

# Explore cURL for FileMaker

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**FileMaker**  
**Devcon**  
**Scandinavia**

# Who am I?

## Steve Winter

- FileMaker, web application and software developer >20 years!
- Run Matatiro Solutions
- Regular DevCon speaker
- Active Open Source developer

**matatiro**solutions  
filemaker web development

# Overview

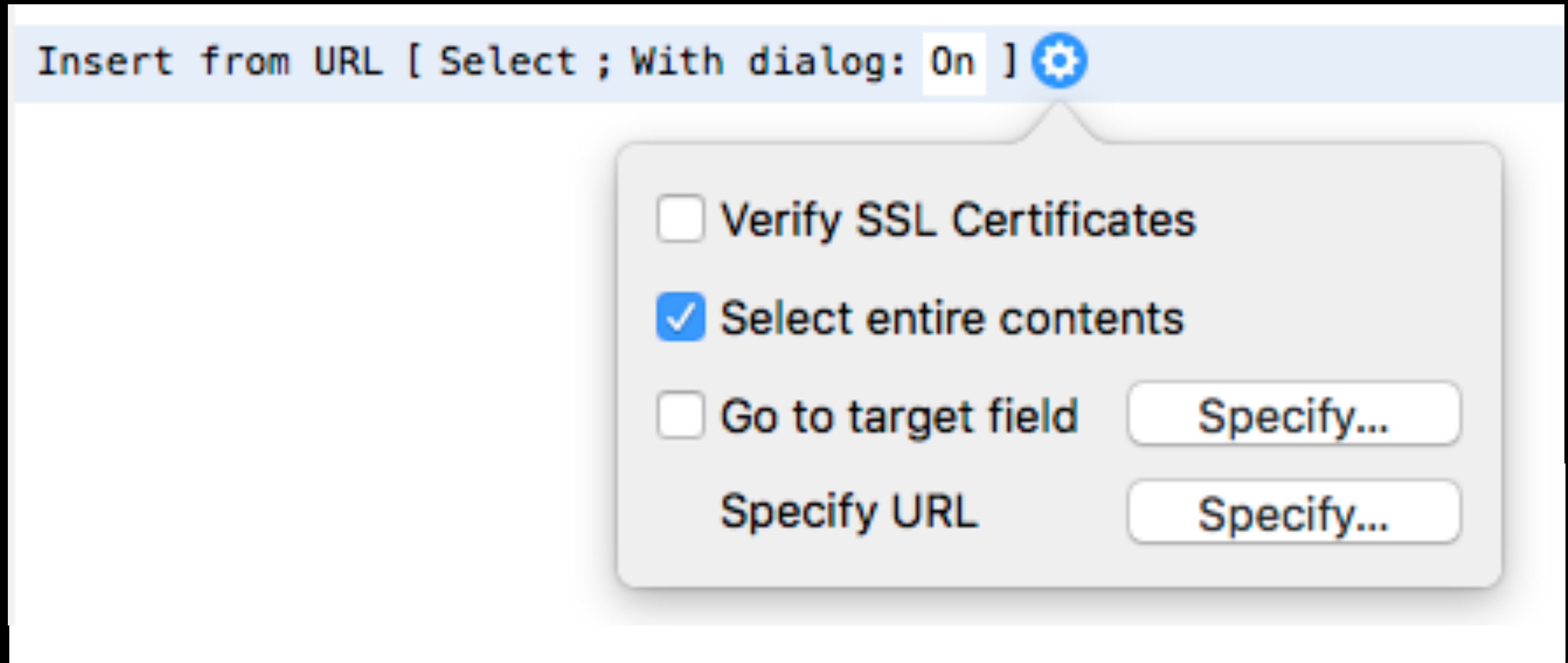
Accessing external APIs using InsertFromURL and cURL parameters

