Introduction to OAuth and Data Management API

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Developer Advocate
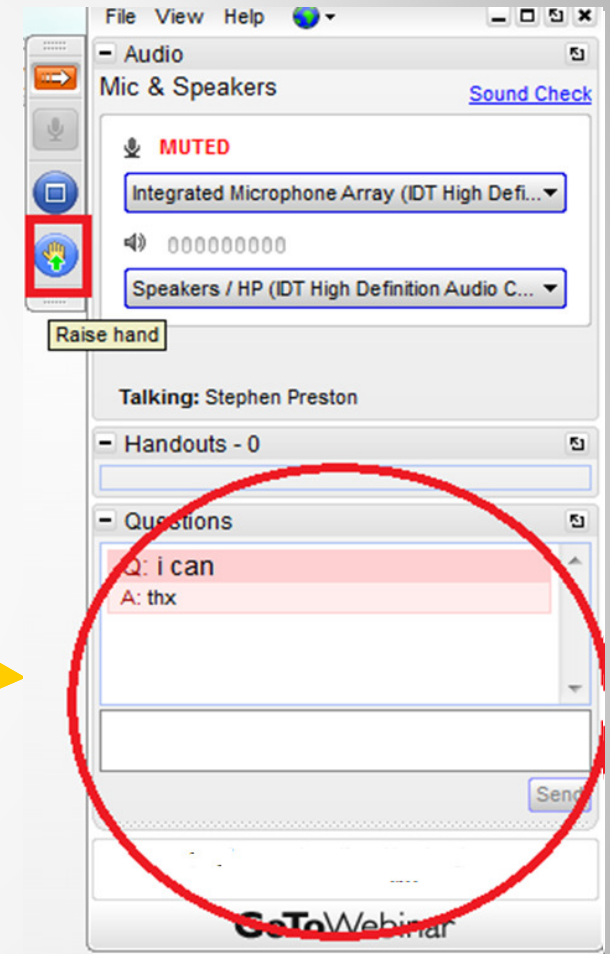
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To ask questions

- Raise hand to speak

  or

- Type a question

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OAuth

Common industry standard

- Used across the galaxy!

- ID & Password remains secure!

- Grant access to a limited time (under a predefined scope)

- Authenticate API access (2-legged)

- Controlled access to end-user information stored with Autodesk (3-legged)
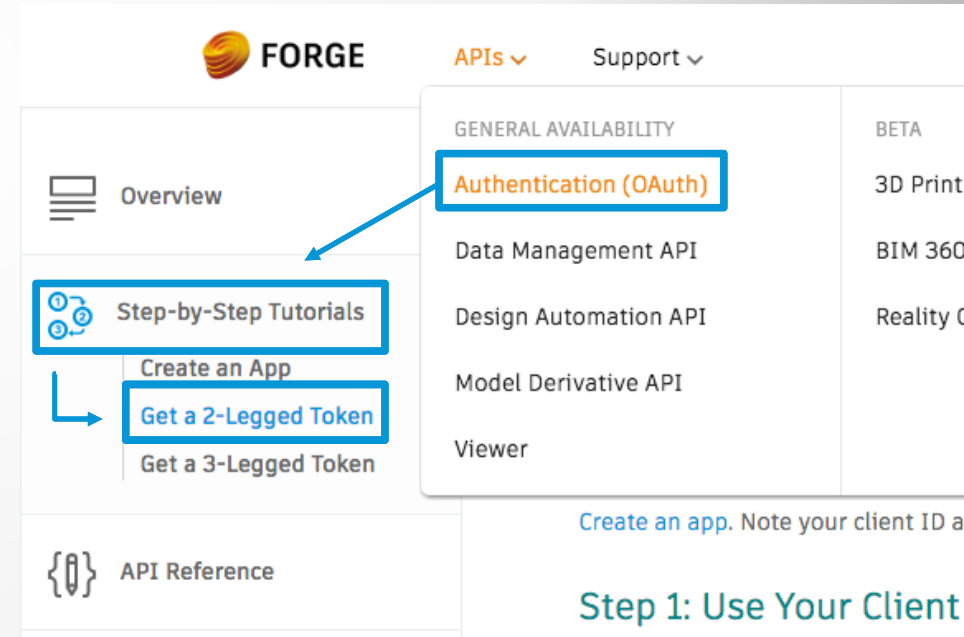
Which approach should I use?
2-legged

