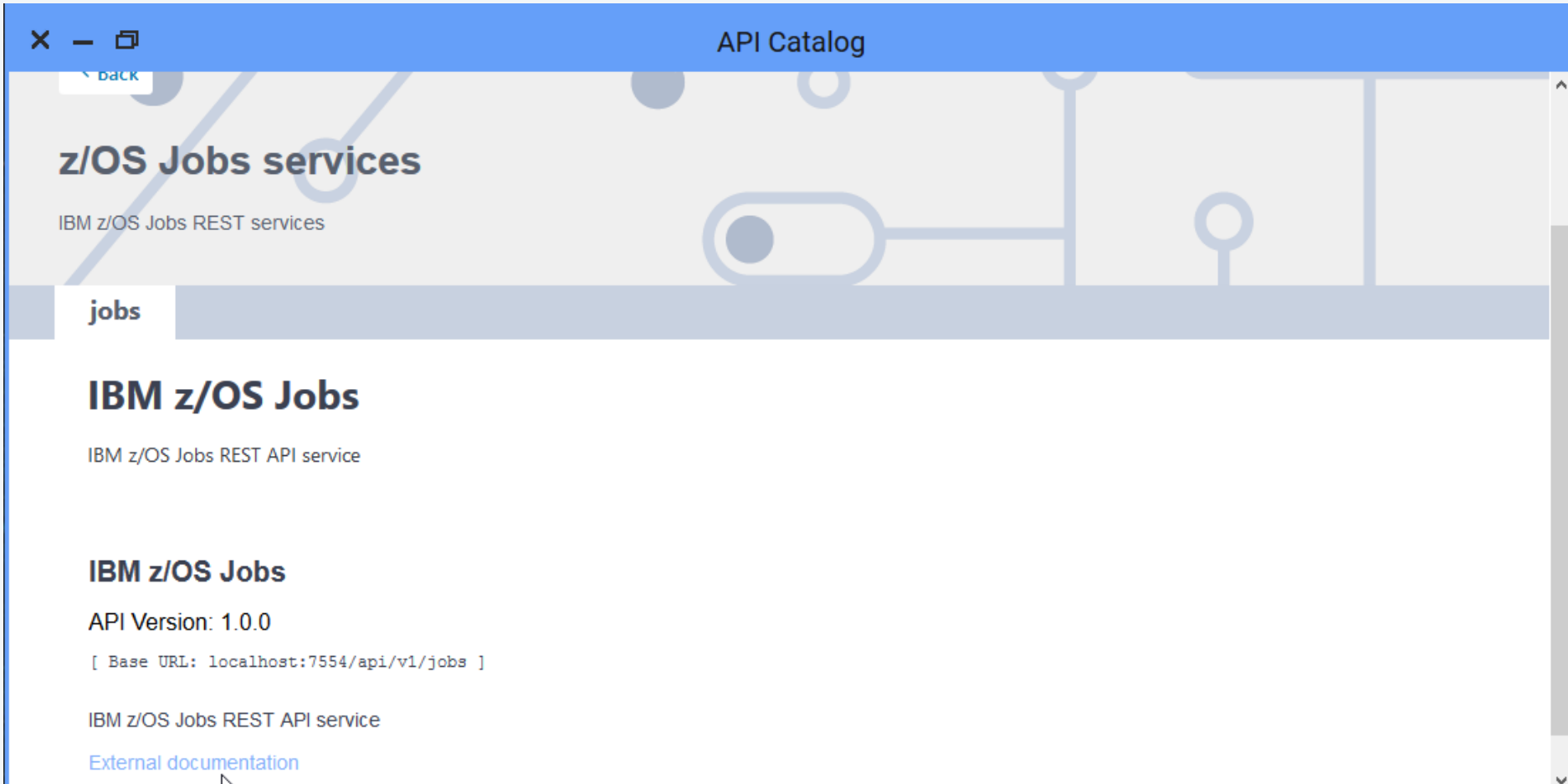
IBM z/OS Management Facility REST services

● All services are running



12:13 PM
9/16/19

Zowe walk through...