Implementing simple sync using cURL and the FileMaker Data API

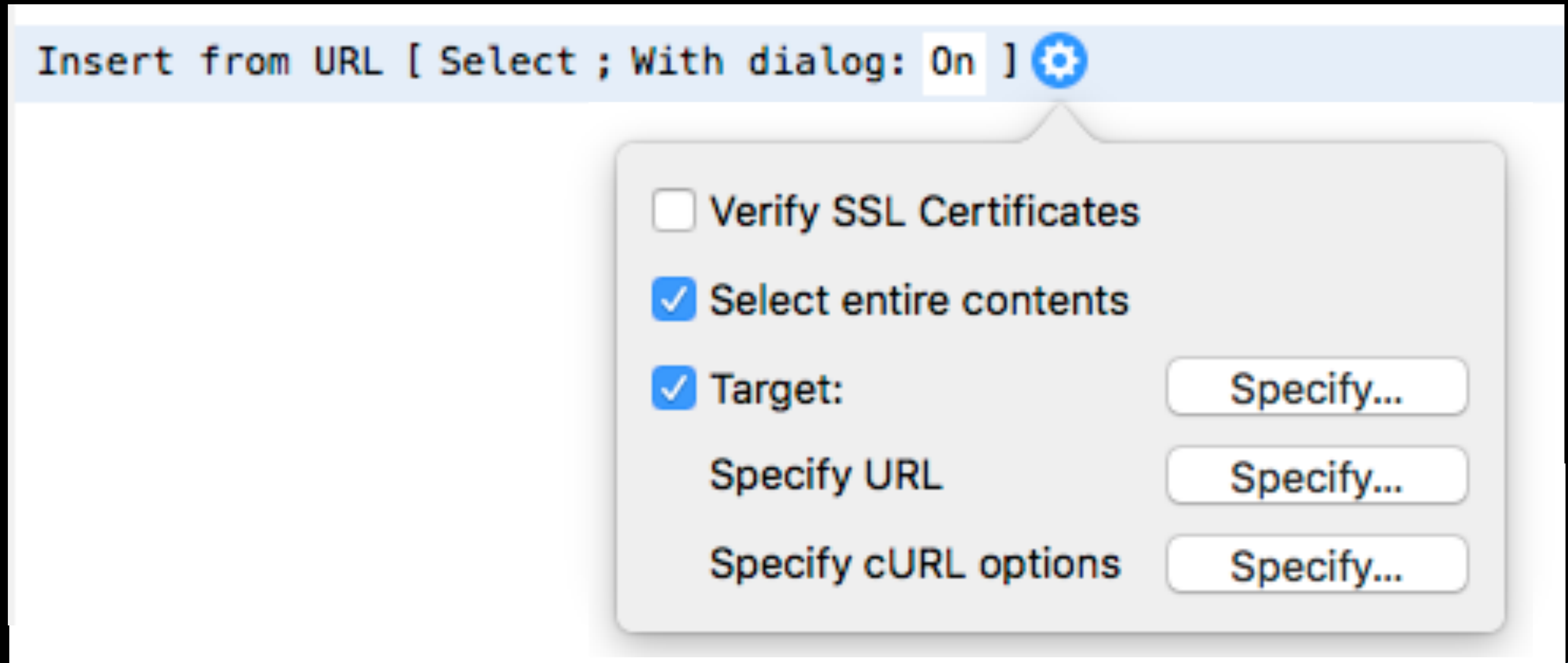
POST, GET, PUT and DELETE the 'crud' of API communication

OAuth, what it is, why we care, and how to make it work in FileMaker

# Insert from URL



# Insert from URL FMS 16





# cURL

“

**cURL** (/kɜːl/ or /kə:l/) is a computer software project providing a library and command-line tool for transferring data using various protocols. The cURL project produces two products, **libcurl** and **cURL**. It was first released in 1997.

The name originally stood for "see URL".

”

Wikipedia

# FileMaker cURL

‘Under the hood’ since Insert From URL introduced (FM 12)

Functionality ‘exposed’ through http(s) / ftp(s) / http(s)post (FM 13)

Limited to ‘simple’ use-cases with only query string access

# cURL options

There are \*lots\* of options which can be specified

<https://curl.haxx.se/docs/manpage.html>

FileMaker doesn't support all cURL options (anything relying on GSS-API, Kerberos, SPNEGO, NTLM, and NTLM\_WB are not supported)

No access to file system, use variables instead

Since FM 18 http(s), ftp(s), ldap(s), and smtp protocols have been supported.