Your app

Authentication happens here, transparent to end-users
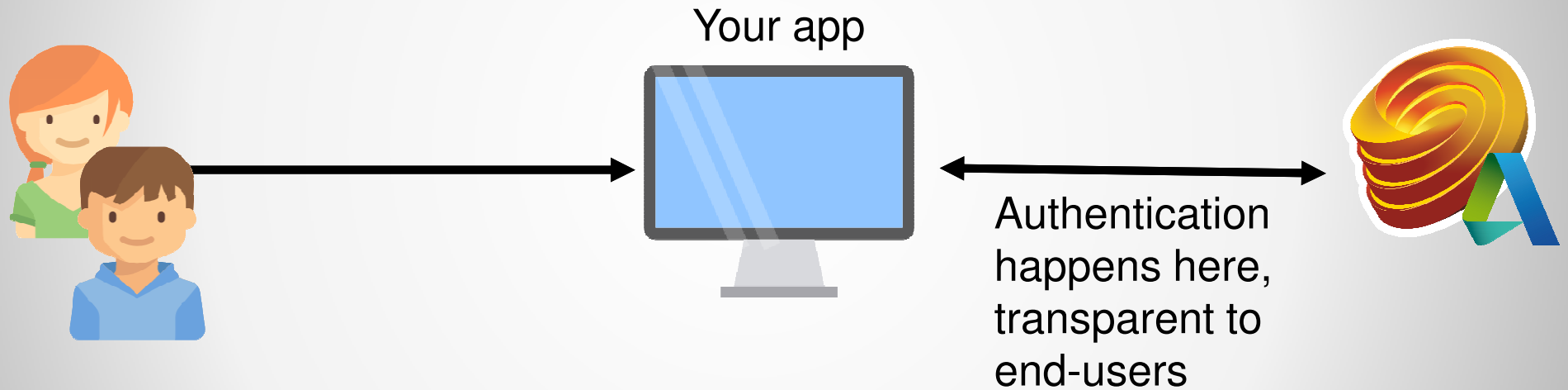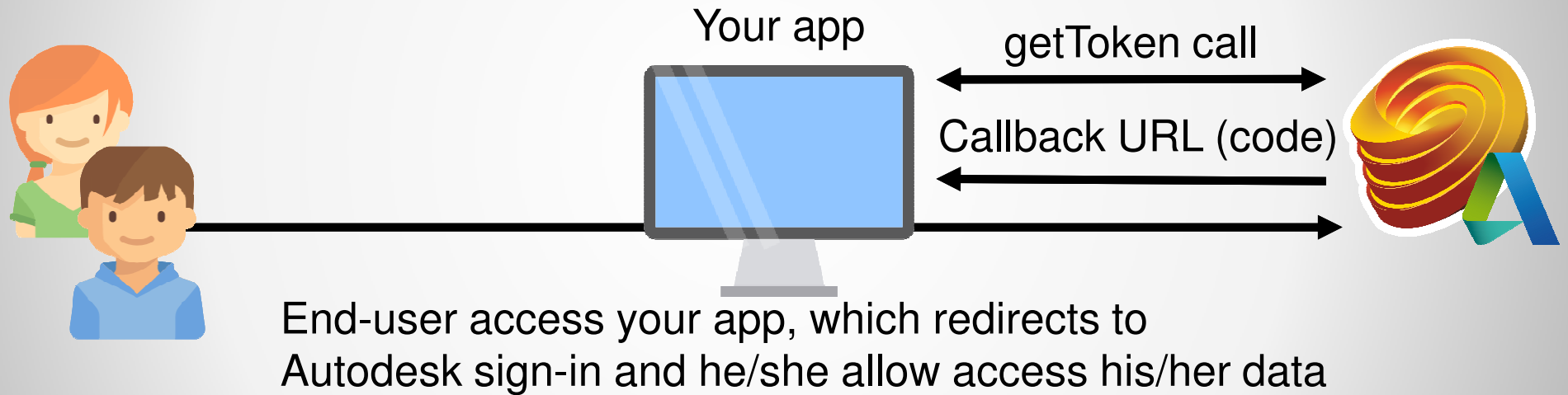
Which approach should I use?
2-legged