The screenshot displays the Zowe API Catalog web application. The top navigation bar is blue with the text 'API Catalog' on the right and standard window controls (close, minimize, maximize) on the left. Below the navigation bar, a breadcrumb trail shows a 'back' button. The main content area has a light gray background with a large heading 'z/OS Jobs services' and a subtitle 'IBM z/OS Jobs REST services'. A horizontal tab bar below this contains a single tab labeled 'jobs'. The content under the 'jobs' tab is white and features the heading 'IBM z/OS Jobs' with the subtitle 'IBM z/OS Jobs REST API service'. Below this, it shows 'API Version: 1.0.0' and a code block containing '[Base URL: localhost:7554/api/v1/jobs]'. At the bottom of the content area, it repeats 'IBM z/OS Jobs REST API service' and includes a blue link for 'External documentation'. A vertical scrollbar is visible on the right side of the content area.

API Catalog

back

z/OS Jobs services

IBM z/OS Jobs REST services

jobs

IBM z/OS Jobs

IBM z/OS Jobs REST API service

API Version: 1.0.0

```
[ Base URL: localhost:7554/api/v1/jobs ]
```

IBM z/OS Jobs REST API service

[External documentation](#)



Zowe walk through...

swagger

Select a spec default

Api Documentation ^{1.0}

[Base URL: s0w1.fritz.box:8545/]
<https://s0w1.fritz.box:8545/v2/api-docs>

Api Documentation

[Terms of service](#)

[Apache 2.0](#)

JES job APIs

Jobs Controller

System APIs

GET

/api/v1/jobs/username

Get current userid



Zowe walk through...

System APIs

GET `/api/v1/jobs/username` Get current userid

This API returns the caller's current TSO userid.

Parameters

No parameters

Try it out

Zowe walk through...

System APIs

GET `/api/v1/jobs/username` Get current userid

This API returns the caller's current TSO userid.

Parameters

Cancel

No parameters

Execute

Responses

Response content type

`application/json`



Zowe walk through...

GET

/api/v1/jobs/username

Get current userid

This API returns the caller's current TSO userid.

Parameters

No parameters

Cancel

Authentication Required

?

https://s0w1.fritz.box:8545 is requesting your username and password. The site says:
"DeveloperStack"

User Name:

