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Did you know you could query that?

July 2022

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APIs for asking questions

- **This is a developer focused topic**
- There are so many! (Hard to keep them straight)
- What is SOAP API… really?
- Authorization, how though? Which do I use?!
- We won't cover them all. We'll list what will and won’t be covered
- Hope to share some:
    - “Hidden” features
    - Useful endpoints
    - Spark ideas for new projects of your own that leverage these interfaces

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Who we are

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We are developers

Here to talk about the variety of Salesforce APIs and how they enable:

- Reporting on the health of your instance:
  - Predicting feature consumption
  - Security
  - Governance
- Extending existing business processes through:
  - Back-end server-to-server integrations
  - Web extensions
  - CLI Plugins
  - More!

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MJ (a.k.a. Martin Davis)

- From the land of 10,000 lakes
- 13 years as a developer
- Former IoT Applications Engineer
- Evangelist of the belief that Salesforce code can be written and deployed in a standard pipeline
- Rustacean Wannabe & Python has-been
- Making Salesforce a normal part of the IT stack through:
  - Reporting
  - Advanced monitoring
  - DevOps
  - Data Governance
- Hot take - Salesforce is code and should be deployed like code

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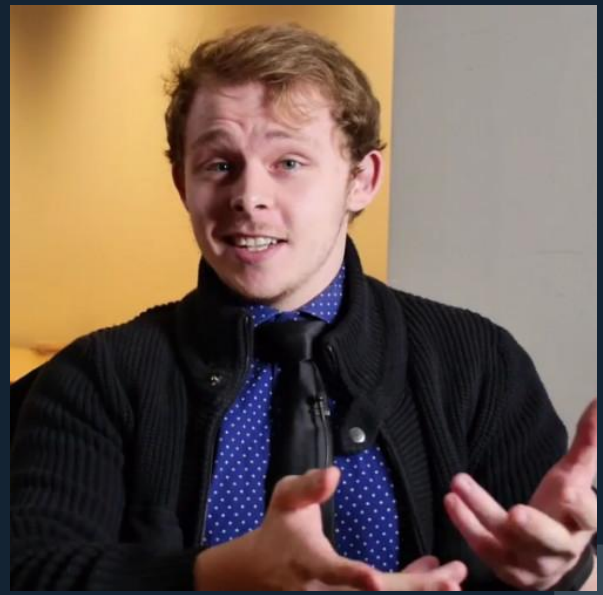
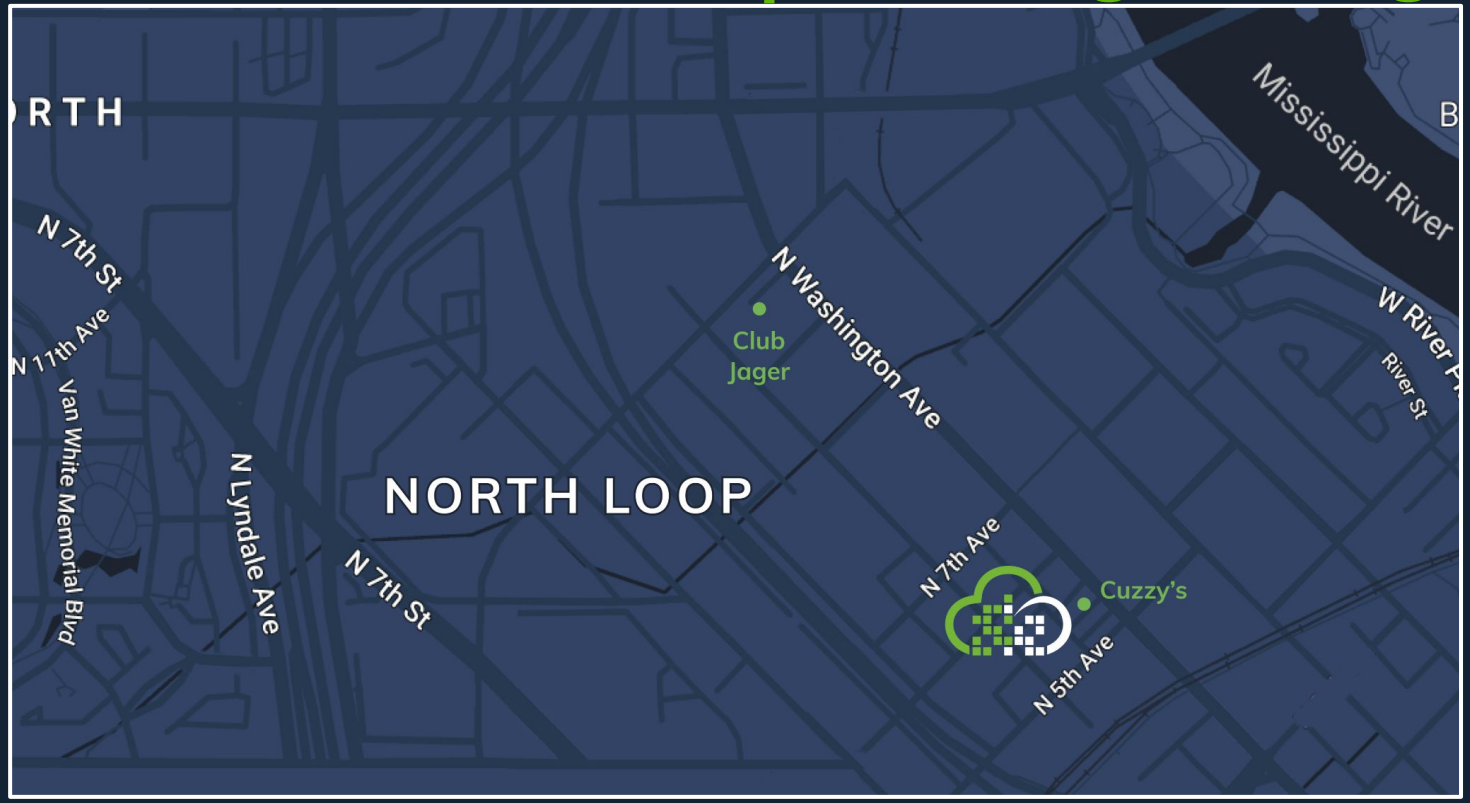
Andrew Dawson (a.k.a. AD)