- Transparent to end-users (no Autodesk Forge brand appear)

- All files are stored under your developer account (OSS buckets)

- Server-server enterprise communication for BIM 360 API

- Get 2-legged token tutorial
  - /authentication/v1/authenticate

Which approach should I use?
3-legged

Your app

getToken call

Callback URL (code)

End-user access your app, which redirects to
Autodesk sign-in and he/she allow access his/her data

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Which approach should I use?
3-legged

- End-use will need to enter his/her credentials and approve access at least once.

- All files are stored under the end-user account (hubs & projects)

- User level operations (actions performed using the user credentials/approval)

- Get 3-legged token tutorial
  - /authentication/v1/authorize
  - [callback your app]
  - /authentication/v1/gettoken
 - /authentication/v1/refreshtoken
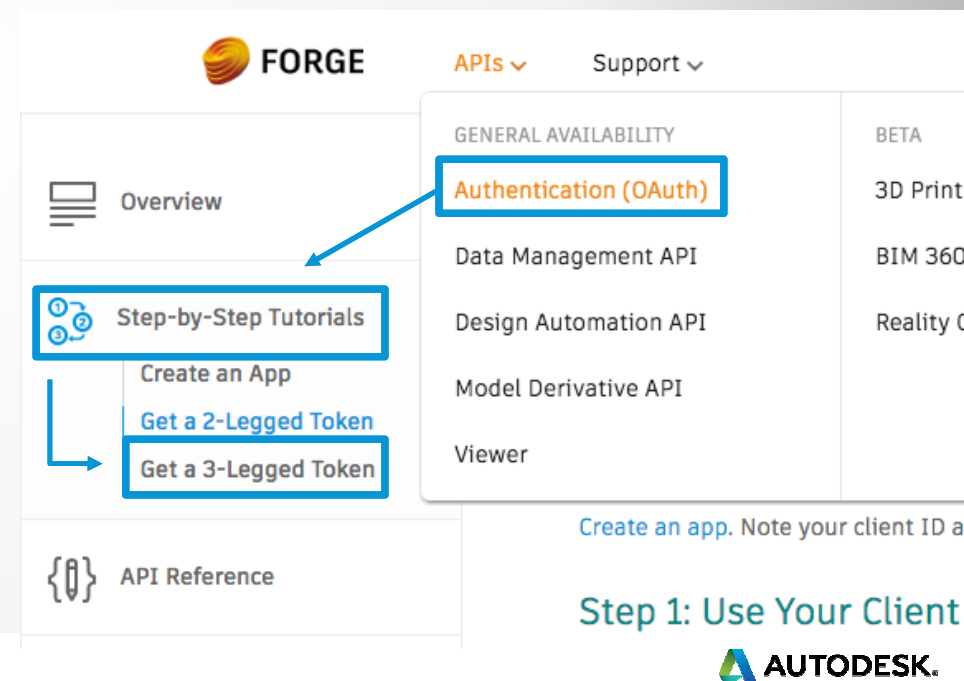
OAuth scopes

- Define which data is accessible for the token (both 2- or 3-legged)

- On 3-legged, the scope define the permissions the end-user will need to approve on the consent page.

