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FileMaker and OData - A replacement for ODBC?

About me

My family

My home

Côteau-Station, Québec, Canada

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The global pandemic effect

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Direct Impact Solutions

- Technical lead
- Started with FileMaker 3/6
- More than 18 years working with the platform

Direct Impact Solutions

- Founded in Laval, Quebec in 1996.
- Offices in Quebec, Ontario, United-States and France.
- #1 Platinum Claris partner in Canada, top 5 world-wide
- 40+ employees including 26 FileMaker Certified Developers

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Why this presentation on OData?

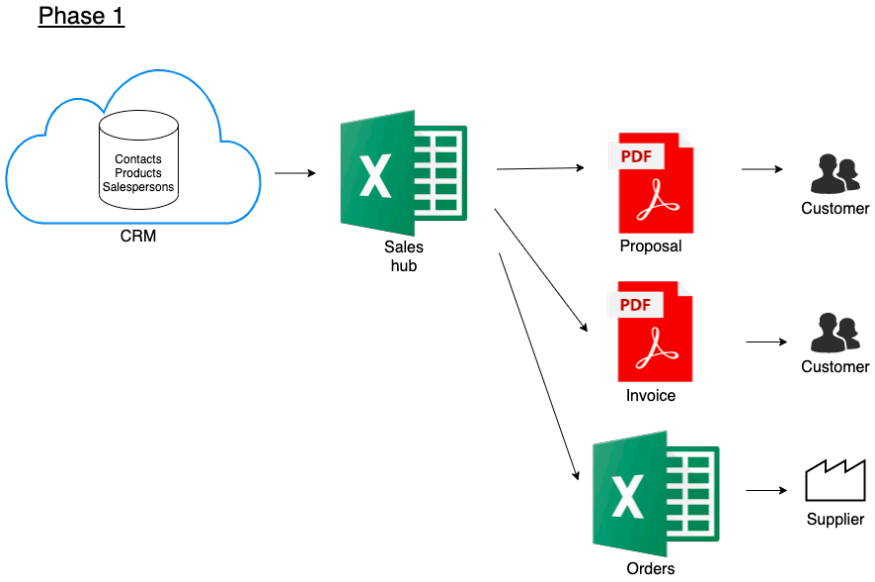
- The potential of OData sharing
- My exploration adventure in the OData world
- But still not an expert at OData ;)

Part 1

The context

The context

- A simple CRM to hold contacts, salespersons, products, etc.
- Integrate the CRM in their actual workflow



The constrains

- Hosted in the cloud, FileMaker Cloud
- 5 office staff, on Windows. Variable number of salesperson, all working remotely
- Continue using an Excel file as a “hub” for other documents (proposal, invoice, order)
- Office365
- Limited budget, as always…

The high level solution

- Hosted in the cloud, FileMaker Cloud
- 5 FileMaker users
- Variable external users
- Excel file/hub on Office365 OneDrive/Sharepoint
- How data would go from FileMaker to Excel is to be defined

Part 2

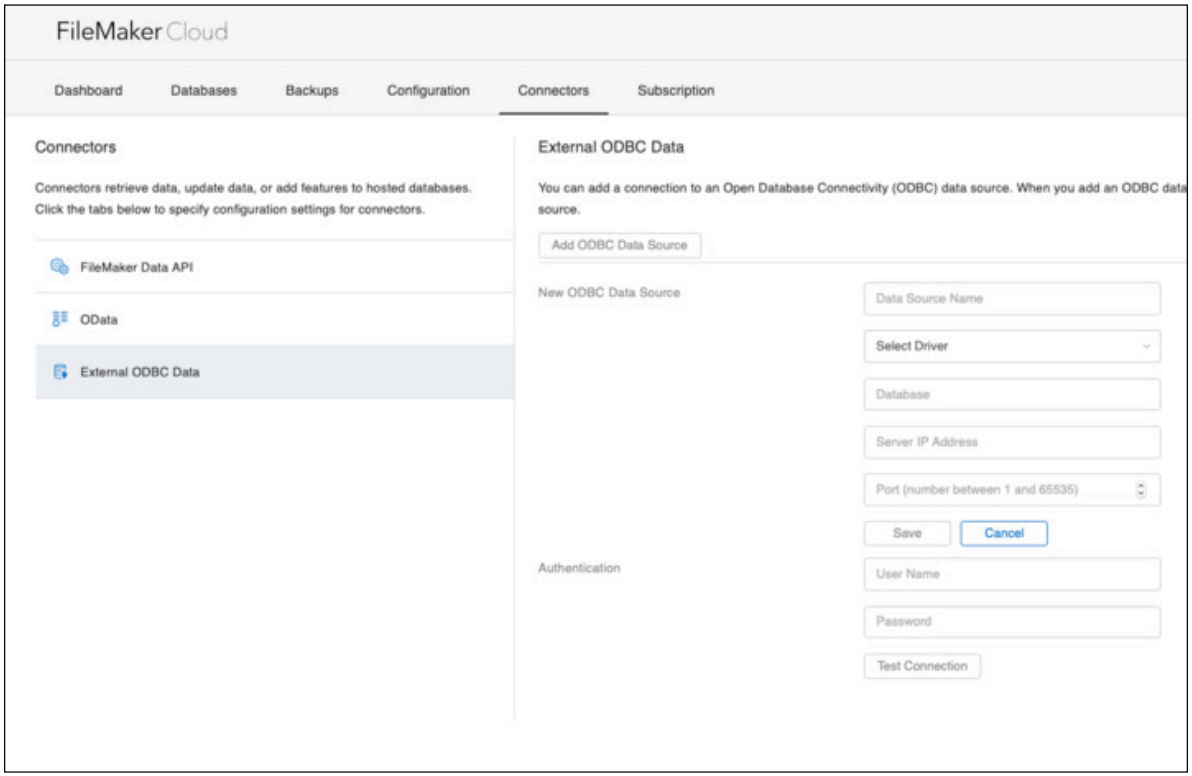
Where do I begin?

Where do I begin?

- List simple solutions:
  - ODBC sharing
  - OData sharing
  - ESS with MySQL

1st solution: ODBC

- Can FM Cloud support ODBC sharing?



1st solution: ODBC

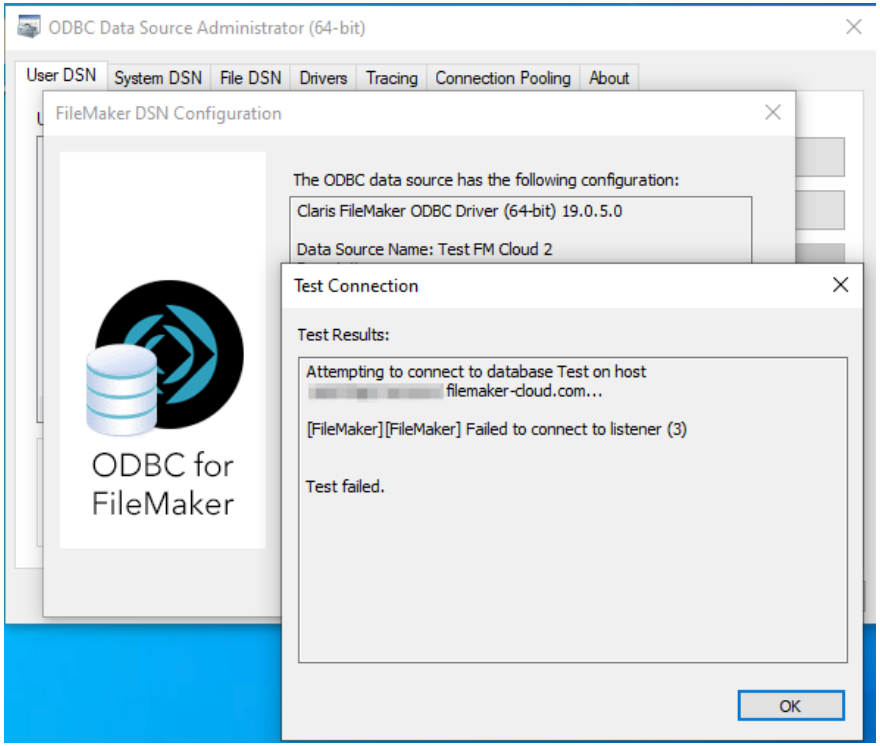
- Can FM Cloud support ODBC sharing?

FileMaker Cloud uses the following ports.

Number	Used by	Protocol/Purpose
80	FileMaker Cloud web server, Admin Console users, client users	HTTP
443	FileMaker Cloud web server, client users	HTTPS
5003	FileMaker Pro Advanced, FileMaker Go client users	Hosting databases
16000	Admin Console users	HTTPS

1st solution: ODBC

- Can FM Cloud support ODBC sharing unofficially?



1st solution: ODBC

- I killed my “happy solution”
- ODBC will not work

DISCLAIMER
Nobody was killed during this process!
“Happy solution” is not a person.

Part 3

What is OData?

What is OData?

- “OData (Open Data Protocol) is a […] standard that defines a set of best practices for building and consuming RESTful APIs.”
  - https://www.odata.org/

- Use a standard structure and methods to represent and work with data consumed or produced by OData applications.

OData for FileMaker

- Similar to Data API
  - http request/response
  - JSON format
  - Read, modify, delete FileMaker data
  - Execute script

OData for FileMaker

- Odata can do a little bit more
  - Payload in JSON or XML Atom
  - Update database schema
  - Does not require layout -> use TOC for the context
  - Can receive multiple requests in 1 call

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OData for FileMaker

- Available on FM Cloud 2 and FileMaker for Linux
- Not available on Windows
- Could replace ODBC sharing

Request example

- To get the list of all tables in a file

Https://dis.filemaker-cloud.com/fmi/odata/v4/Test_OData

Host name

Call the OData API

File name

Other examples

- To get all records from a table

https://dis.filemaker-cloud.com/fmi/odata/v4/Test_OData/Contacts

Host name | Call the OData API | File name | Table name

- Append function keywords like $filter and $orderby

[...]/fmi/odata/v4/Test_OData/Contacts?$filter=city%20eq%20'Laval'

Response example


```
{
    "@odata.context": "https://xyz.directimpacthosting.com/fmi/odata/v4/Test_OData/$metadata#Contacts",
    "value": [
        {
            "@odata.id": "https://xyz.directimpacthosting.com/fmi/odata/v4/Test_OData/Contacts('73895F3B-237F-48E0-BA50-BD2A618CD95F')",
            "@odata.editLink": "https://xyz.directimpacthosting.com/fmi/odata/v4/Test_OData/Contacts('73895F3B-237F-48E0-BA50-BD2A618CD95F')",
            "First Name": "François",
            "Last Name": "Dubé",
            "Title": "Mr.",
            "Company": "Direct Impact Solutions",
            "Job Title": "Technical lead",
            "Website": "https://www.directimpactsolutions.com/",
            "Initial": "D",
            "PrimaryKey": "73895F3B-237F-48E0-BA50-BD2A618CD95F",
            "CreatedBy": "idi",
            "ModifiedBy": "idi",
            "CreationTimestamp": "2021-04-16T11:05:14Z",
            "ModificationTimestamp": "2021-06-02T09:26:39Z",
            "Address Line 2": null,
            "Address Line 1": "1650 Place de Lierre",
            "City": "Laval",
            "State": "Québec",
            "Postal Code": null,
            "Country": "Canada"
        },
        { ⋯ },
        { ⋯ }
    ]
}
```