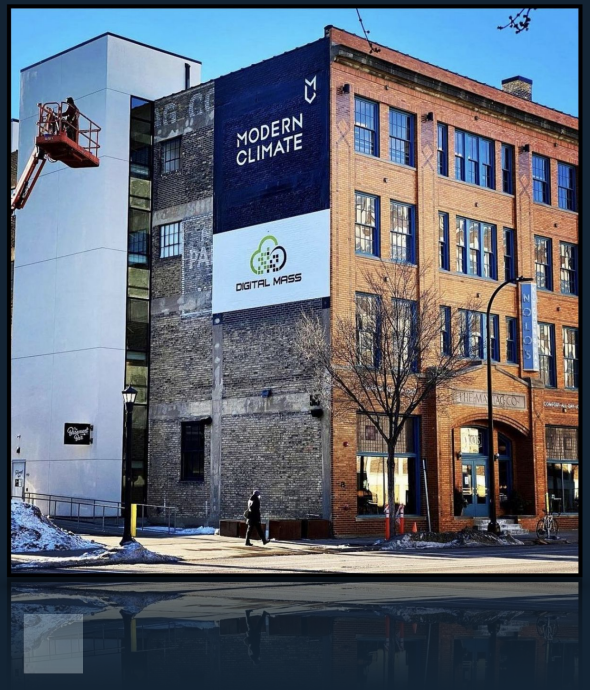
- From the land of 10,000 cornfields (Not NE)
- 12x certified full stack developer with 8 years in the platform
- Focus on formalizing and modernizing dated Salesforce development patterns
  - Basically, this guy just loves Flow Builder…who doesn't? ;)
- Javascript apologist & TypeScript enthusiast
- Won't shut up about Microsoft, like really…
  - Not afraid to roll up his sleeves and write some:
    - PowerShell
    - VBA
    - M & DAX
- Hot take - Salesforce Flow > Power Automate (Flow)



Located in the North Loop - Maytag building



3rd Floor



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We're going to cover:

- Lightning Platform SOAP - No Demo
- Standard REST API - Demos
- Einstein Platform Services - Demo
- Lightning Console API - Demo
- Tooling API - Demo

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Maybe next time...