- IMPORTANT: if the end-user have access to the token, create a token with restricted access (e.g. read-only).
  - Malicious end-user with a write-enabled token can modify data directly on your account (e.g. your buckets)
  - For Viewer, use viewables:read scope ONLY (or Proxy)
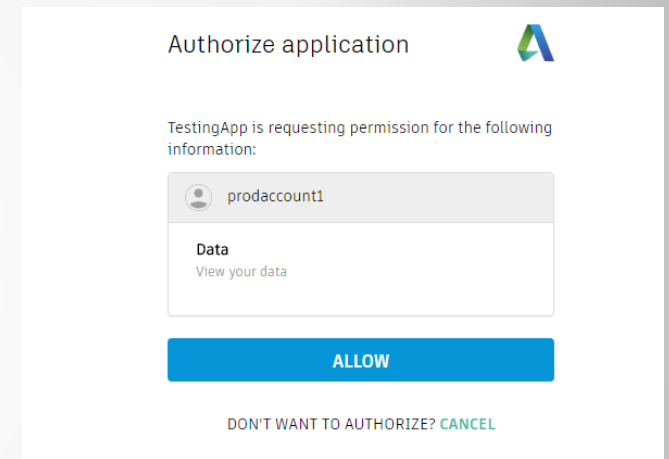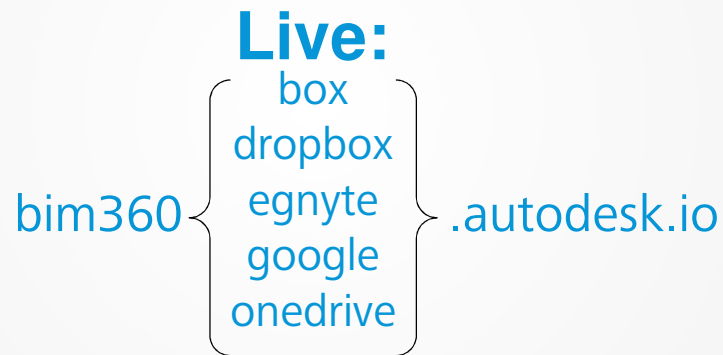
Data Management API

Overview

- User data, needs 3-legged token

- Hubs, Projects, Folders, Items (and versions)
  - Abstraction on top of OSS

- Access to:
  BIM 360 Team & Docs
  Collaboration for Revit
  Fusion 360
  OSS (app bucket)
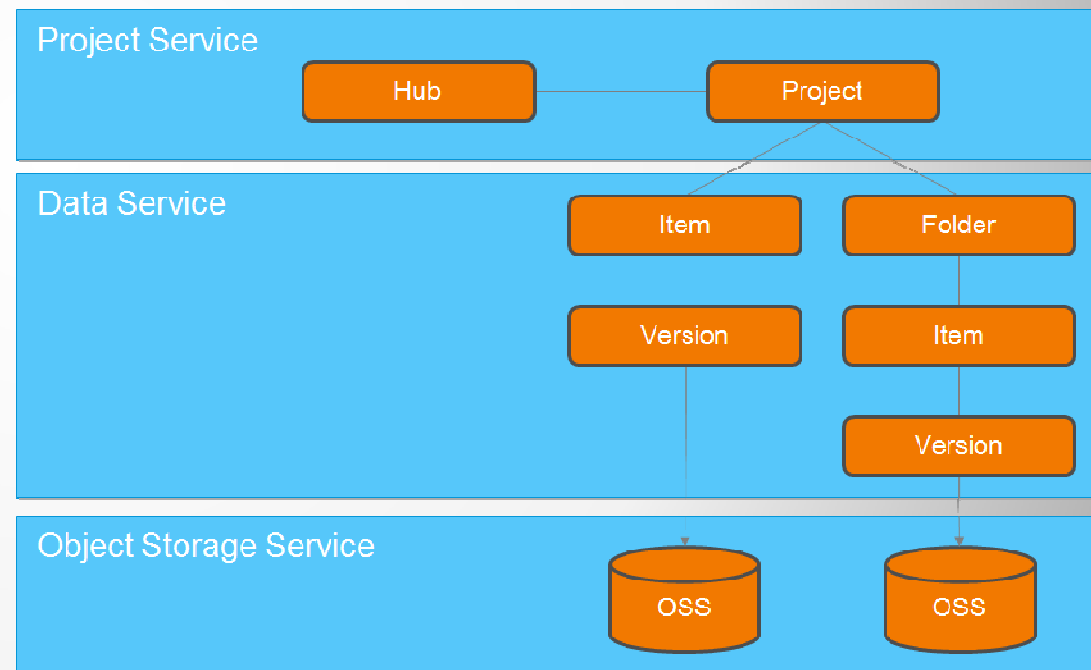
Overview - Endpoints