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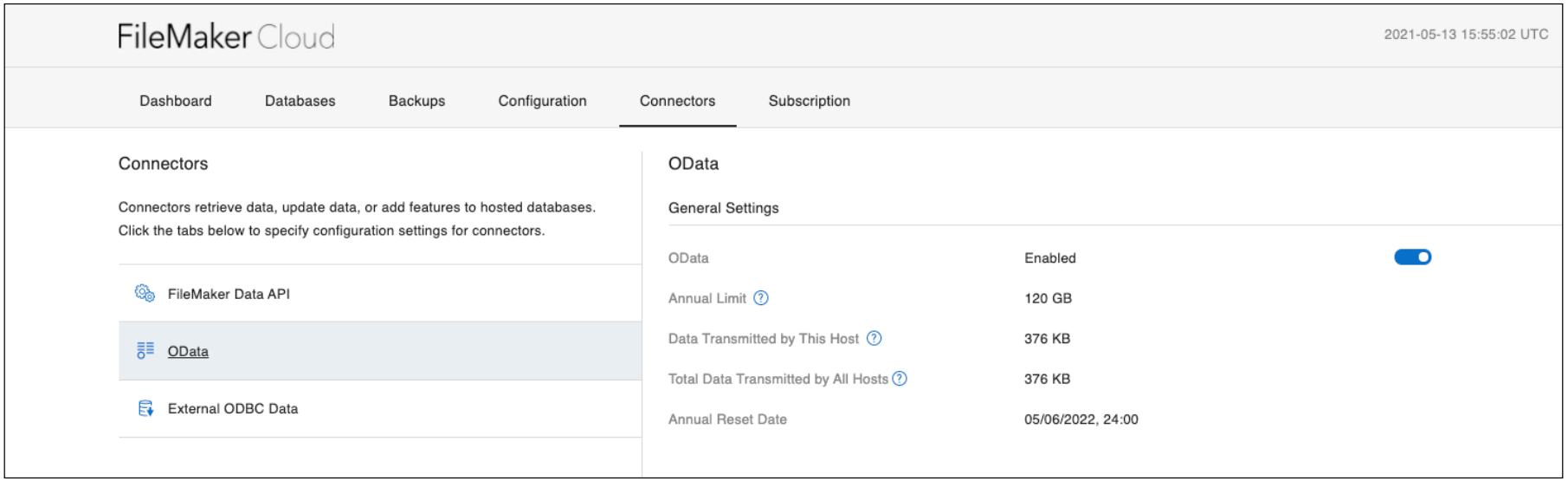
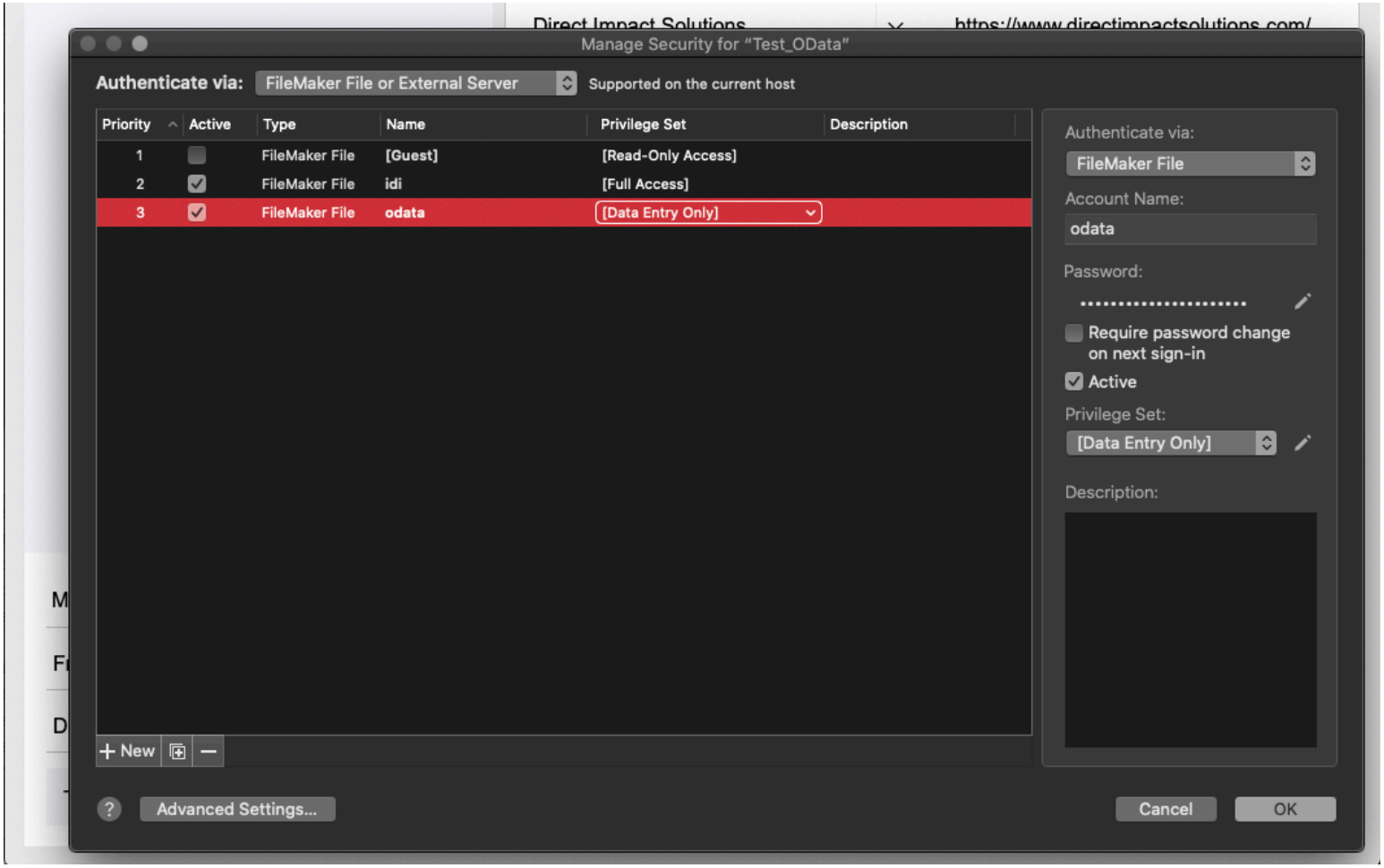
OData for FileMaker



OData for FileMaker



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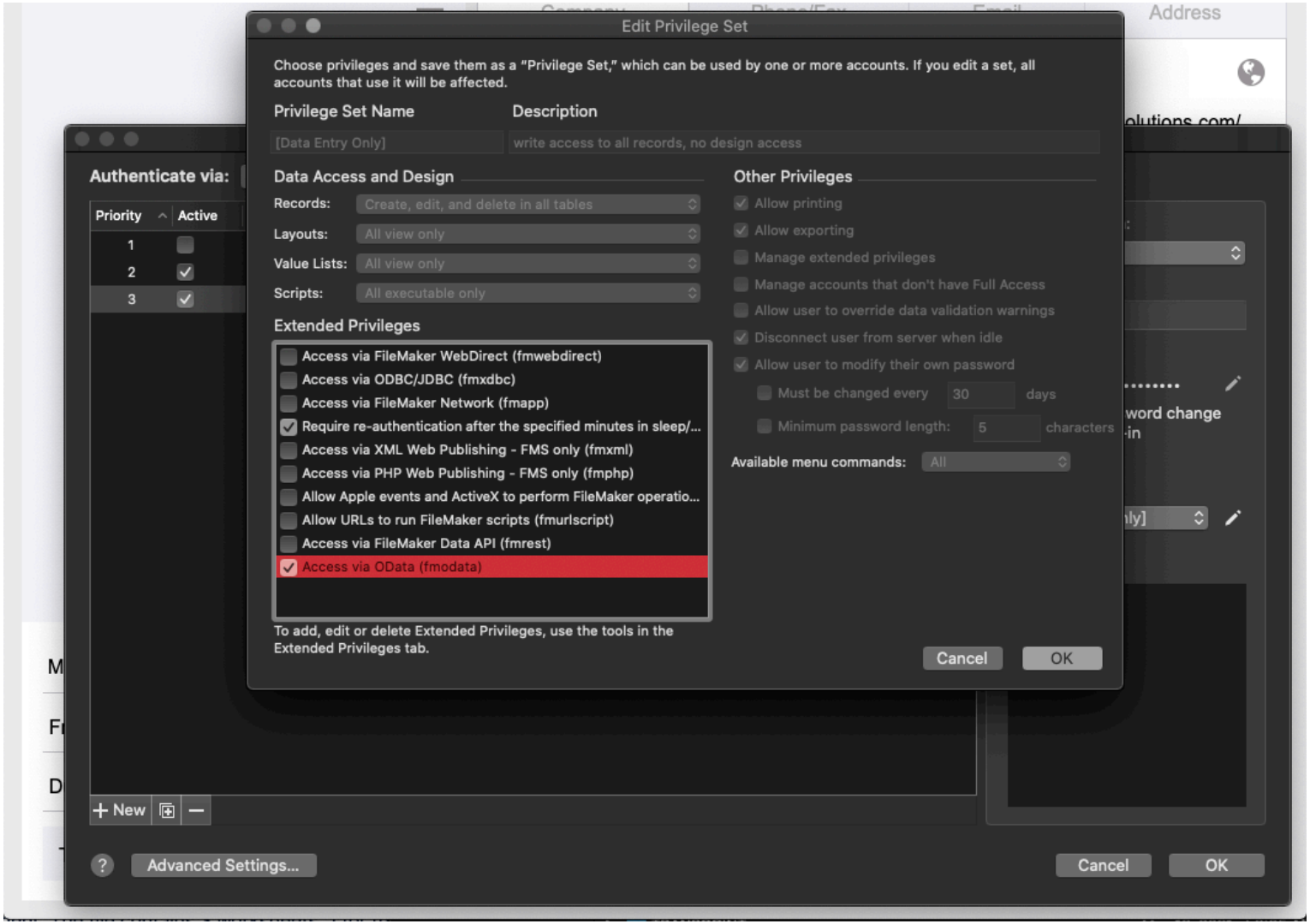
OData for FileMaker



Part 4

The ODBC replacement

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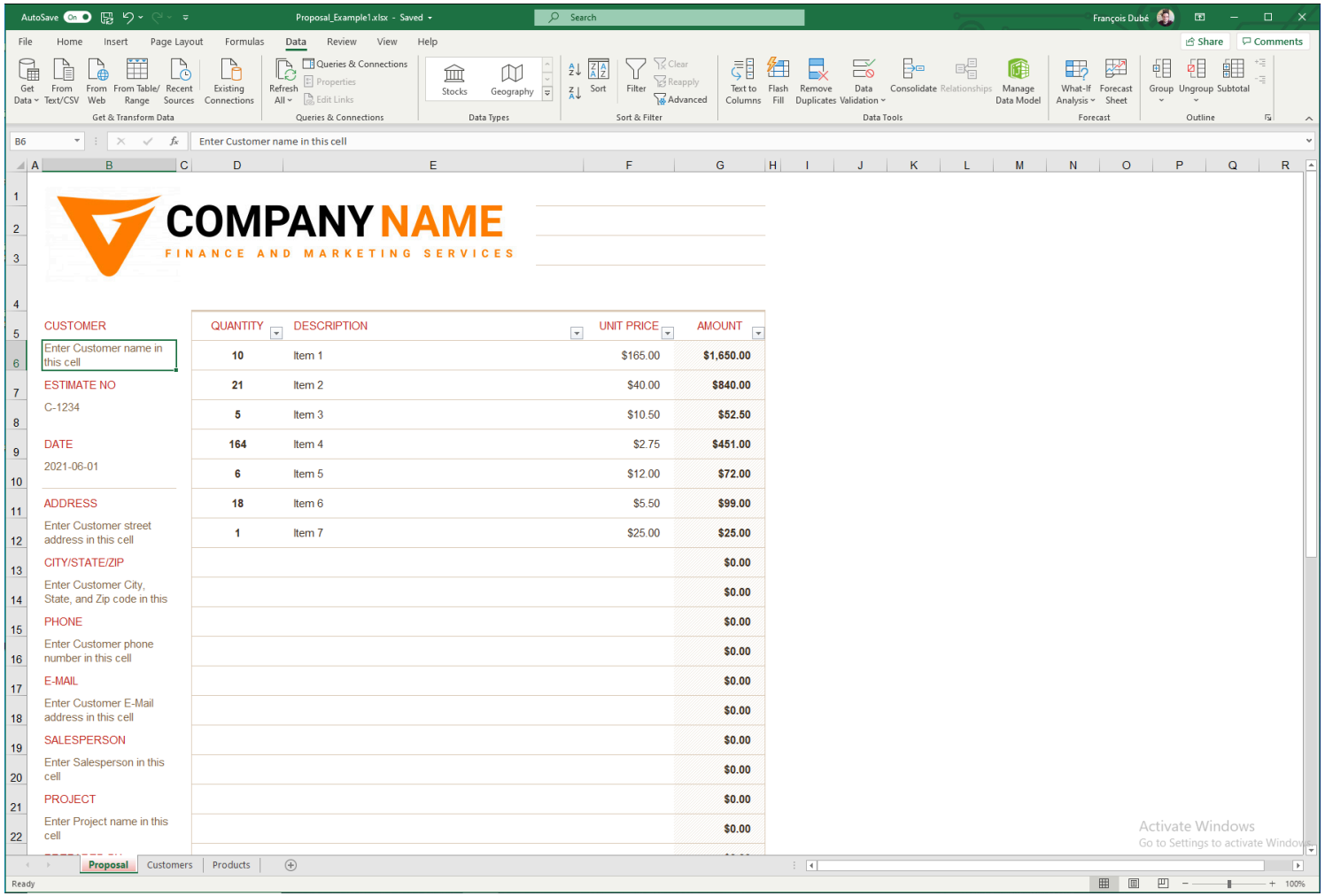
The ODBC replacement



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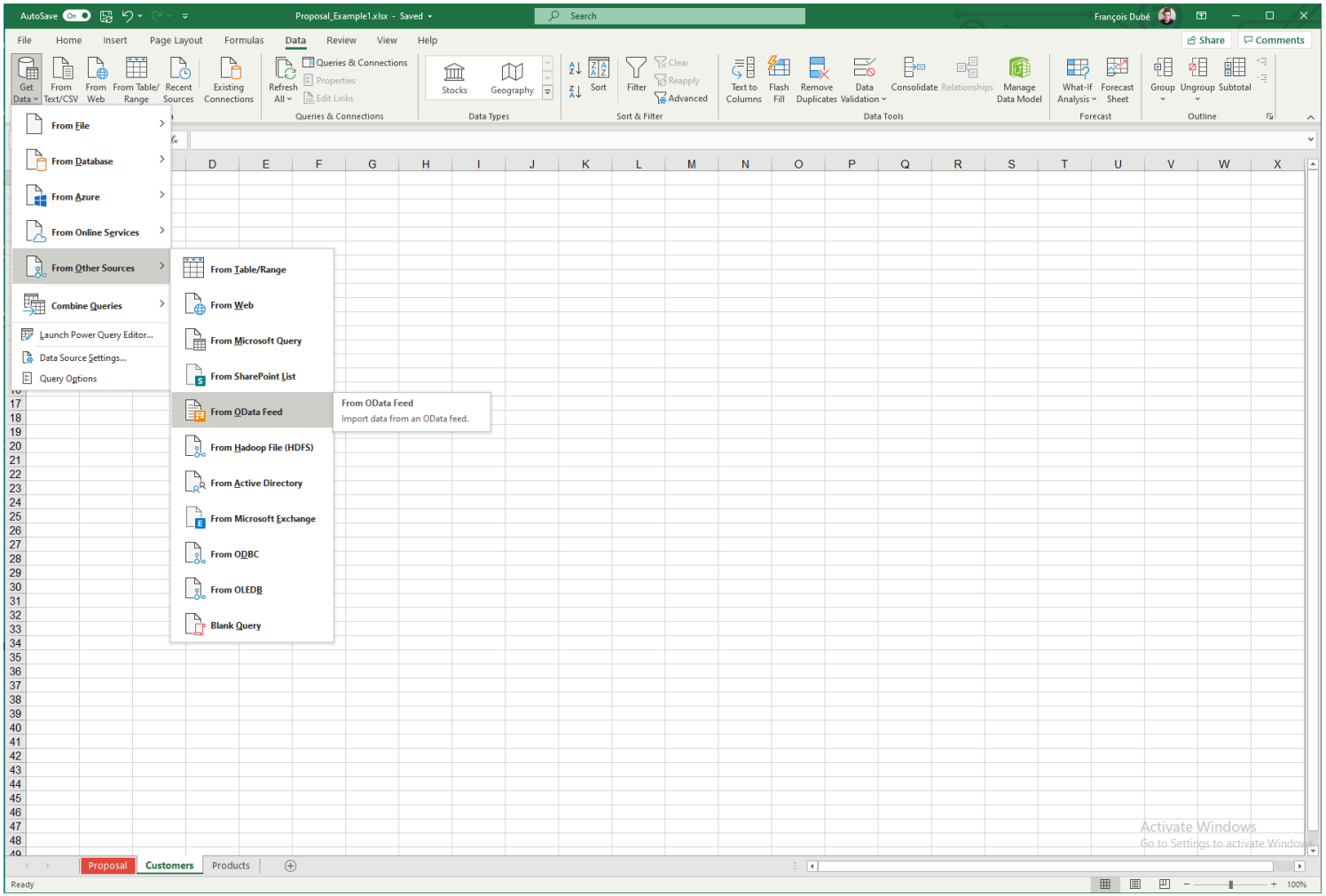
The ODBC replacement