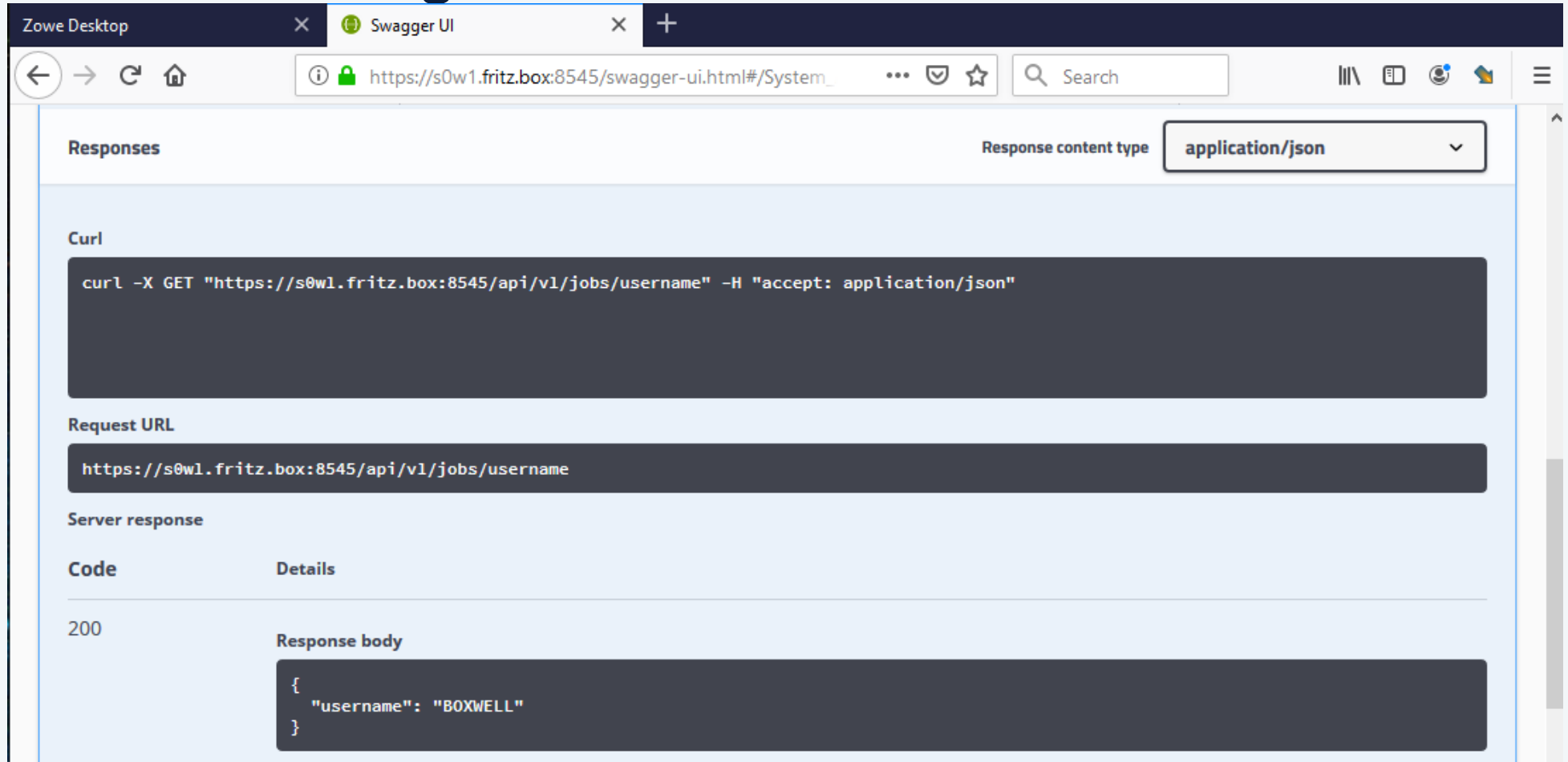
Password:

OK

Cancel

LOADING

Zowe walk through...



Zowe Desktop x Swagger UI x +

https://s0w1.fritz.box:8545/swagger-ui.html#/System_ Search

Responses Response content type **application/json**

Curl

```
curl -X GET "https://s0w1.fritz.box:8545/api/v1/jobs/username" -H "accept: application/json"
```