- Marketing Cloud
- MC Einstein Content
- Subscription Management
- Tableau
- Tableau CRM
- Tableau CRM SAQL
- CPQ API
- Heroku Platform
- Einstein Bot
- Metadata API
- Bulk API 2.0
- Metadata Component Dependency API
- Connect API
- Streaming API
- Salesforce UI API
- B2B Commerce API
- B2B Commerce PWA Kit and Managed Runtime
- Salesforce CDP
- Customer 360 Data Manager
- Pardot
- Quip Live Apps
- Quip Automation

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Just kidding...

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Let's address the authentication elephant

Authenticating with Salesforce is not as easy as Basic Authentication using an API token in a header.

Salesforce almost always expects authorization to be attached to a User.

It is a common practice to consume a user seat to create a service account. Looking into your own org, if your current application is using a teammate's credentials in an OAuth grant, we strongly recommend changing this. Here are some healthy reasons to make this change:

- Revocation
- Increasing the bus factor
- Abstraction
- Discrete profiles and permission sets to attach to the service scope
- Debugging, "Why were all these records modified by Hank? Isn't he the admin?"

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All of these buzzwords... where to start?

Auth flows, JWT, grants, session ids, tokens, connected apps, scopes, client ids/secrets, and certificates :')

WHAT?!?!?! - The above is a lot, we know - deep breaths…

Some useful resources for generating a token/session Id:

- SFDX CLI - Authorize an org to retrieve this token
- Workbench - Log in and interact with several of these APIs
- Postman - read more about the collection on Github
- SOAP UI - there's a great module on Trailhead covering this
- From within Salesforce - that's right! Your session Id doubles as a token with most Salesforce APIs

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Let's talk APIs

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A Note on the SOAP API

- The SOAP API is:
  - The granddaddy of Salesforce APIs - it's old, it's stubborn… it's xml-based
  - Far and away the most *robust* suite of services to interface with
  - Its own protocol, meaning authentication, and the techniques to ask it questions relative to the REST APIs covered below, are entirely different
- The SOAP API is ***not***:
  - Going anywhere - Salesforce is an API-first shop, and most functionality is exposed here before anywhere else
  - Necessary for *most* types of interaction with the platform
- When should I consider using it?
  - SOAP is an appropriate solution for:
    - Enterprise integrations with *multiple* disparate functional requirements, or complex requirements not provisioned through standard REST APIs
    - Tenured development teams with prior SOAP experience
    - Organizations with an established practice of working with WSDLs, and which understand the contract that document represents

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REST API

- What is it? A robust collection of common utilities we may want to know more about, or interact with, made available through the more developer-friendly REST interface

- You might not know…
  - Not OpenAPI compliant - it can't be imported as an external service. Salesforce is taking steps towards making this possible

  - NOT at feature parity with the SOAP API and vice versa
    - Common misconception
    - Many of the same interactions are possible with either; however, beyond the tech differences underpinning each architecture, the approach to asking each to perform a particular action is different. E.G. Executing Apex

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REST API - In Use

- Enables better org management through:
  - Checking org limits through sfdx cli - (demo)
  - Inspect org limits with your own program - (demo)
- Example endpoints:
  - Execute custom/standard invocable actions - (demo)
  - Query setup objects - (demo)
  - Submit multiple simultaneous requests with composite graphs - (demo)

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Einstein Platform Services - NodeJS

- What is it? Comprised of two distinct services:
  - Language - natural language processing - Identify:
    - Intent
    - Sentiment
    - Named Entities (Beta)
  - Vision - image classification and OCR
  - BYOD (Bring Your Own Data for Most Endpoints and Services)

- You might not know…
  - Free usage of up to 2k requests/mo - read more about rate limits here
  - Adheres to Open API spec - endpoints can be registered as external services
  - Requires JWT to authorize - Apex now supports JWS & JWT