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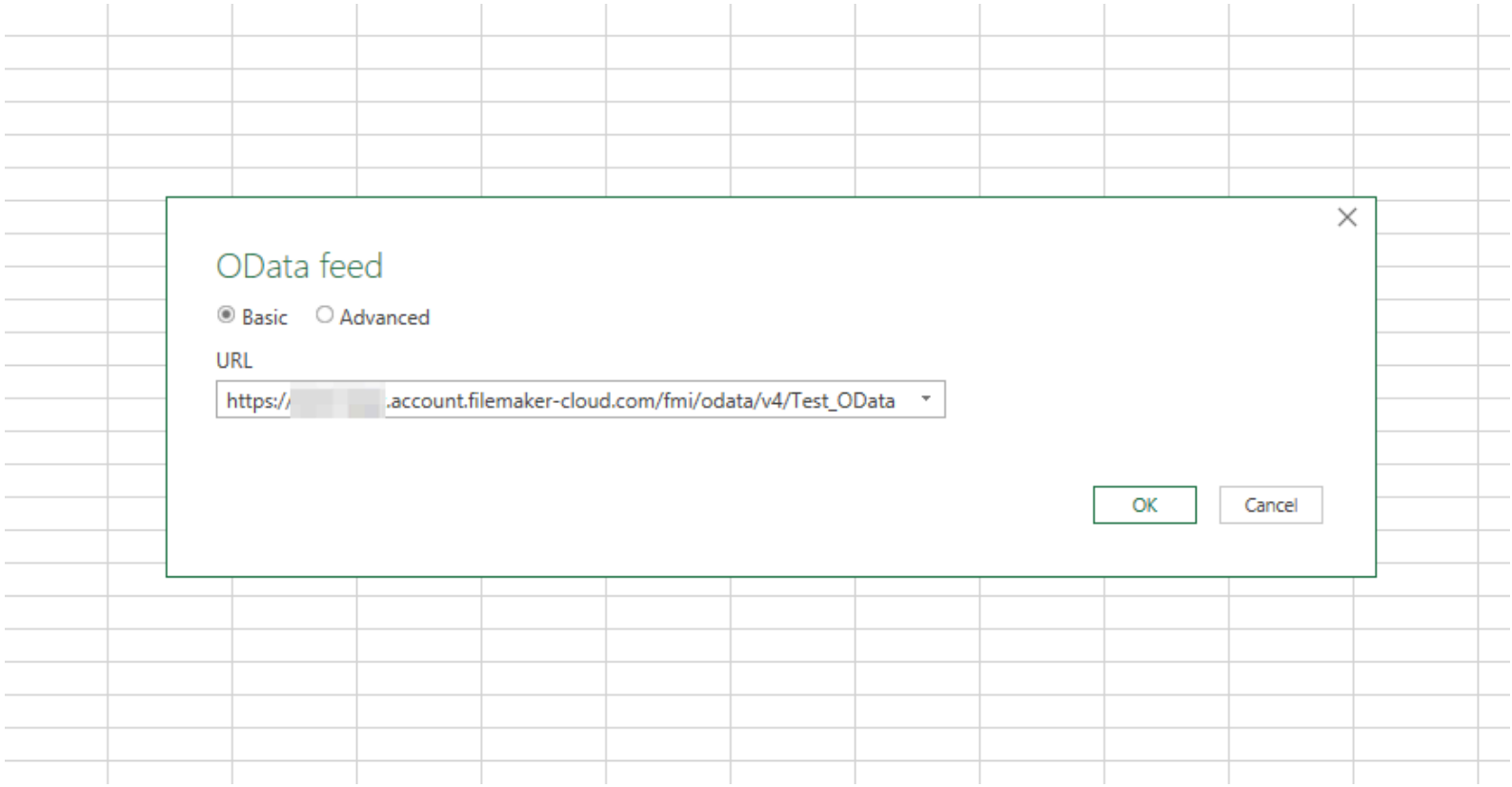
The ODBC replacement



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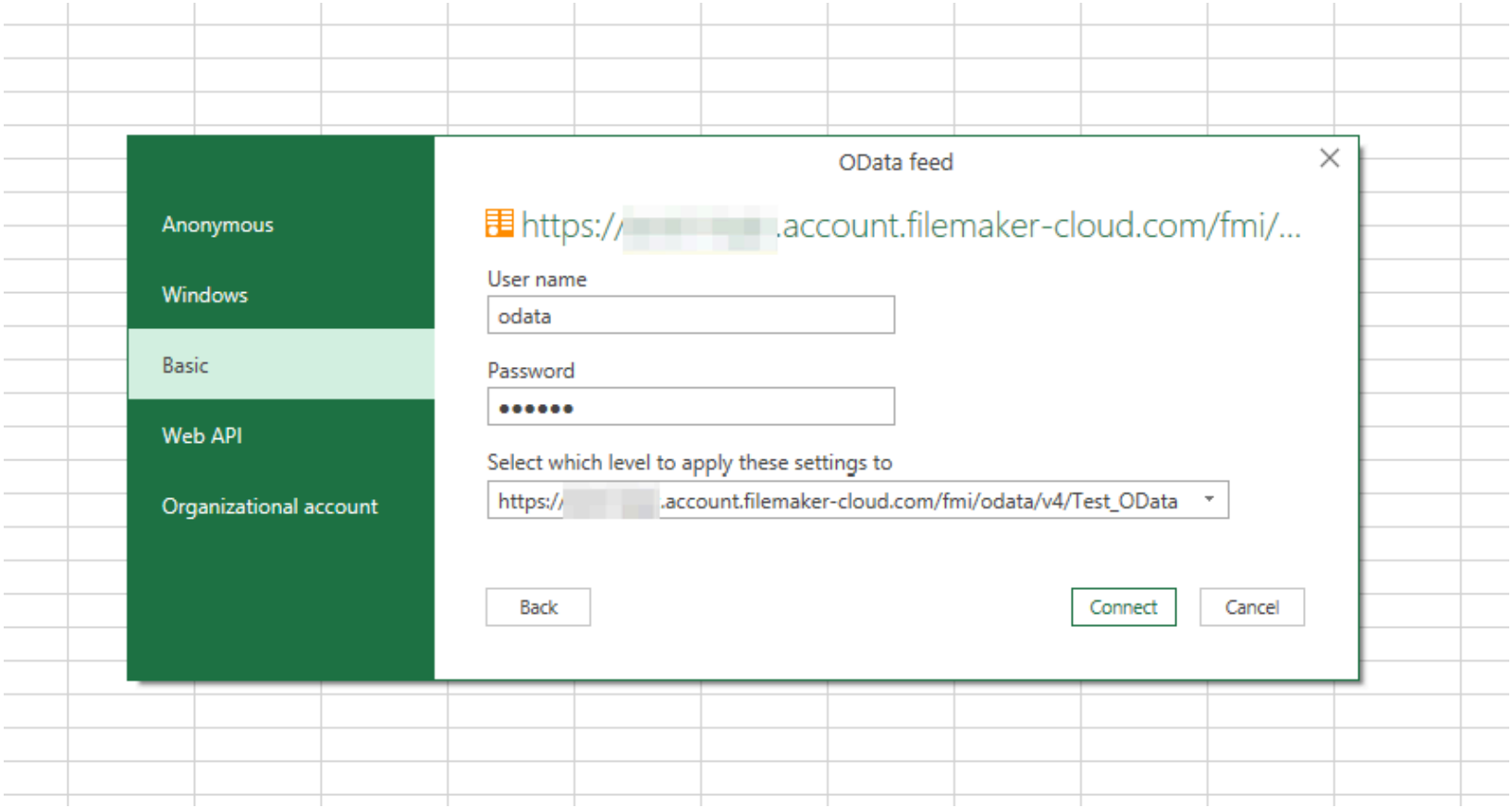

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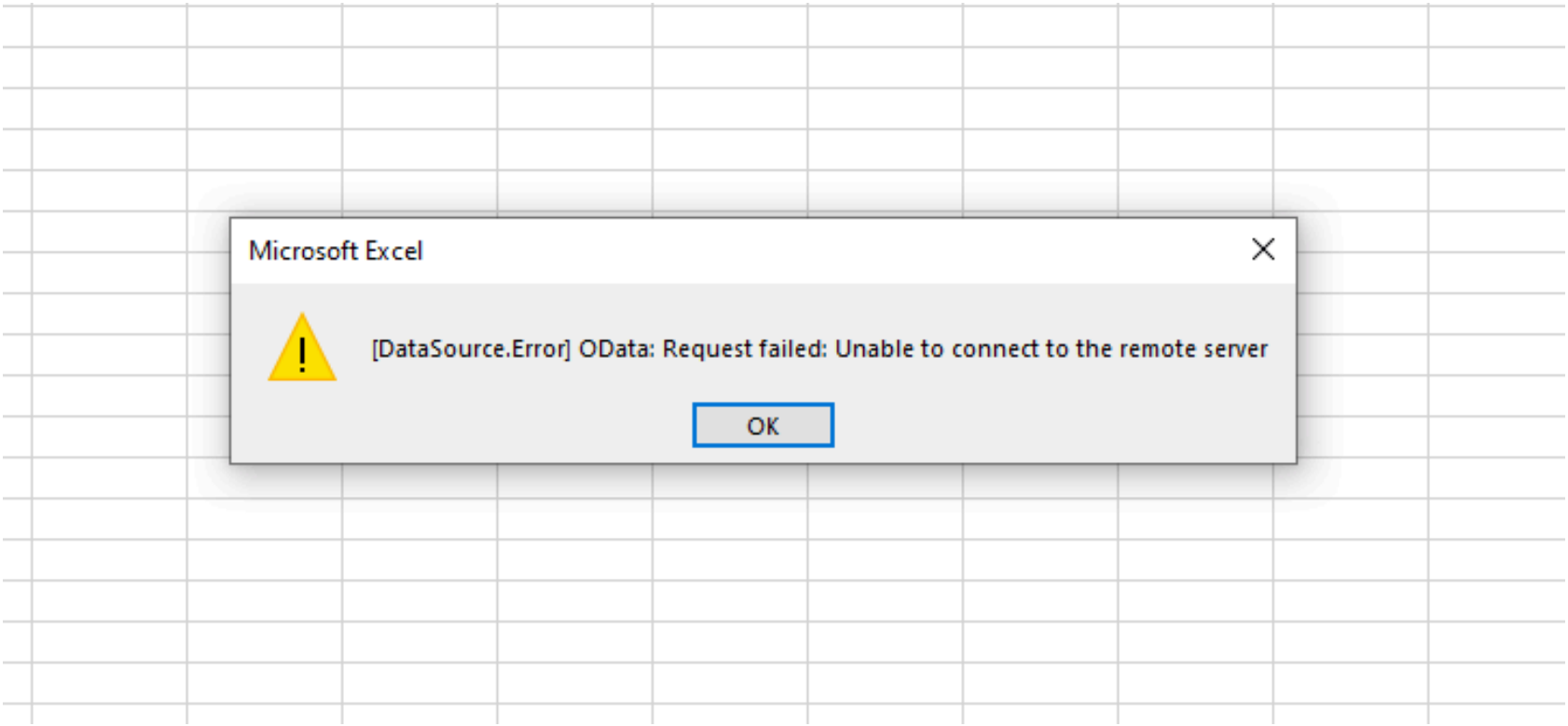
The ODBC replacement



OData and FMCloud

- FM Cloud doesn’t use basic auth to authenticate to OData API
- You need your Claris ID, but that’s only the 1st requirement
- 2nd step is to get a token through Amazon Cognito
- The token is only valid for 1 hour
- FileMaker Server for Linux use basic auth with regular user accounts