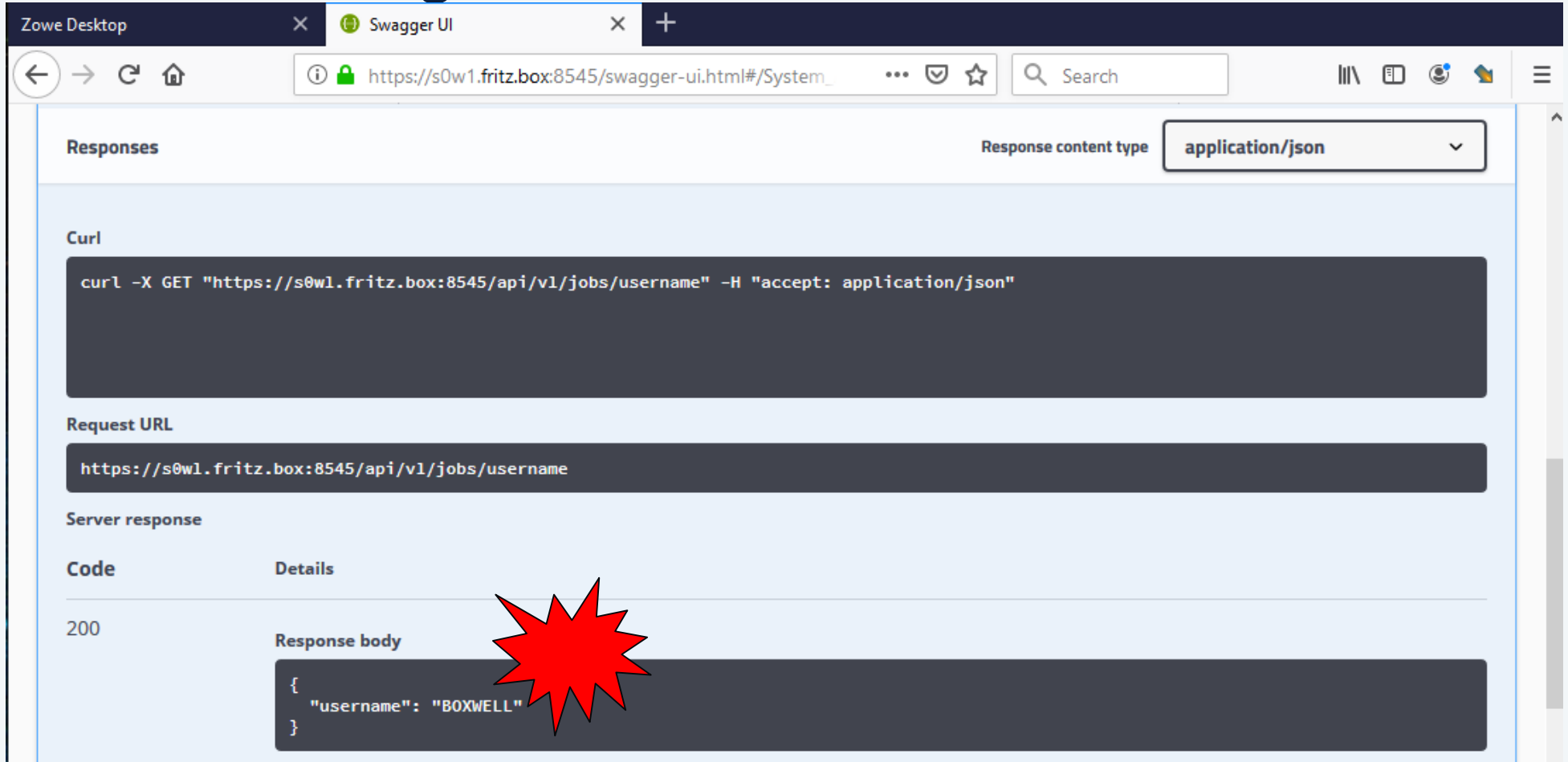
Request URL

```
https://s0w1.fritz.box:8545/api/v1/jobs/username
```

Server response

Code	Details
200	Response body <pre>{ "username": "BOXWELL"}</pre>

Zowe walk through...



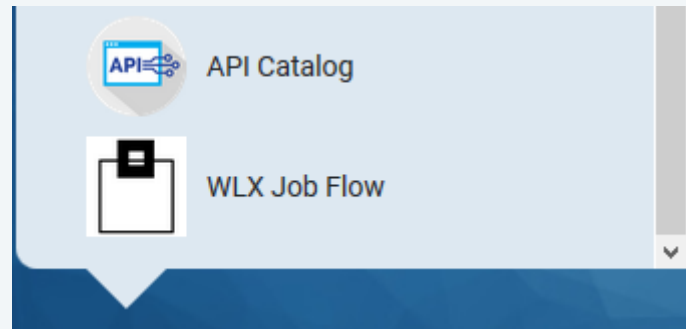
The screenshot shows the Zowe Desktop interface with the Swagger UI open. The browser address bar displays the URL `https://s0w1.fritz.box:8545/swagger-ui.html#/System_`. The Swagger UI shows the following details:

- Responses:** The response content type is set to `application/json`.
- Curl:** `curl -X GET "https://s0w1.fritz.box:8545/api/v1/jobs/username" -H "accept: application/json"`
- Request URL:** `https://s0w1.fritz.box:8545/api/v1/jobs/username`
- Server response:**

Code	Details
200	<p>Response body</p> <pre>{ "username": "BOXWELL" }</pre>

A red starburst graphic is overlaid on the response body, highlighting the JSON data.