# cURL options we really like

- d    --data            Send data with the request (like http(s)post)
- data-binary    Send **binary** data (e.g. file content)
- H    --header        Sends one or more headers
- proxy-\*        Allows setting of proxy server configuration

# Demo

# More cURL options we really like

- c    --cookie-jar    Store all cookies which are received, and which can be re-sent on subsequent requests
- b    --cookie        Send one or more cookies as key=value pairs or the encoded content of the cookie-jar
- X    --request        The HTTP method to use with the request. Defaults to GET, but can be set to POST, PUT, DELETE etc (we'll see more of this later)

# Cookie-Jar

Remember - need to 'encode' the content before sending it back

Otherwise unpredictable results

Reminder blog post: <https://bit.ly/fm-curl-cookies>

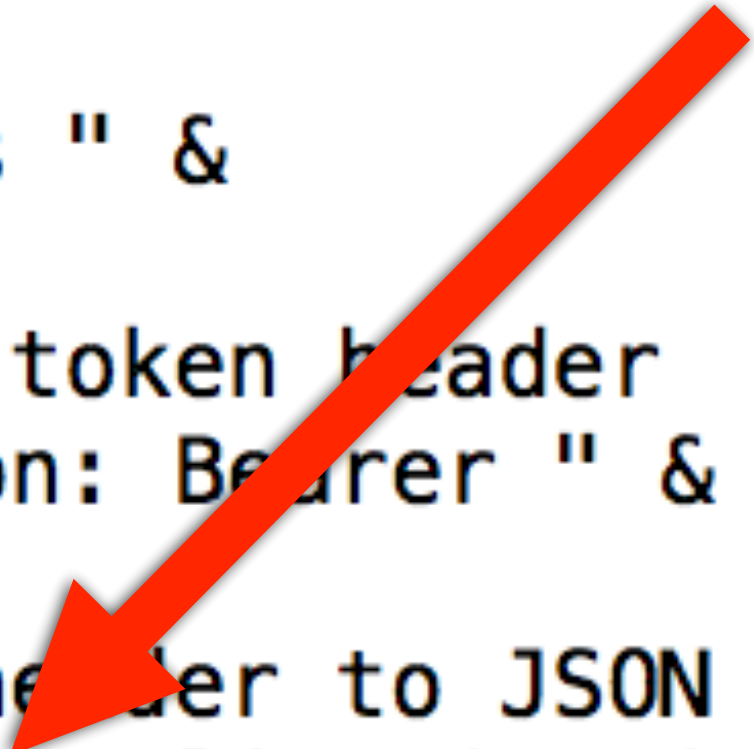
# A note of caution

```
// for debugging ONLY set error reporting on
"--show-error " &
"--dump-header $$Headers " &

// set the authorization token header
"--header \"Authorization: Bearer \" & $$GoogleToken & "\" \" &

// set the Content type header to JSON
"--header Content-Type: application/json " &

// set the textual data
"--data-ascii " & Quote($data)|
```



`--header \"Content-Type: application/json\"`

# Simple Sync

## Disclaimer

- this is probably a bad idea for anything but simple cases
- sync is hard (seriously hard)
- what the heck, let's do it anyway :-)



# The Plan

Hosted app is exposing tables through FileMaker Data API

Remote app with limited connectivity

Add new records in the remote app

‘Push’ them to the hosted app

# FileMaker Data API

“[The] FileMaker Data API is FileMaker's platform to integrate with 3rd party applications and web services and is part of [the] FileMaker server family”

# FileMaker Data API - in short

Exposes layouts and their associated records

RESTful in the way it is structured

- **C** POST `https://<server>/rest/api/record/<solution>/<layout>`
- **R** GET `https://<server>/rest/api/record/<solution>/<layout>/<recordId>`
- **U** PUT `https://<server>/rest/api/record/<solution>/<layout>/<recordId>`
- **D** DELETE `https://<server>/rest/api/record/<solution>/<layout>/<recordId>/<modId>`

# Demo

# OAuth from FileMaker

But why?