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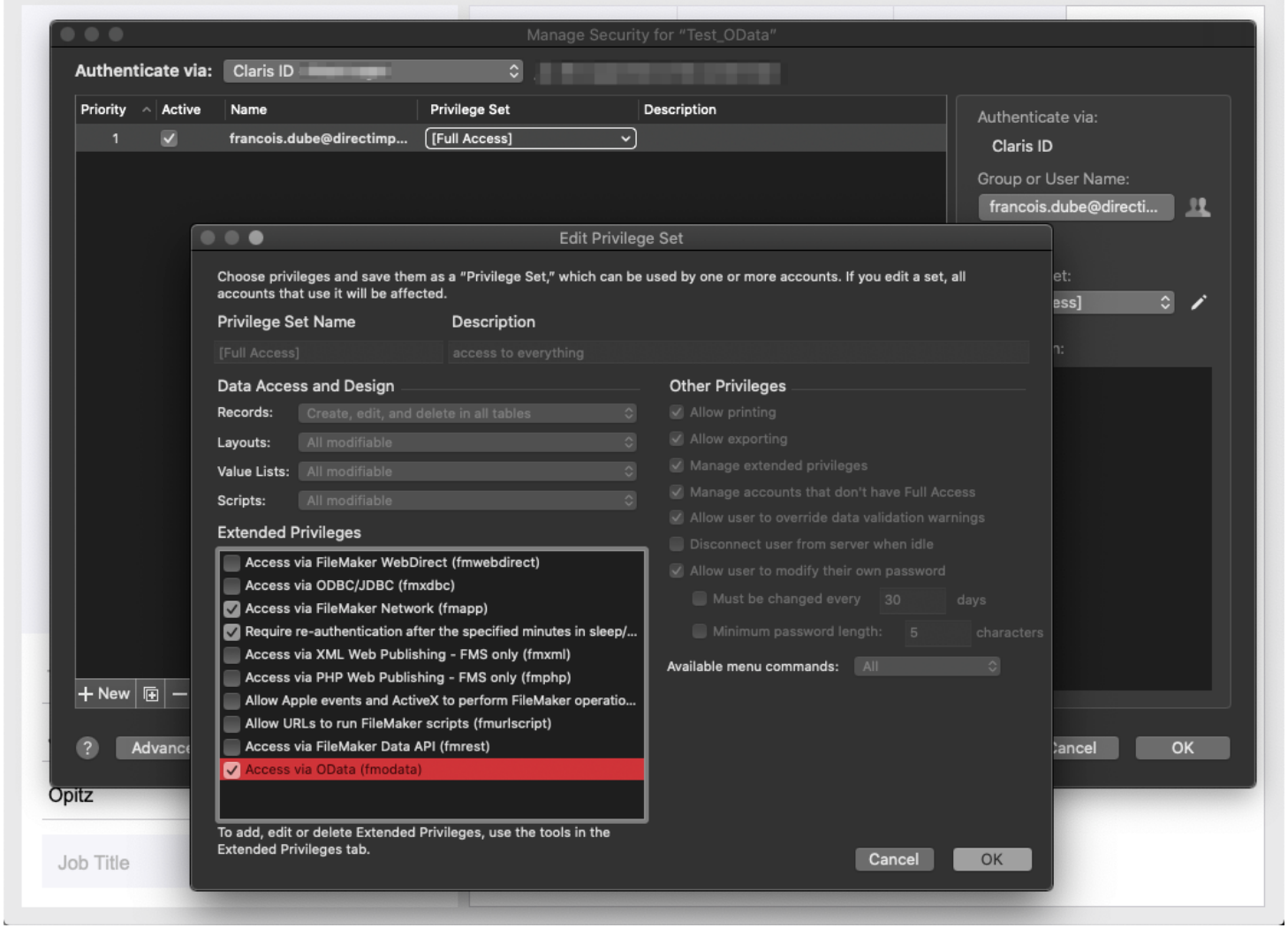
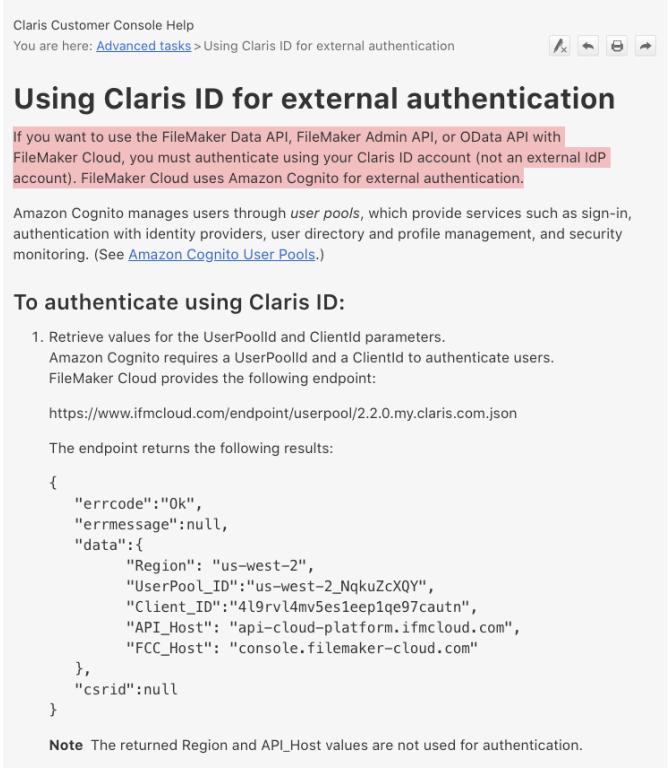
OData and FM Cloud



OData and FM Cloud

- https://help.claris.com/en/customer-console-help/content/create-fmid-token.html



Claris Customer Console Help

You are here: Advanced tasks > Using Claris ID for external authentication

Using Claris ID for external authentication

If you want to use the FileMaker Data API, FileMaker Admin API, or OData API with FileMaker Cloud, you must authenticate using your Claris ID account (not an external IdP account). FileMaker Cloud uses Amazon Cognito for external authentication.

Amazon Cognito manages users through *user pools*, which provide services such as sign-in, authentication with identity providers, user directory and profile management, and security monitoring. (See Amazon Cognito User Pools.)

To authenticate using Claris ID:

1. Retrieve values for the UserPoolId and ClientId parameters.
   Amazon Cognito requires a UserPoolId and a ClientId to authenticate users. FileMaker Cloud provides the following endpoint:

   https://www.ifmcloud.com/endpoint/userpool/2.2.0.my.claris.com.json

   The endpoint returns the following results:

```
{
   "errcode":"Ok",
   "errmessage":null,
   "data":{
         "Region": "us-west-2",
         "UserPool_ID":"us-west-2_NqkuZcXQY",
         "Client_ID":"4l9rvl4mv5es1eep1qe97cautn",
         "API_Host": "api-cloud-platform.ifmcloud.com",
         "FCC_Host": "console.filemaker-cloud.com"
   },
   "csrid":null
}
```

   Note The returned Region and API_Host values are not used for authentication.

2. Use the Amazon Cognito Identity SDK for JavaScript to authenticate a user through Amazon Cognito. (See Amazon Cognito Identity SDK for JavaScript.) Use the example below in your JavaScript code to retrieve values for the Claris ID token (`Claris_ID_token`) and the Claris ID refresh token (`Claris_ID_refresh_token`). The Claris ID token is used for authentication when you use the FileMaker Data API, FileMaker Admin API, or OData API, and is valid for one hour. The Claris ID refresh token allows scripts to continue running after the Claris ID token expires, and is valid for one year.

Example

In this example:

- the `UserPool_ID` and `Client_ID` values from above are used
- for `username` and `password`, enter the Claris ID user name and password

Example code:

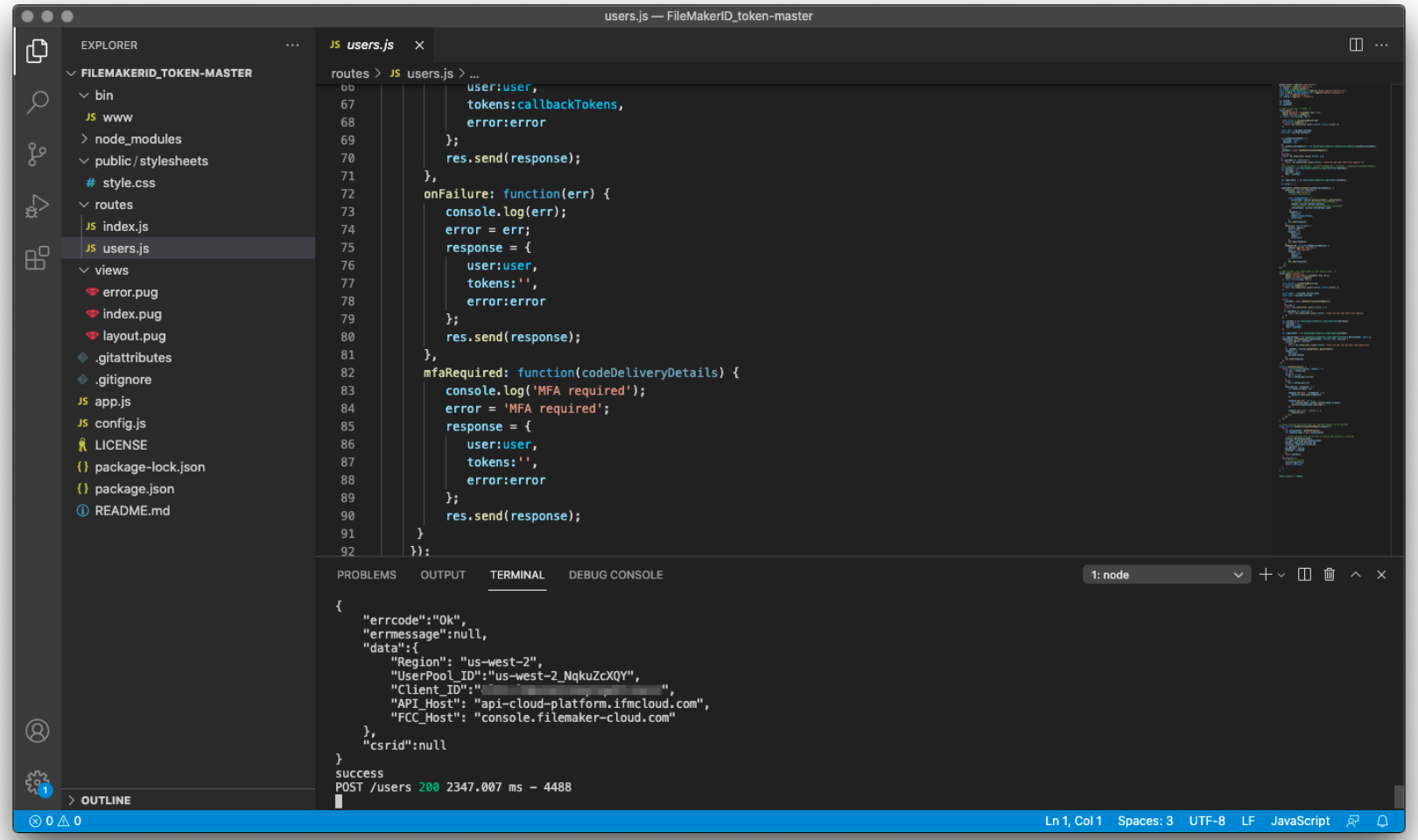
```
var authenticationData = {
      Username : 'username',
      Password : 'password',
   };
var authenticationDetails = new
AmazonCognitoIdentity.AuthenticationDetails(authenticationData);
var poolData = { UserPoolId : 'us-west-2_NqkuZcXQY',
   ClientId : '4l9rvl4mv5es1eep1qe97cautn'
};
var userPool = new AmazonCognitoIdentity.CognitoUserPool(poolData);
var userData = {
   Username : 'username',
   Pool : userPool
};
var cognitoUser = new AmazonCognitoIdentity.CognitoUser(userData);
cognitoUser.authenticateUser(authenticationDetails, {
   onSuccess: function (result) {
      var Cognito_access_token = result.getAccessToken().getJwtToken();
      var Claris_ID_token = result.idToken.jwtToken;
```

OData and FM Cloud

- https://www.soliantconsulting.com/blog/data-api-filemaker-cloud/

> Be prepared: it is a complex multi-step process

OData and FM Cloud



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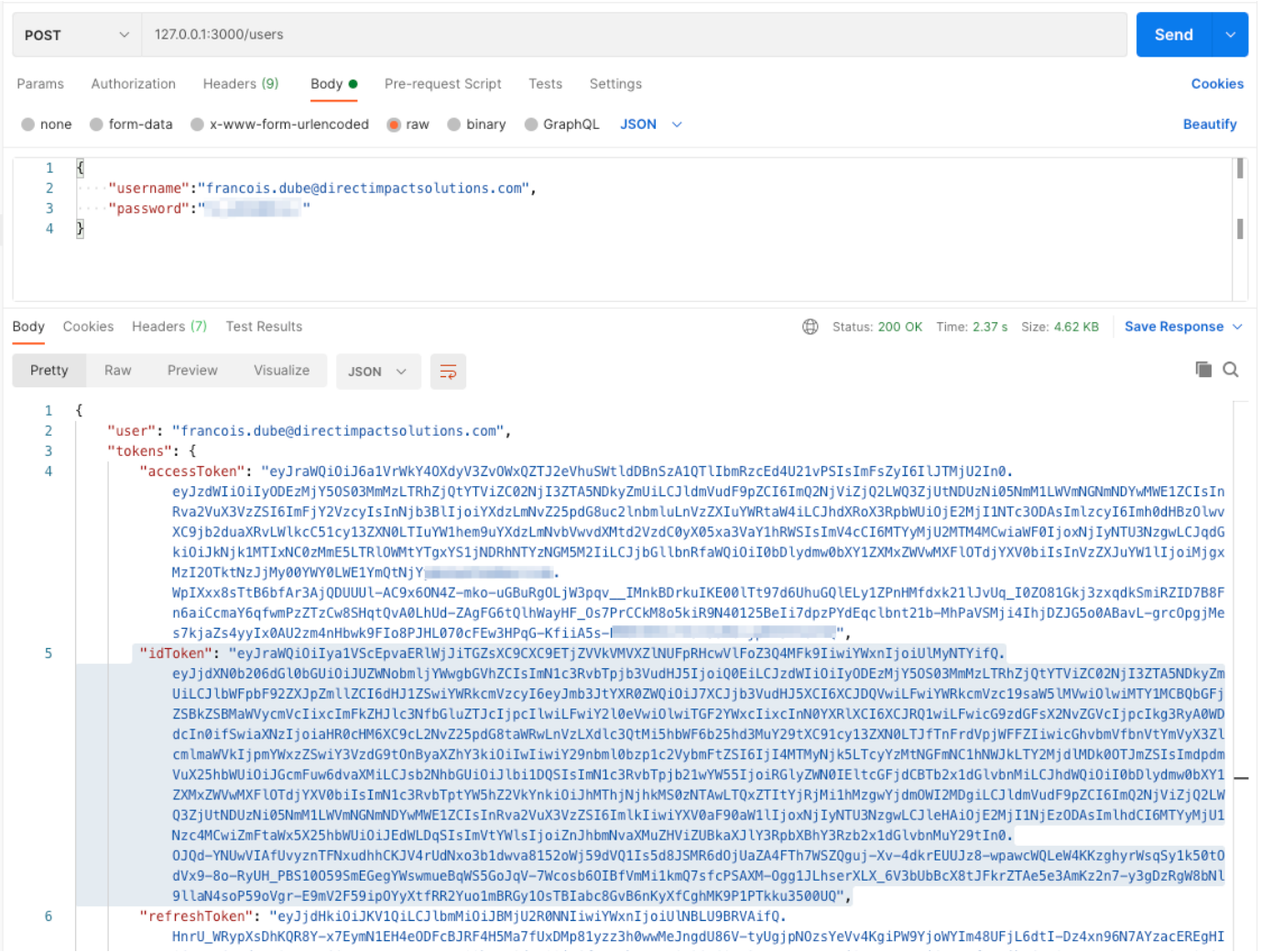
OData and FM Cloud