Zowe walk through...



Now we can look at the test app that we created



Zowe walk through...

✕

—

□

WLX Job Flow

[View the WLX Demo #1](#)
[View the WLX Demo #2](#)
[View the EXPLAIN Demo](#)

Testing API access

List of jobs by user

Message

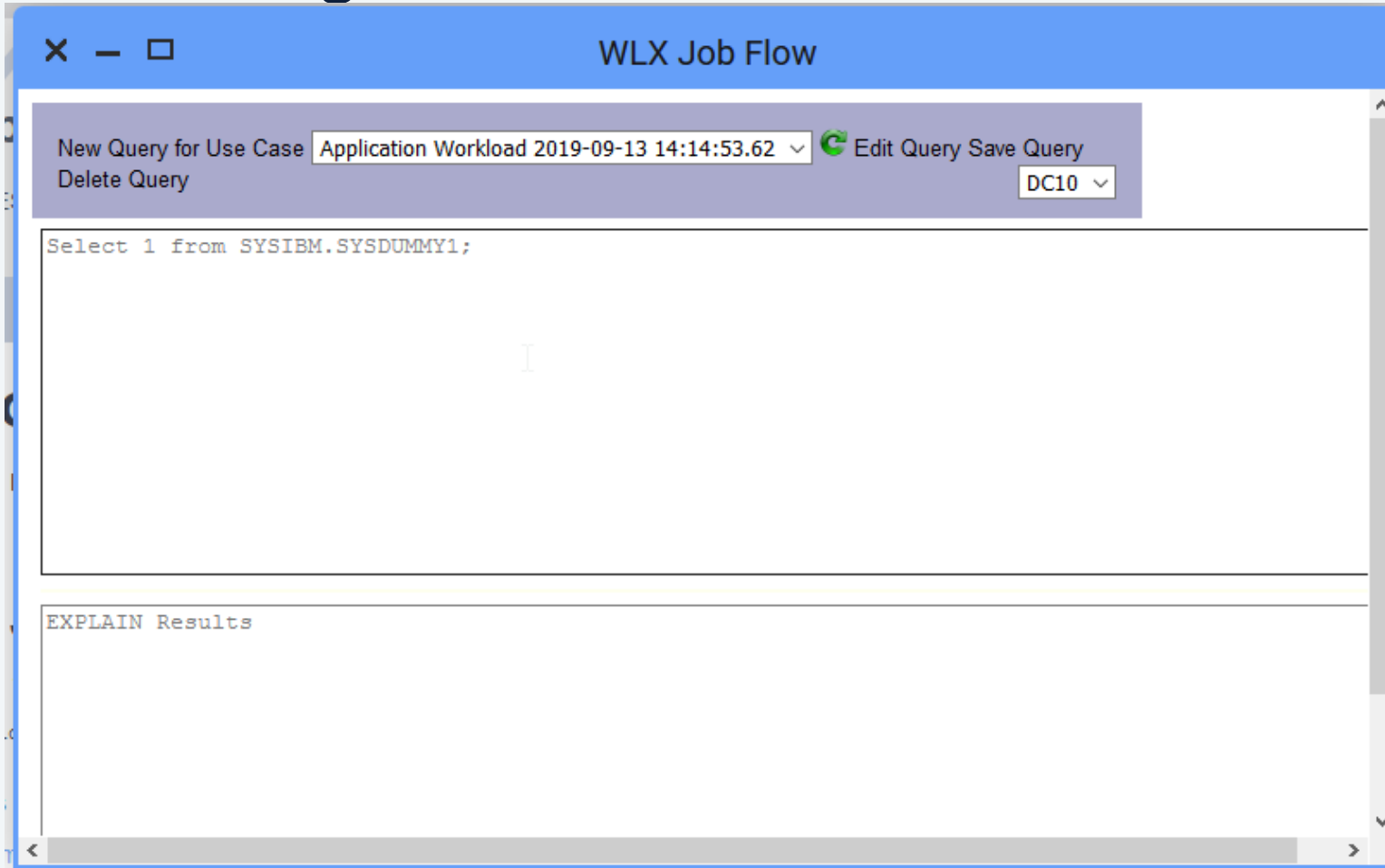
Run

Response

Response

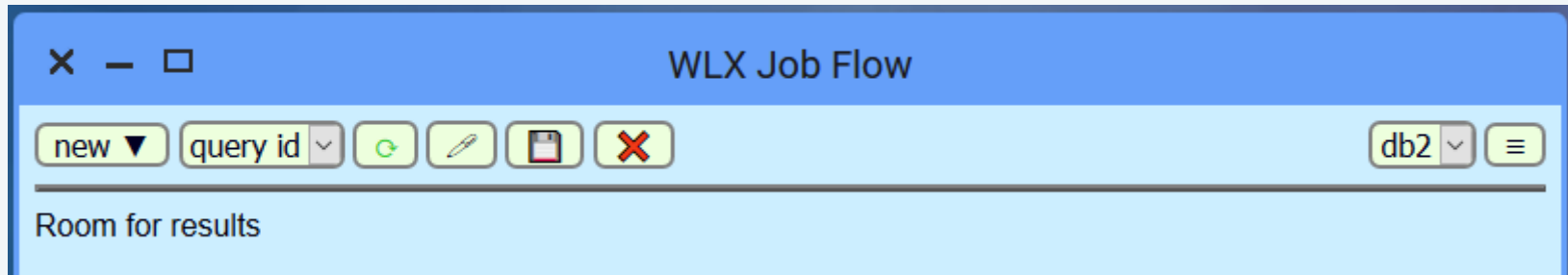


Zowe walk through...