- Example endpoints:
  - Scan a business card - Vision (demo)
  - Detect sentiment - Language
  - Classify an Image - Vision

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Lightning Console API - Salesforce

- What is it? Five APIs for interacting with the following elements in console apps:
  - Navigation Item - Describe the navigation options in the current app
  - Workspace - Interface with the tabs and subtabs in the current app
  - Utility Bar - Take the utility bar to another level with async/passive processing
  - Conversation Toolkit - Extend an agent's chat experience in service cloud
  - Omni Toolkit - Extend omni-channel and more with service requests
- You might not know…
  - These APIs are not exposed as URIs - they cannot be interfaced with outside of Salesforce. Interact by bubbling events up through the DOM to a listener
  - Aura is the only supported mechanism to ask these services questions without a custom-built solution for generating custom events in vanilla JS

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Lightning Console API - In Use

- Empowers better org management through:
  - Passively logging user activity as they navigate the app
  - Components running in the utility bar are the closest thing to ubiquitous, non-interactive processing on the platform
  - Monitor and report on agent chat logs with your customers
- Example endpoints:
  - Get/Set Navigation Items - (demo)
  - Get Utility Context/Open Utility Bar - (demo)
  - Open a console tab
  - Send an instant message to a customer
  - Log in to Omni-Channel with a specified status

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Let's download some logs

```
#!/bin/bash
if [ -d "$HOME/temp/log" ]
then
    cd $HOME/temp/
else
    echo "Directory $HOME/temp/log does not exist, creating it..." && mkdir $HOME/temp && mkdir $HOME/temp/log && cd $HOME/temp/
fi

echo -n "How many Logs do you want to retrieve? "
read NUMBEROFLOGS

echo -n "Which sfdx cli org alias are you going to use? "
read ORGALIAS

for logId in $(sfdx force:data:soql:query -q "select id from apexlog LIMIT $NUMBEROFLOGS" -u $ORGALIAS | tail -n +3); do
    idLength=`expr length "$logId"`
    if [ $idLength -gt 17 ];
    then
        echo "writing log/$logId.debug"
        sfdx force:apex:log:get --logid $logId -u $ORGALIAS > log/$logId.debug
    fi
done
```

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Some interesting objects you can query from SOQL directly

- ActiveFeatureLicenseMetric
- ActivePermSetLicenseMetric
- ActiveProfileMetric
- ActivityUsrConnectionStatus
- ApexClass - First 1 million characters - Run against PMD ruleset? Other SCA?
- ApexLog
- ApexTrigger
- AuraDefinition
- CronTrigger - an individual schedule job run
- Dashboard - USING SCOPE ALLPRIVATE - see other user's privately-held dashboards
- DashboardComponent - find which users have components referencing a particular report
- DuplicateRecordSet, DuplicateRecordItem
- FieldPermissions
- FieldSecurityClassification
- FlowTestTestResult
- FlowVersionView
- Folder
- Group,GroupMember
- LightningToggleMetrics/LightningUsageByBrowserMetrics
- LoginGeo,LoginHistory,LoginIP
- ObjectPermissions
- …OwnerSharingRule - requires support ticket request. Enables logging of sharing rule metadata!
- OpportunityStage
- PermissionSet, PermissionSetAssignment, PermissionSetGroup, PermissionSetGroupComponent, Profile
- RelatedListDefinition, RelatedListColumnDefinition
- Report - USING SCOPE ALLPRIVATE
- SetupEntityAccess
- StaticResource
- UserPermissionAccess
- UserRecordAccess

Check out the object reference here to learn more about these and other objects!

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Wrapping up

- There is a huge surface area of APIs in Salesforce that have high degrees of utility
- Authentication isn't as hard as it looks when getting started. The hardest choice that you have is choosing the right grant to use
- The front-end API is deeper than Lightning and Aura documentation
- Logs are just objects, you can make use of them
- These APIs and the services you create around them are your power tools for heavy lifting inside and outside of Salesforce
    - Governance
    - Reporting
    - Automation
    - Compliance

Want to talk more APIs? Come visit us at our booth!
or.. RTFM (Read the Force.com Manual)