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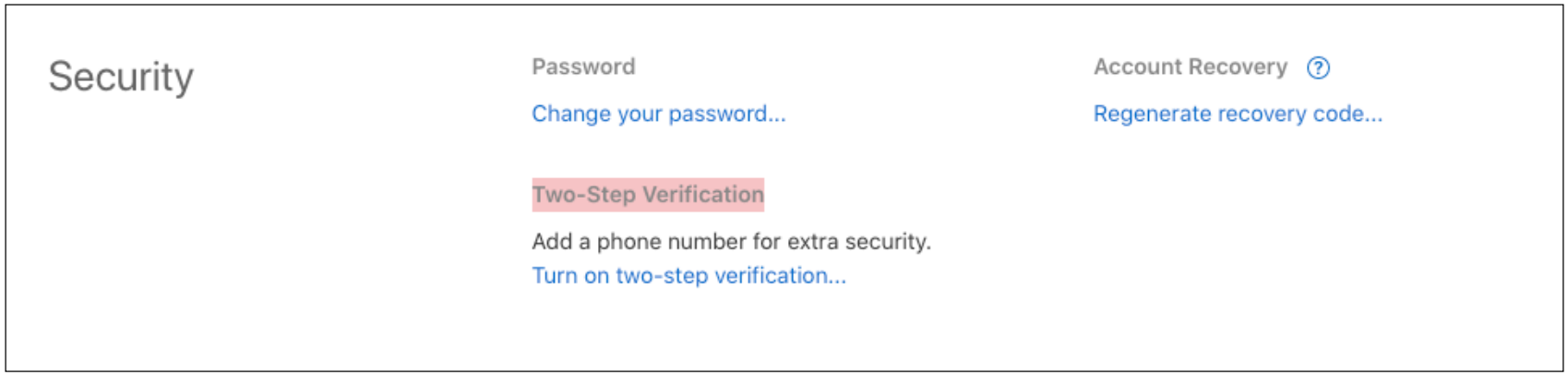

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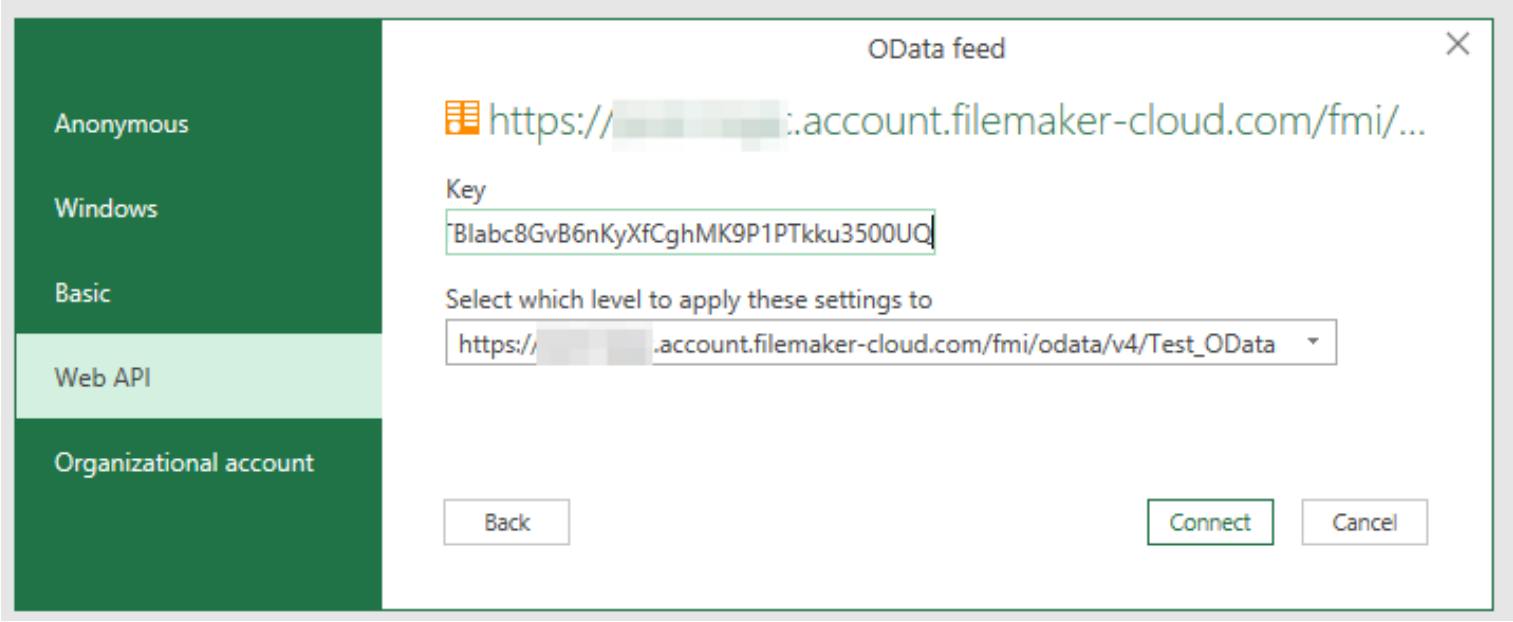

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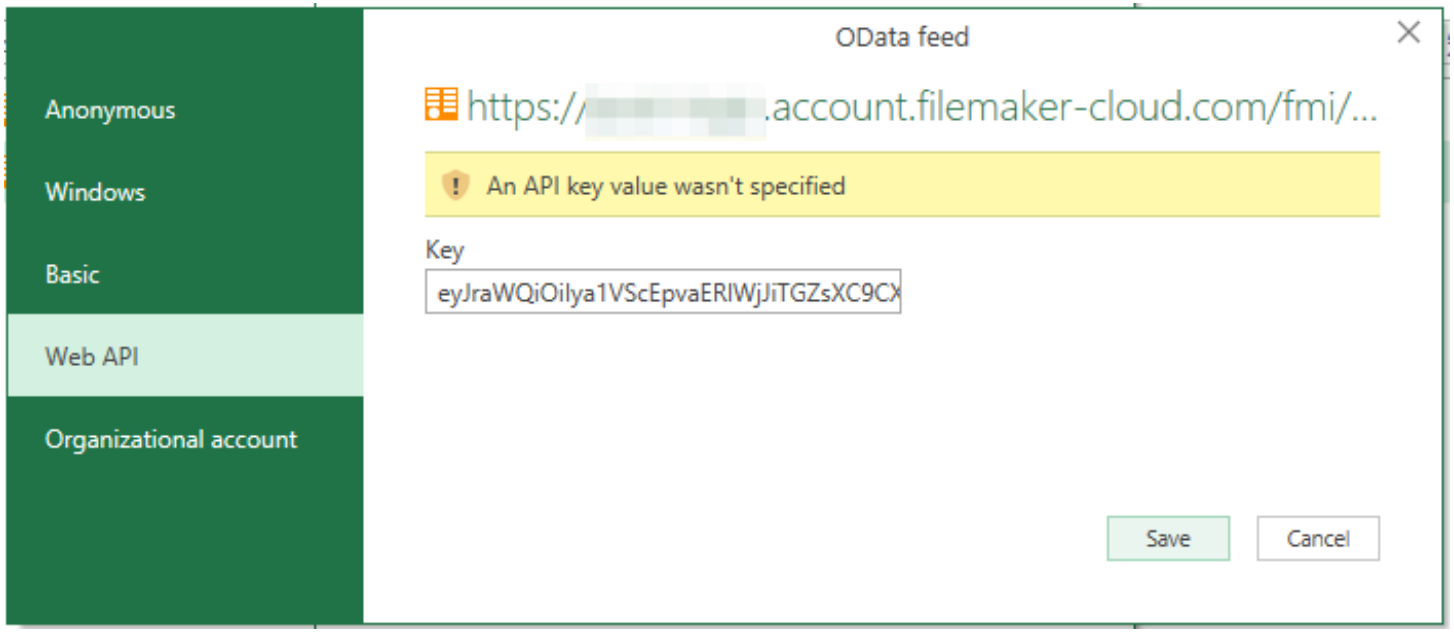

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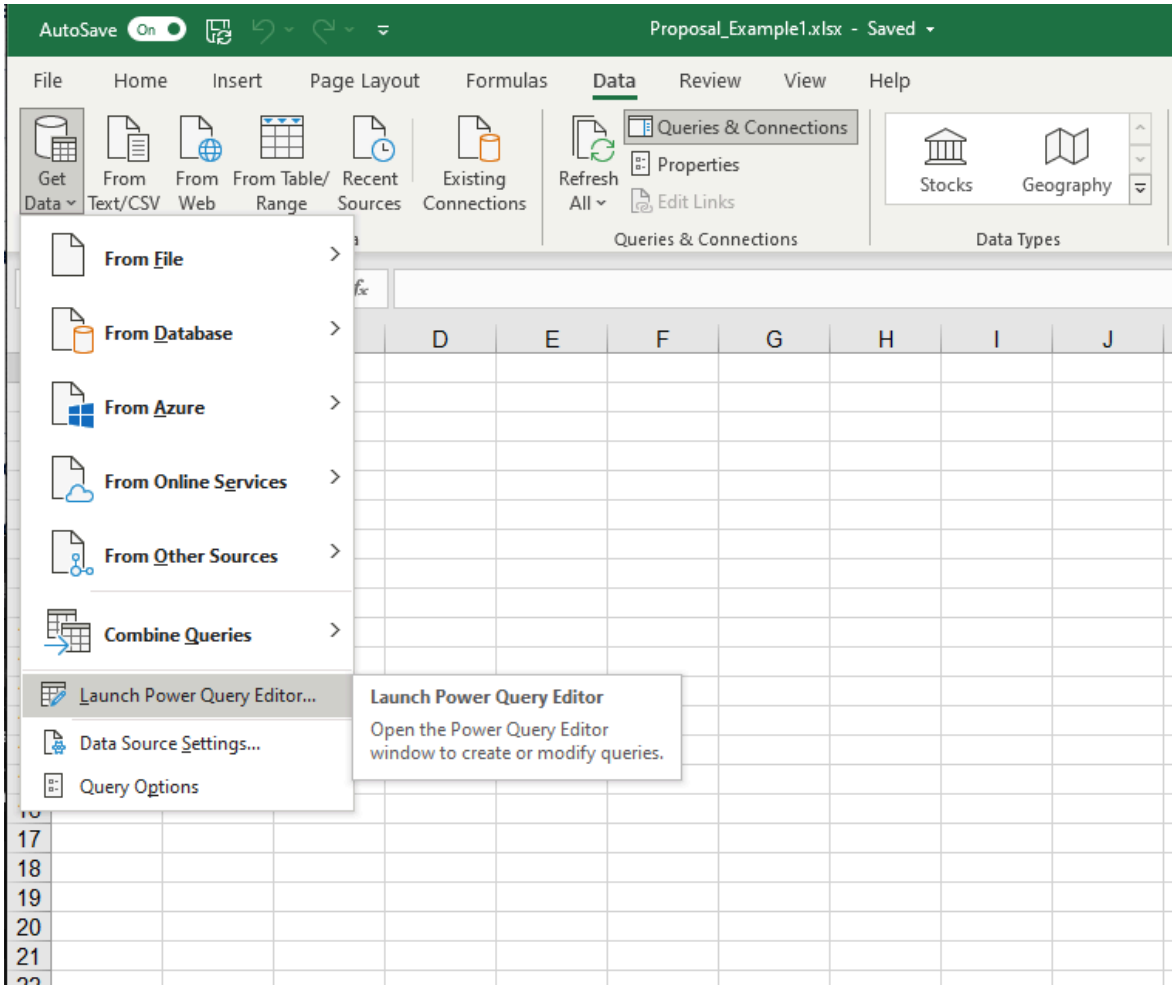

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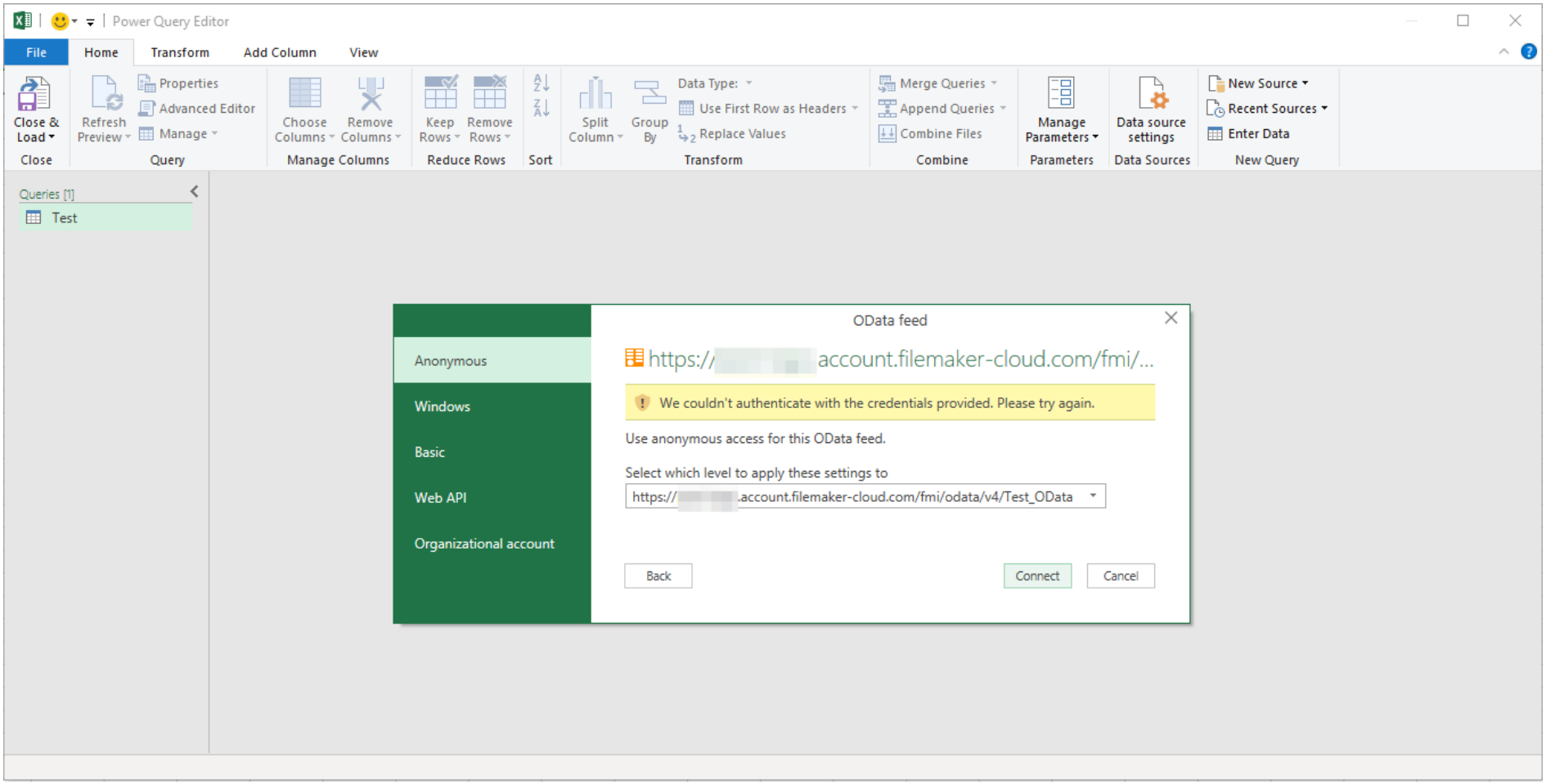