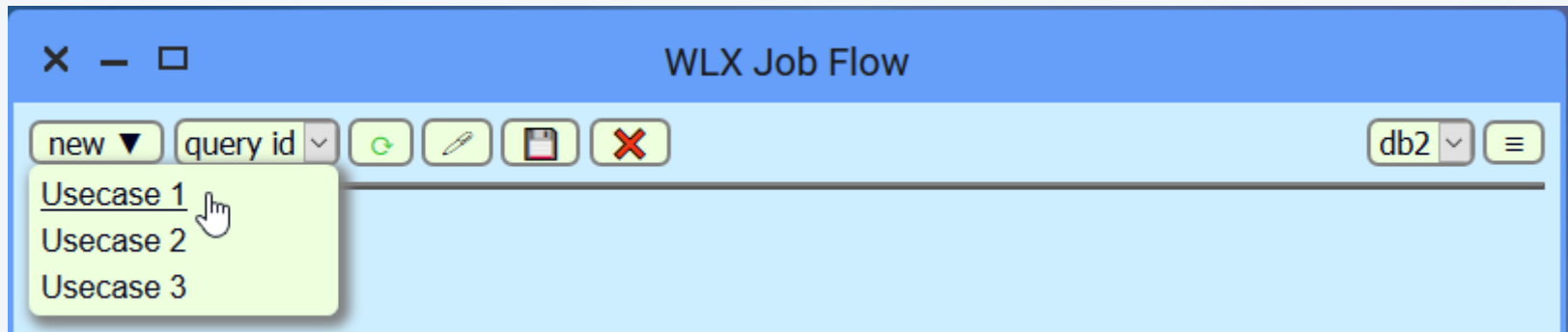




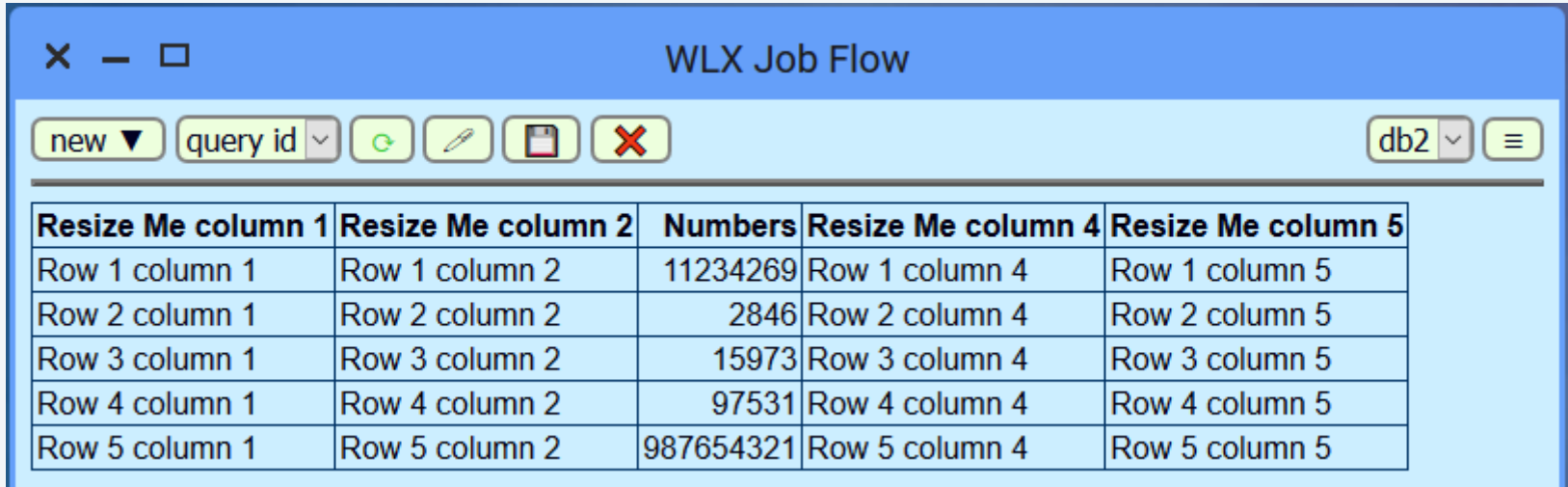
Zowe walk through...



Zowe walk through...



Zowe walk through...



The screenshot shows the Zowe WLX Job Flow interface. At the top is a title bar with window controls and the text "WLX Job Flow". Below the title bar is a toolbar with buttons for "new", "query id", a refresh icon, an edit icon, a save icon, and a delete icon. On the right side of the toolbar is a dropdown menu showing "db2" and a hamburger menu icon. The main area of the interface contains a table with 5 columns and 6 rows. The columns are labeled "Resize Me column 1", "Resize Me column 2", "Numbers", "Resize Me column 4", and "Resize Me column 5". The rows are labeled "Row 1 column 1" through "Row 5 column 1" in the first column, and "Row 1 column 2" through "Row 5 column 2" in the second column. The "Numbers" column contains the values 11234269, 2846, 15973, 97531, and 987654321. The other columns contain generic labels like "Row 1 column 4" and "Row 1 column 5".

Resize Me column 1	Resize Me column 2	Numbers	Resize Me column 4	Resize Me column 5
Row 1 column 1	Row 1 column 2	11234269	Row 1 column 4	Row 1 column 5
Row 2 column 1	Row 2 column 2	2846	Row 2 column 4	Row 2 column 5
Row 3 column 1	Row 3 column 2	15973	Row 3 column 4	Row 3 column 5
Row 4 column 1	Row 4 column 2	97531	Row 4 column 4	Row 4 column 5
Row 5 column 1	Row 5 column 2	987654321	Row 5 column 4	Row 5 column 5

New, ZOWE day, agenda

- What do I want to show you?
- Problems we had...
- Success!
- Q & A

New, ZOWE day, agenda

- What do I want to show you?
- Problems we had...
- Success!
- Q & A

Q & A

Any questions about what we have just seen and done?



Please fill out your session evaluation
before leaving!

Roy Boxwell
Software Engineering GmbH
r.boxwell@seg.de

Session code: G09



IDUG

Leading the Db2 User
Community since 1988