- Short answer: 'because Google'
- Long answer: because much of the web (digital world) is secured using OAuth

# So what is OAuth?

“

OAuth is an open standard for access delegation, commonly used as a way for Internet users to grant websites or applications access to their information on other websites but without giving them the passwords.

”

Wikipedia



# Adding events to Google Calendar

FileMaker solution for course management

Shared Google Calendar

Wanted course sessions in the shared calendar

# Adding events to Google Calendar

Calendar

Today<>15 – 21 May 2017

DayWeekMonth4 DaysAgendaMore⚙

CREATE

May 2017

My calendars

Other calendars

FileMaker data

Course codeGMMUK2709

Product code1004

ProductGMAT Prep - In Person

Course titleWeekend Course

Capacity

Current enrolments

Available space

Country code10

VisibilityPublic

Reseller course

DatesStudentsAdd to calendarSet rooms

	Date	Start	End	Timezone
1	07/05/2017	11:00:00	13:30:00	BST
2	07/05/2017	14:30:00	17:00:00	BST
3	14/05/2017	11:00:00	13:30:00	BST
4	14/05/2017	14:30:00	17:00:00	BST
5	21/05/2017	11:00:00	13:30:00	BST
6	21/05/2017	14:30:00	17:00:00	BST
7	04/06/2017	11:00:00	13:30:00	BST
8	04/06/2017	14:30:00	16:30:00	BST
9	11/06/2017	11:00:00	13:30:00	BST
10	11/06/2017	14:30:00	15:30:00	BST

Mon 15/5

Tue 16/5

Wed 17/5

Thu 18/5

Fri 19/5

Sat 20/5

Sun 21/5

7pm

8pm

11 – 1:30p  
Room 307 -  
GMMUK2709 -  
Session 5  
Kaplan Test Prep, 3-5  
Charing Cross Road,  
London, WC2H 0HA,  
United Kingdom

12p – 4p  
RKGL171308

1p – 5p  
LLLUK4505  
- Women  
LL -  
Session 8  
Kaplan Test  
Prep, 3-5  
Charing Cross  
Road, London,  
WC2H 0HA,  
United Kingdom

1p – 4:30  
MKGL171305

2:30p – 5p  
Room 307 -  
GMMUK2709  
Session 6  
Kaplan Test Pre  
Charing Cross  
Road, London, WC2H  
United Kingdom

6p – 10p  
Center Closed

6p – 10p  
Center Closed

# Prepare to connect to Google

Login to <https://console.developers.google.com> with a Google account

Create a project

Create a Service Account

Receive the credentials file

Optionally give the service account domain-wide access

Configure the APIs to use

# Credentials file

```
{
  "type": "service_account",
  "project_id": "devcon-2017-demo",
  "private_key_id": "acd08c65c08d74e83b8986d1bf6e2514b9a19064",
  "private_key": "-----BEGIN PRIVATE KEY----- key content -----END PRIVATE KEY-----\n",
  "client_email": "calendar-api@devcon-2017-demo.iam.gserviceaccount.com",
  "client_id": "105257292549448009564",
  "auth_uri": "https://accounts.google.com/o/oauth2/auth",
  "token_uri": "https://accounts.google.com/o/oauth2/token",
  "auth_provider_x509_cert_url": "https://www.googleapis.com/oauth2/v1/certs",
  "client_x509_cert_url": "https://www.googleapis.com/robot/v1/metadata/x509/calendar-api%40devcon-2017-demo.iam.gserviceaccount.com"
}
```

# Actually connecting

Create a JSON Web Token (JWT)

Request an access token

Receive a token response

Use that token for subsequent API calls

# JSON Web Token (JWT)

Has three parts

- header
- 'claim set'
- signature



# Demo

# Exchanging container data with Dropbox

Login to the Dropbox account you wish to access

Create an App (<https://www.dropbox.com/developers/apps>)

Generate an access token

Pass that access token in a header

# Demo

# Questions?

# Session Materials

<https://bit.ly/fds-curl>



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