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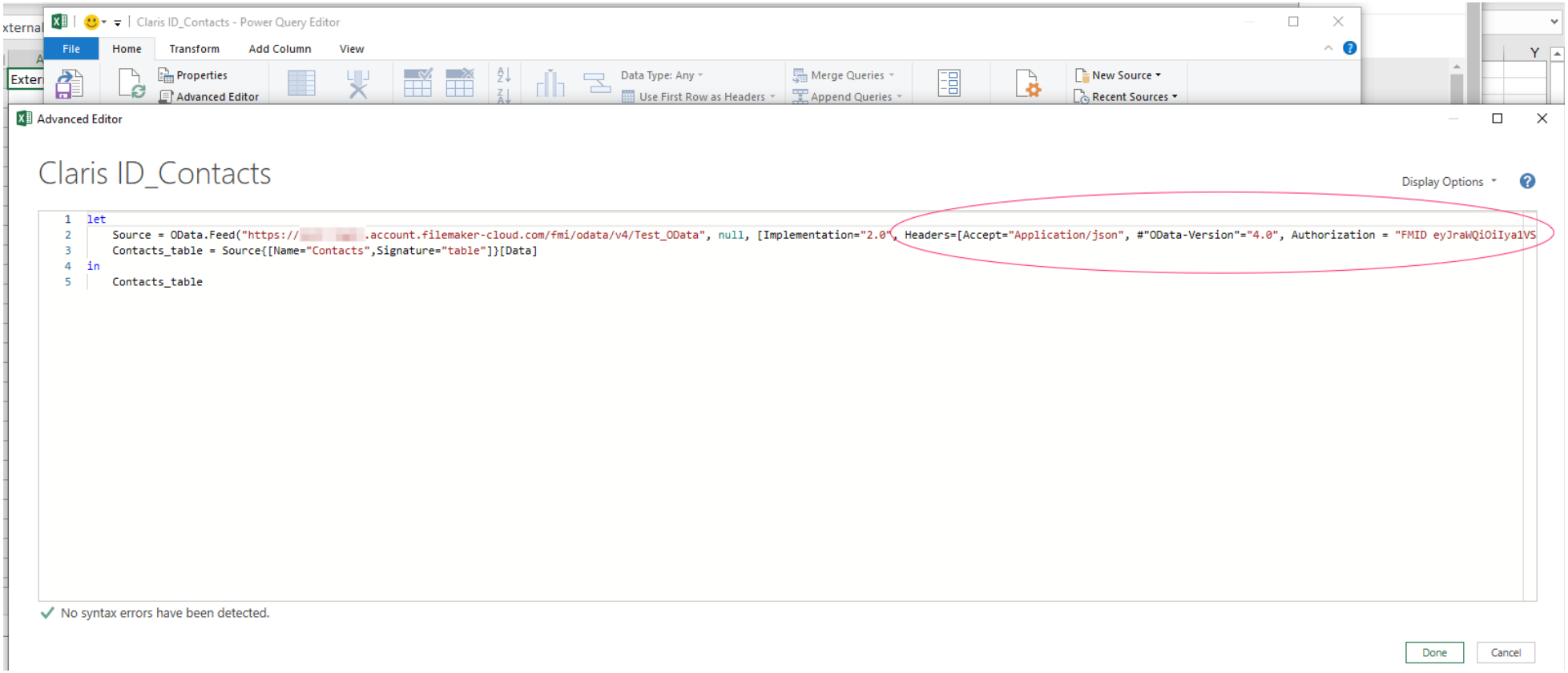

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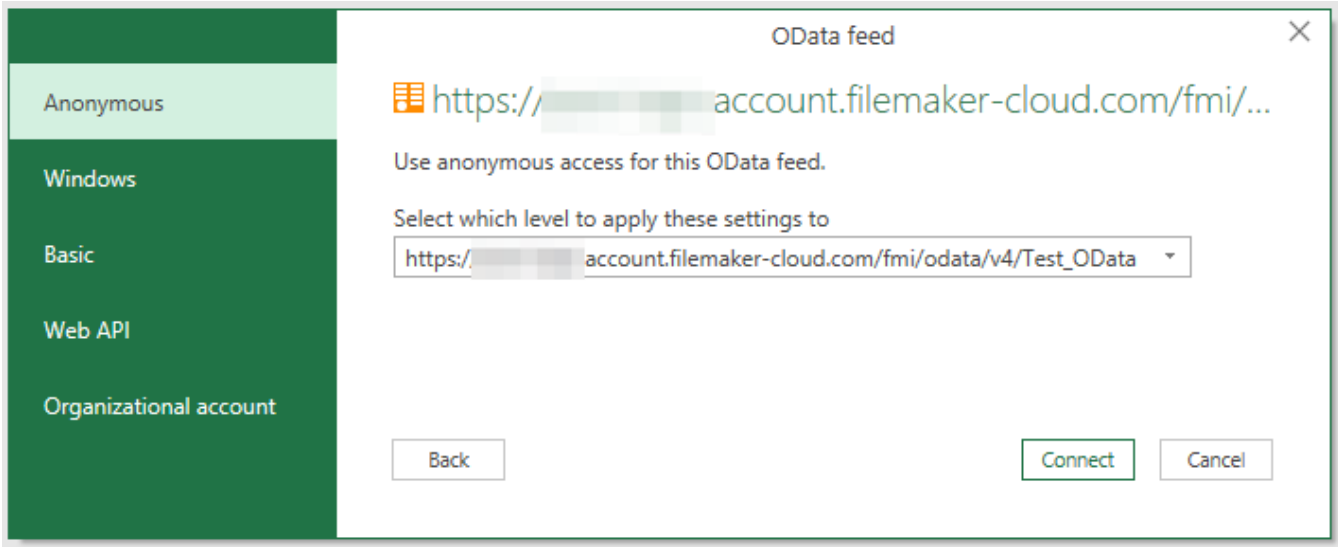

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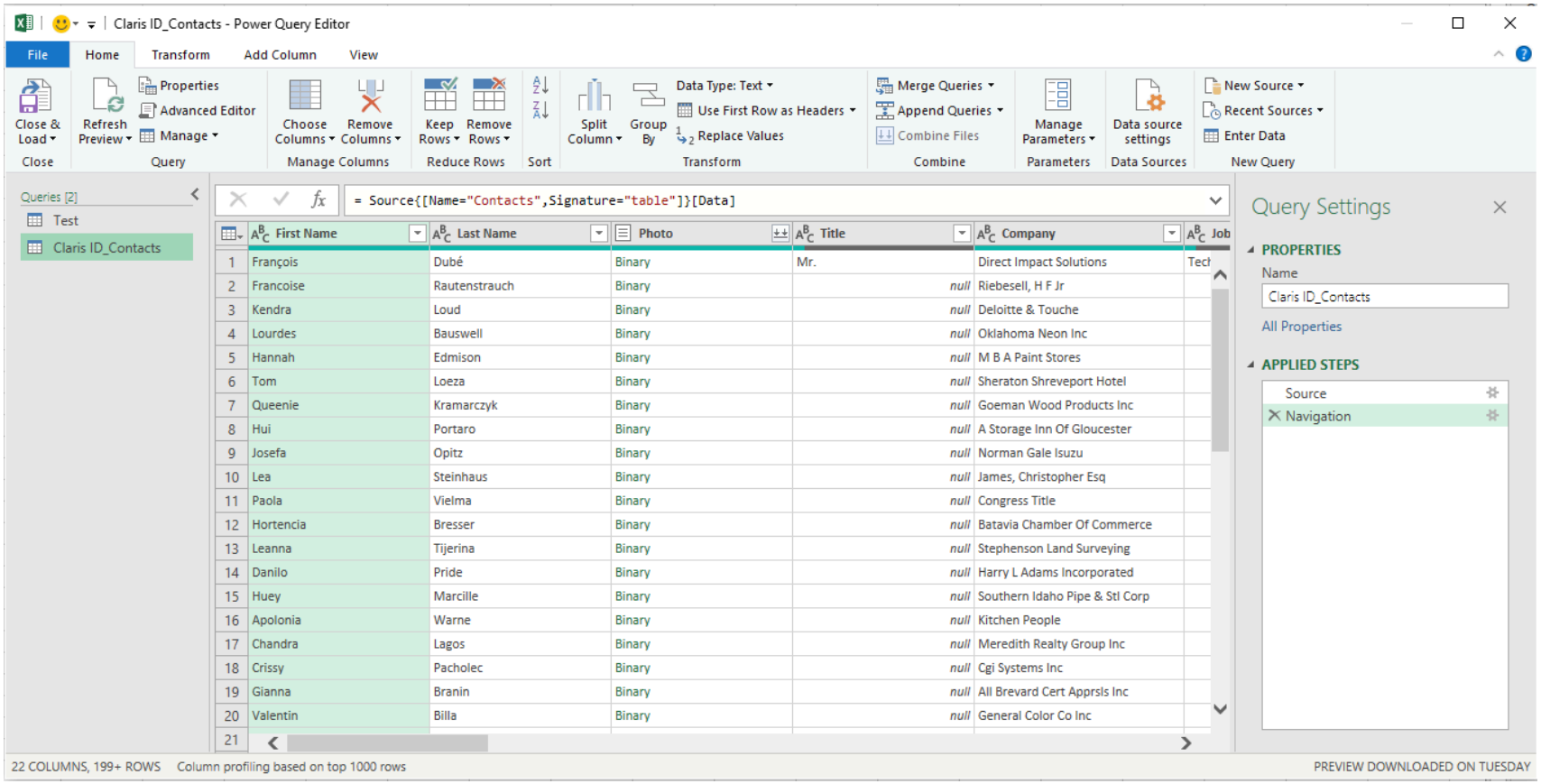
OData and FM Cloud



Part 5

D…. it won’t work…. or it will?

D.... it won't work.... or it will?

- I lost the focus, not a viable solution
  - Not simple to put in place
  - Not simple for the end user
- Don't really like the 3rd solution
- Can FileMaker Server for Linux come to the rescue?

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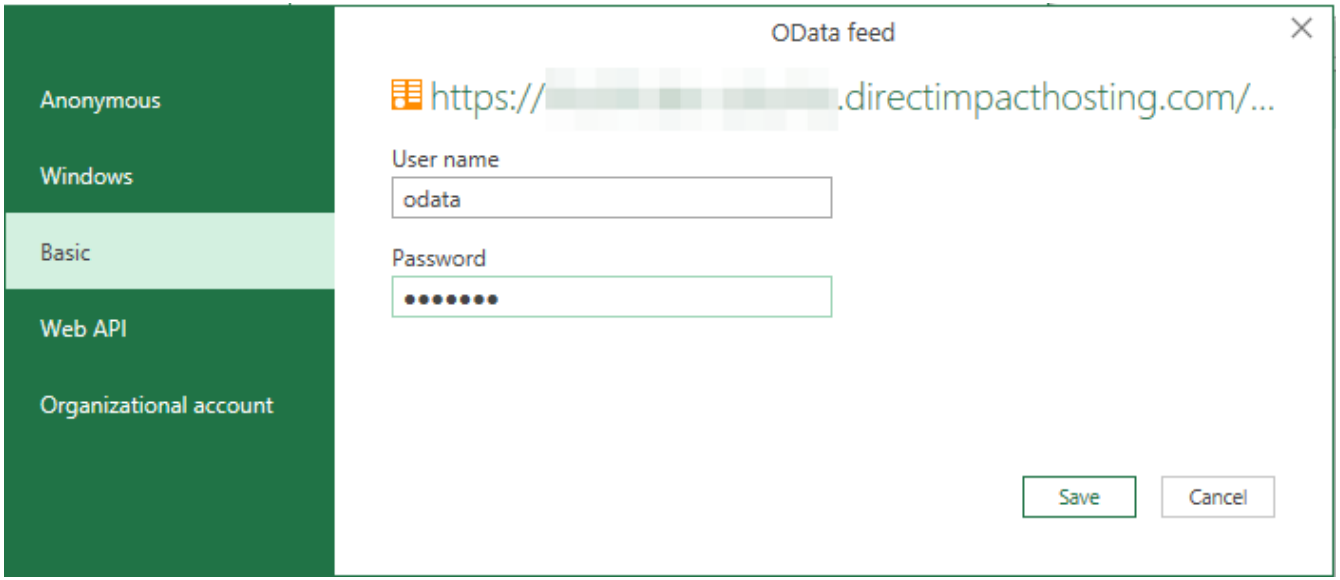
D.... it won't work.... or it will?



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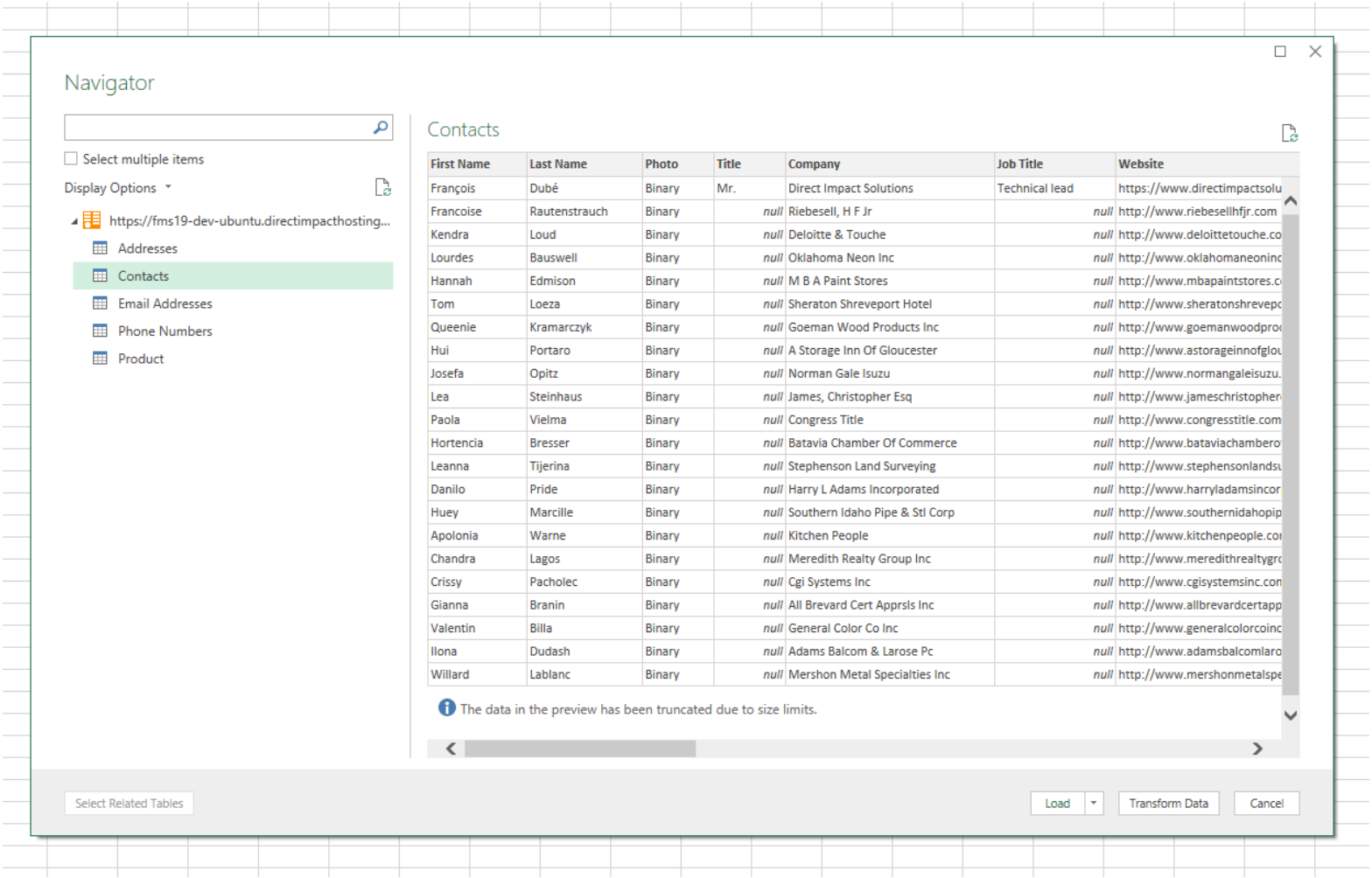
D.... it won't work.... or it will?



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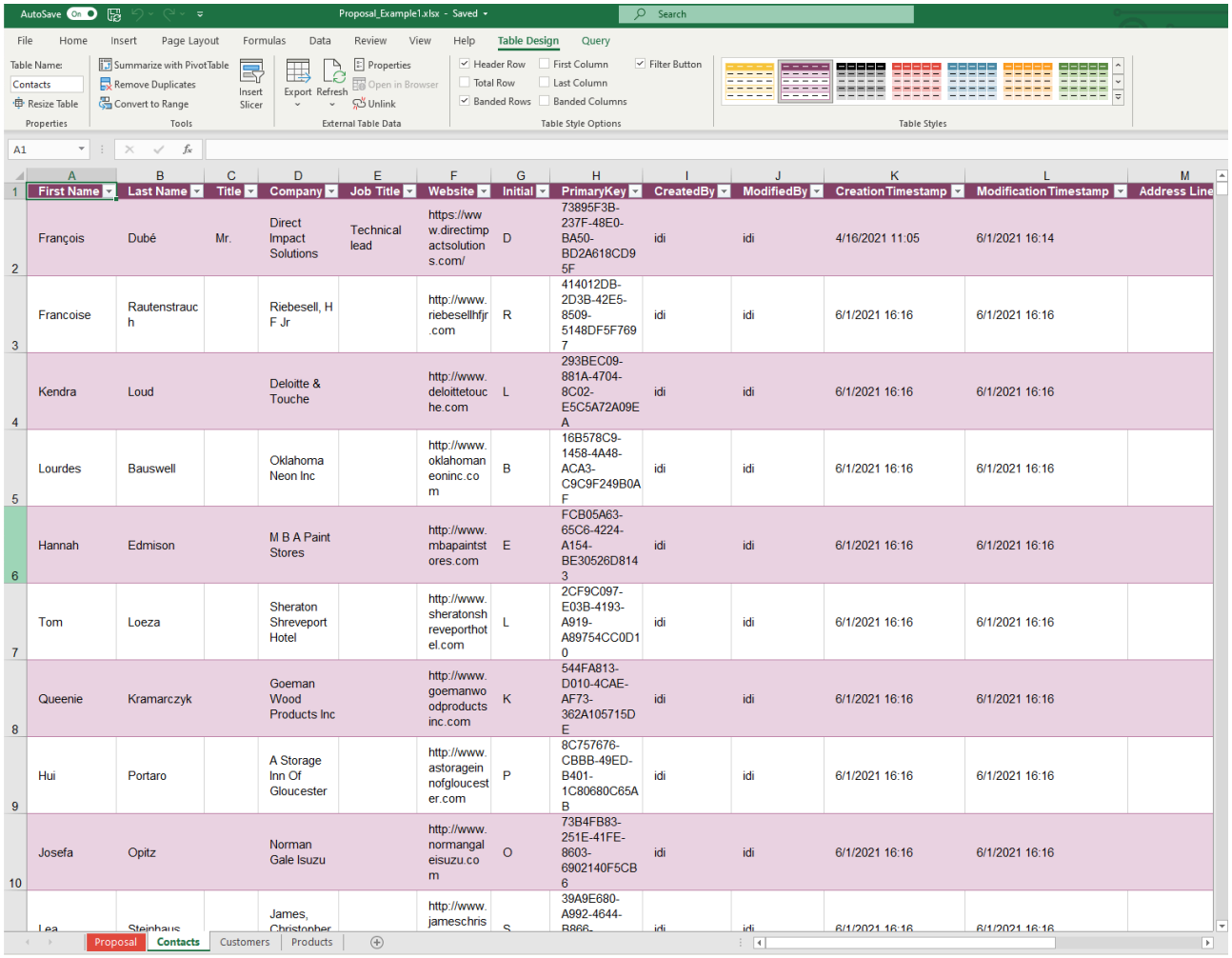
D.... it won't work.... or it will?



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Josefa	Opitz		Norman Gale Isuzu		http://www.normangaleisuzu.com	O	73B4FB83-251E-41FE-8603-6902140F5CB6	idi	idi	6/1/2021 16:16	6/1/2021 16:16	
Lea	Steinhaus		James, Christopher		http://www.jameschris	S	39A9E680-A992-4644-B866-	idi	idi	6/1/2021 16:16	6/1/2021 16:16	

To summarize

- Works on Windows version of Excel to create the connection and refresh the data, and partially on Excel Online
- Does not work on Mac
- Works with FileMaker Server for Linux with basic authentication (using a local FileMaker account)
- Does not work with FileMaker Cloud because of the authentication type (Claris ID)

Part 6

Let's continue to explore

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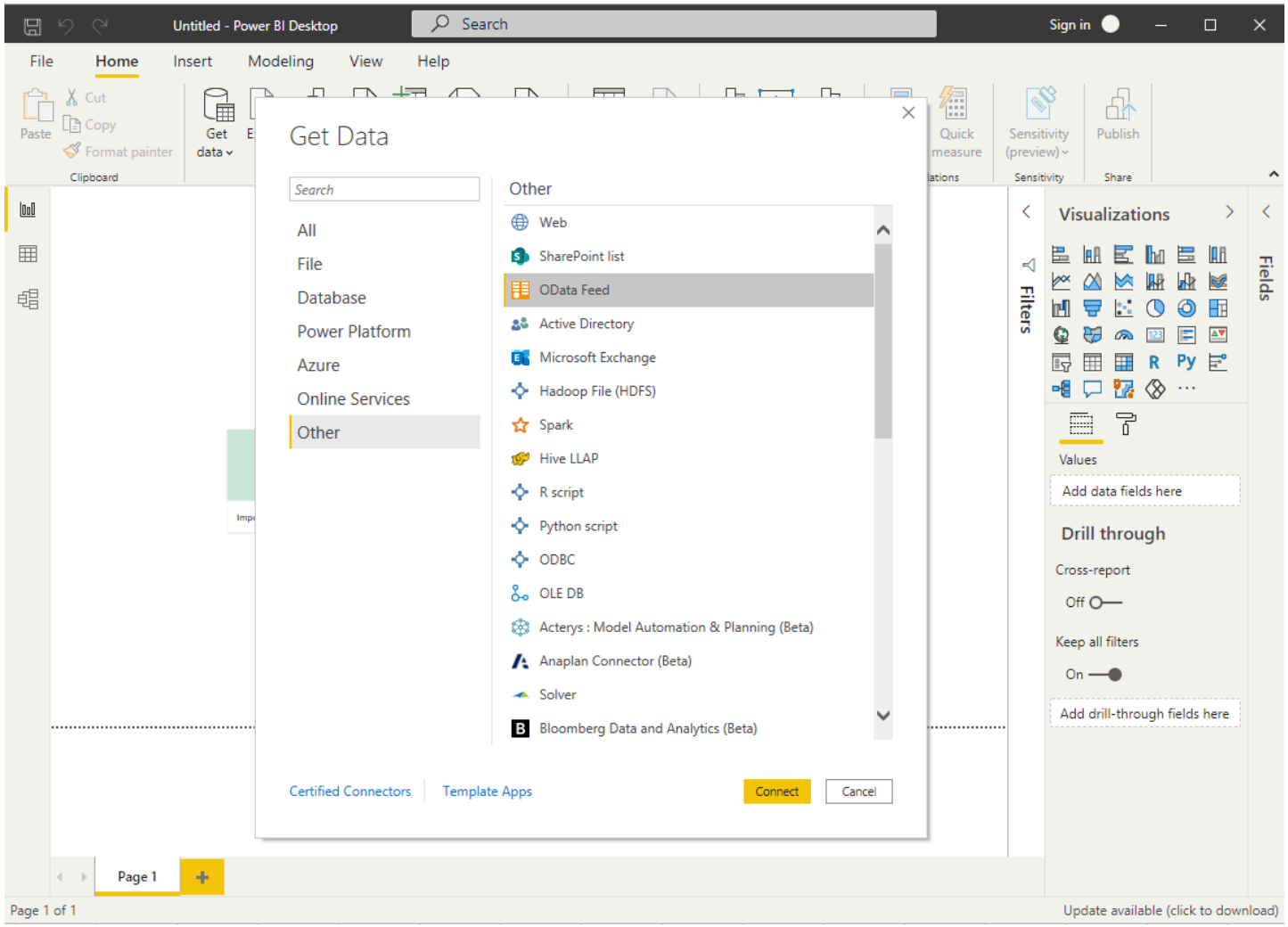
Microsoft Power BI



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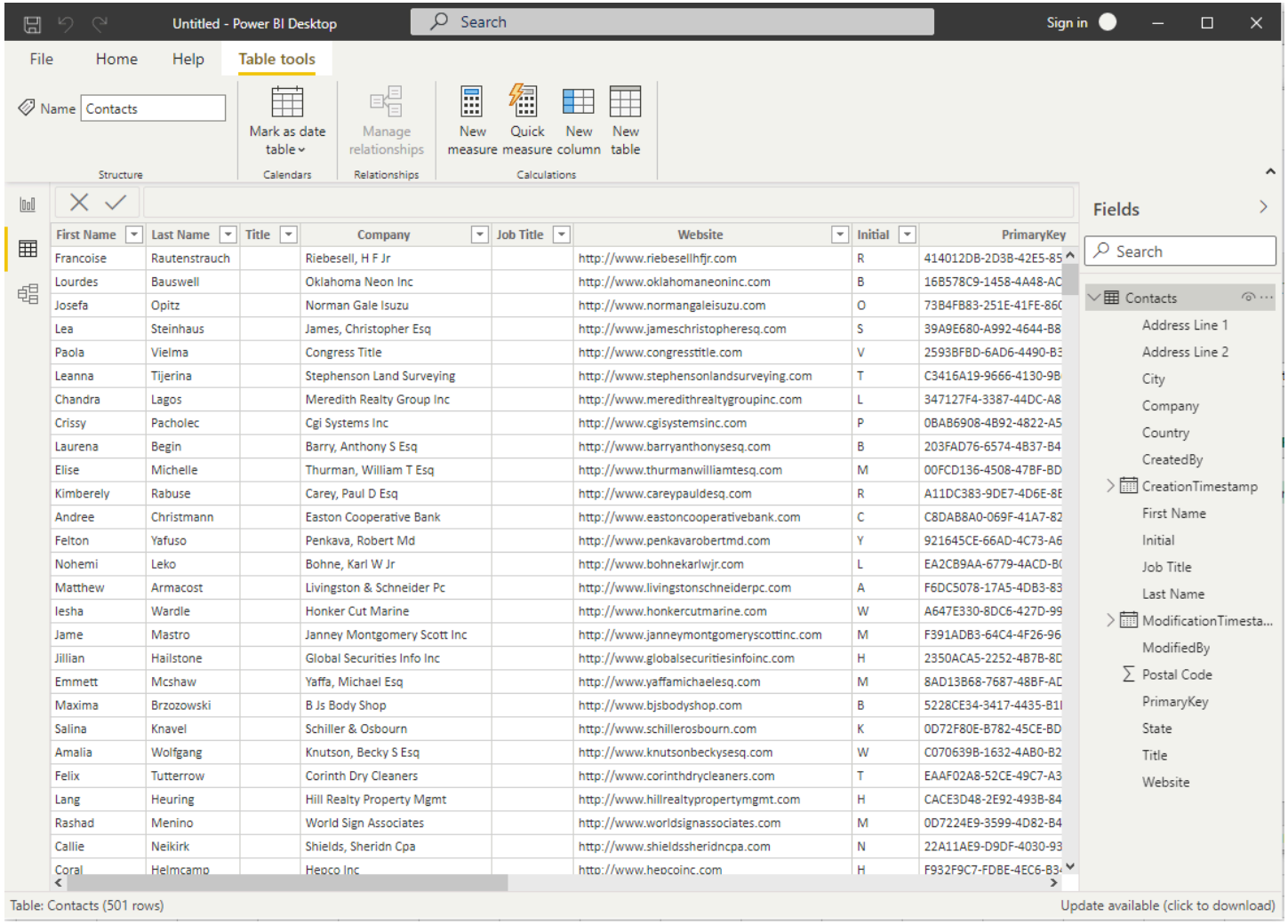

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Lea	Steinhaus		James, Christopher Esq		http://www.jameschristopheresq.com	S	39A9E680-A992-4644-B8
Paola	Vielma		Congress Title		http://www.congresstitle.com	V	2593BFBD-6AD6-4490-B3
Leanna	Tijerina		Stephenson Land Surveying		http://www.stephensonlandsurveying.com	T	C3416A19-9666-4130-9B
Chandra	Lagos		Meredith Realty Group Inc		http://www.meredithrealtygroupinc.com	L	347127F4-3387-44DC-A8
Crissy	Pacholec		Cgi Systems Inc		http://www.cgisystemsinc.com	P	0BAB6908-4B92-4822-A5
Laurena	Begin		Barry, Anthony S Esq		http://www.barryanthonysesq.com	B	203FAD76-6574-4B37-B4
Elise	Michelle		Thurman, William T Esq		http://www.thurmanwilliamtesq.com	M	00FCD136-4508-47BF-BD
Kimberely	Rabuse		Carey, Paul D Esq		http://www.careypauldesq.com	R	A11DC383-9DE7-4D6E-8E
Andree	Christmann		Easton Cooperative Bank		http://www.eastoncooperativebank.com	C	C8DAB8A0-069F-41A7-82
Felton	Yafuso		Penkava, Robert Md		http://www.penkavarobertmd.com	Y	921645CE-66AD-4C73-A6
Nohemi	Leko		Bohne, Karl W Jr		http://www.bohnekarlwjr.com	L	EA2CB9AA-6779-4ACD-B(
Matthew	Armacost		Livingston & Schneider Pc		http://www.livingstonschneiderpc.com	A	F6DC5078-17A5-4DB3-83
Iesha	Wardle		Honker Cut Marine		http://www.honkercutmarine.com	W	A647E330-8DC6-427D-99
Jame	Mastro		Janney Montgomery Scott Inc		http://www.janneymontgomeryscottinc.com	M	F391ADB3-64C4-4F26-96
Jillian	Hailstone		Global Securities Info Inc		http://www.globalsecuritiesinfoinc.com	H	2350ACA5-2252-4B7B-8D
Emmett	Mcshaw		Yaffa, Michael Esq		http://www.yaffamichaelesq.com	M	8AD13B68-7687-48BF-AD
Maxima	Brzozowski		B Js Body Shop		http://www.bjsbodyshop.com	B	5228CE34-3417-4435-B1I
Salina	Knavel		Schiller & Osbourn		http://www.schillerosbourn.com	K	0D72F80E-B782-45CE-BD
Amalia	Wolfgang		Knutson, Becky S Esq		http://www.knutsonbeckysesq.com	W	C070639B-1632-4AB0-B2
Felix	Tutterrow		Corinth Dry Cleaners		http://www.corinthdrycleaners.com	T	EAAF02A8-52CE-49C7-A3
Lang	Heuring		Hill Realty Property Mgmt		http://www.hillrealtypropertymgmt.com	H	CACE3D48-2E92-493B-84
Rashad	Menino		World Sign Associates		http://www.worldsignassociates.com	M	0D7224E9-3599-4D82-B4
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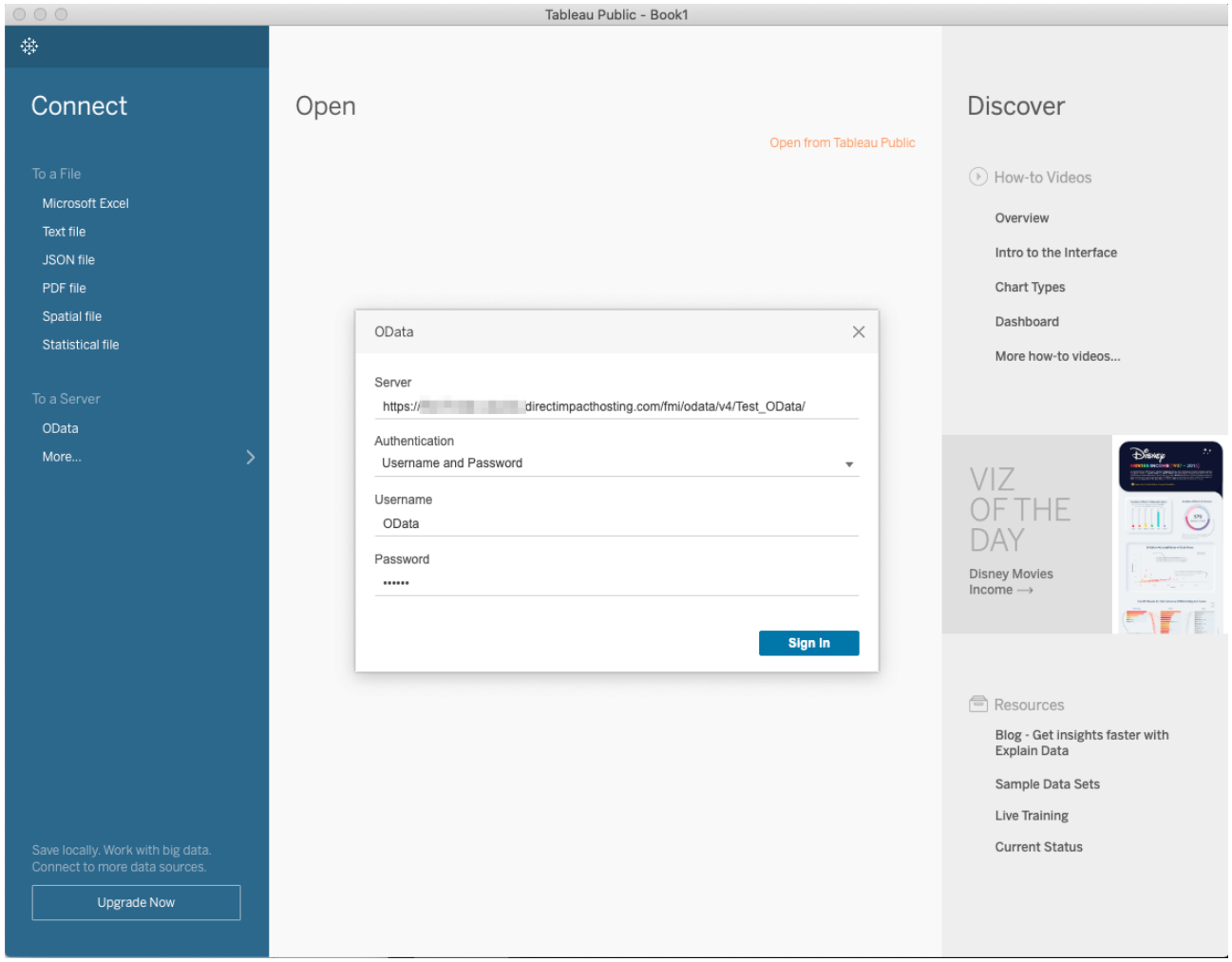
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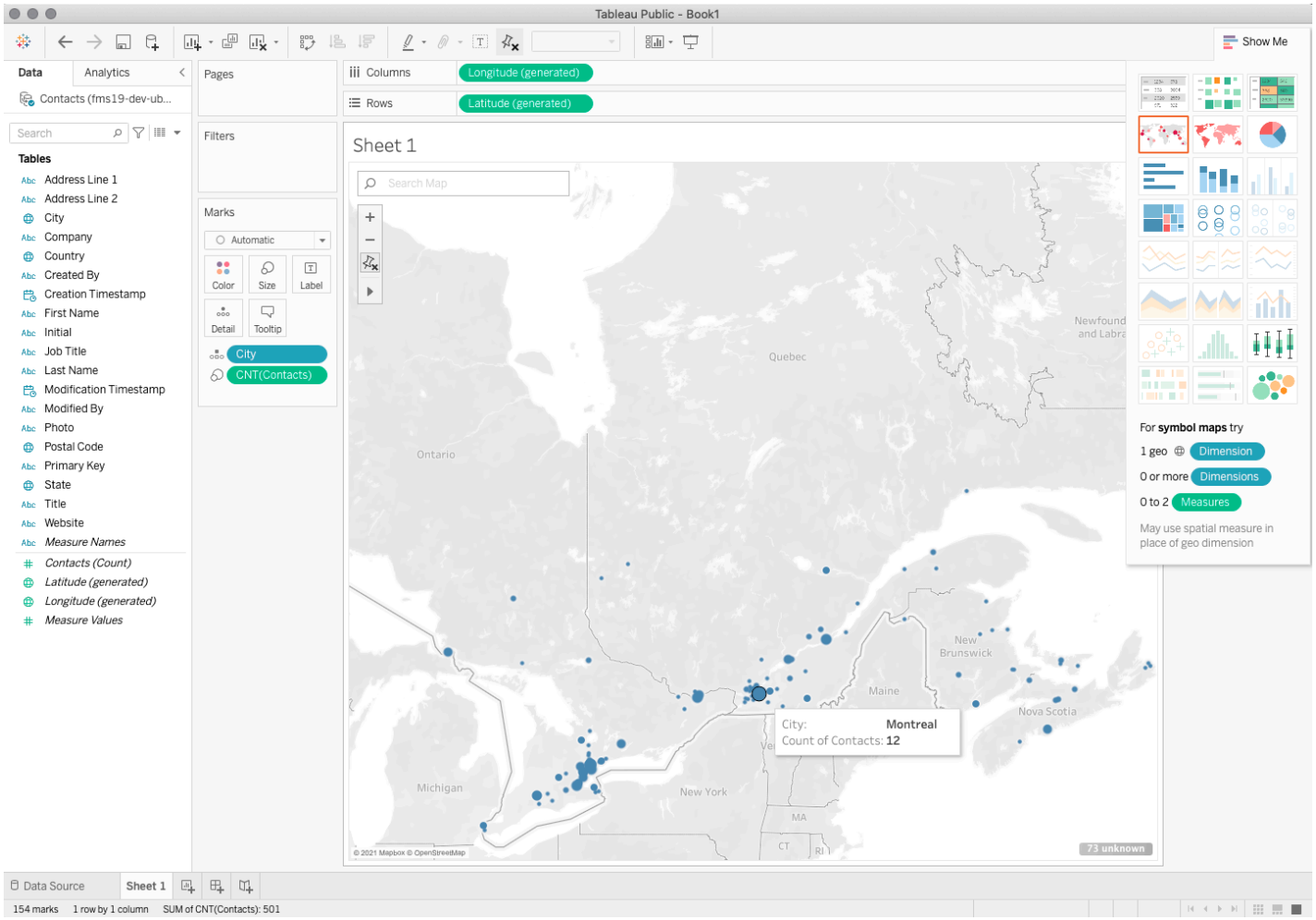

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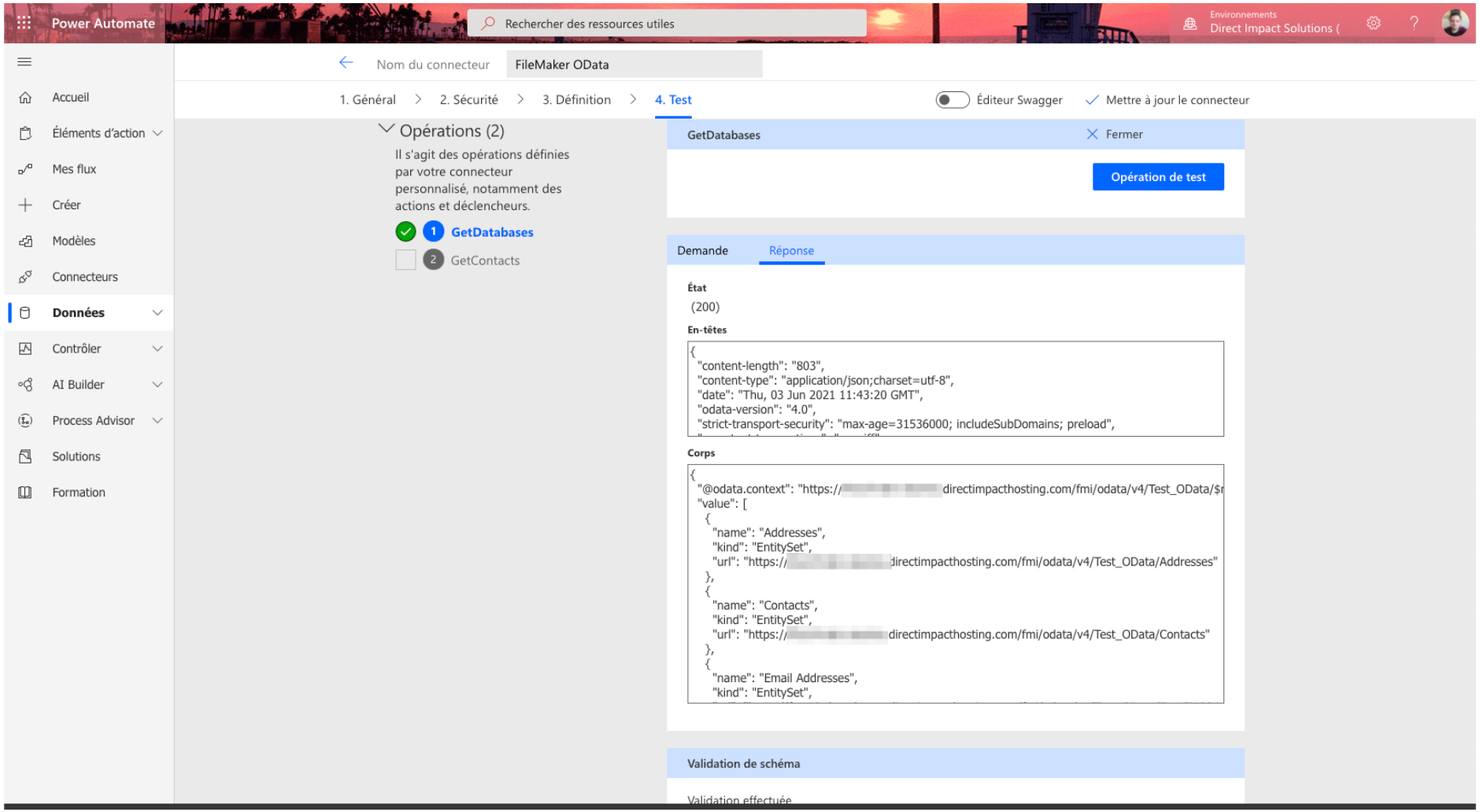
Microsoft Power Automate



The conclusion

- OData with Basic Auth on FMS Linux -> Yes!
- Maybe we should wait for FMS on Ubuntu
- Can we replace ODBC with OData? Yes, but still limited

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Thank you!