- Projects, Data & OSS endpoints, here are a few (of many):

- /projects/
    - Hubs   /project/v1/hubs
    - Projects   /project/v1/hubs/:hub_id/projects

- /data/
    - Folders   /data/v1/projects/:project_id/folders/:folder_id/contents
    - Items   /data/v1/projects/:project_id/items/:item_id
    - Version   /data/v1/projects/:project_id/versions/:version_id

- /oss/
    - Buckets   /oss/v2/buckets *(POST to create, GET to list)*
    - Upload   /oss/v2/buckets/:bucketKey/objects/:objectName
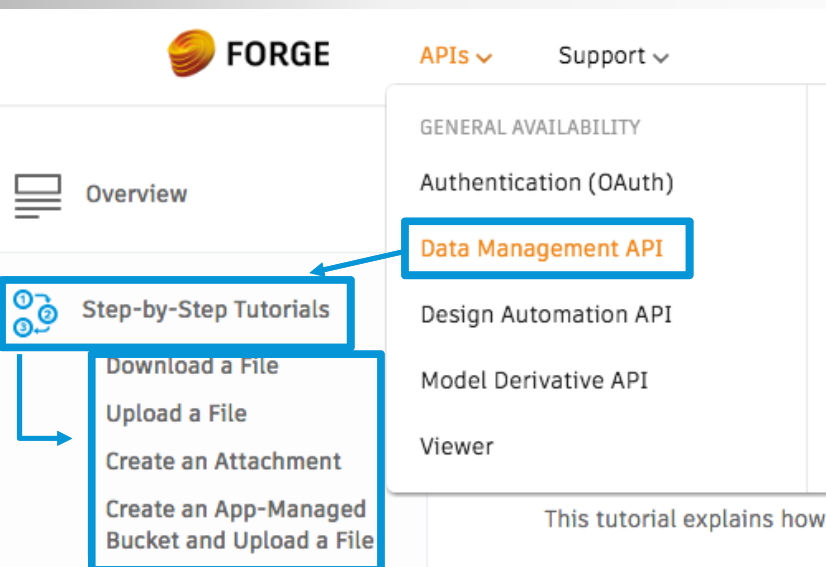
Demonstration!

Live:

bim360 { box
dropbox
egnyte
google
onedrive } .autodesk.io

Source-code

github.com/Autodesk-Forge/**bim360appstore-data.management-nodejs-transfer.storage**

Tutorials, please!

- Check our amazing tutorials!

- Which tutorial? A few scenarios at this post:
  https://forge.autodesk.com/cloud_and_mobile/2016/09/forge-tutorials-which-should-i-use.html

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Tips & Tricks

BIM 360: Listing files
About the attributes.extension.type

- Hubs
    - Enterprise (shared with me):   hubs:autodesk.core:Hub
    - Personal: hubs:autodesk.a360:PersonalHub
    - BIM 360 Docs account: hubs:autodesk.bim360:Account

- Projects
    - Other projects: projects:autodesk.core:Project
    - BIM 360 Docs Projects: projects:autodesk.bim360:Project

- Items
    - Folders   folders:autodesk.core:Folder or folders:autodesk.bim360:Folder
    - Files   items:autodesk.core:File or items:autodesk.bim360:File
    - Others   items:autodesk.bim360:Document
      items:autodesk.bim360:ReviewDocument

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BIM 360: Upload a file

- Tutorial: https://developer.autodesk.com/en/docs/data/v2/tutorials/upload-file/

- POST projects/:project_id/items
  Creates a new item (and first version)
  - data.attribute.extension.type
    "items:autodesk.core:File" : "items:autodesk.bim360:File"
  - included[0].attribute.extension.type
    "versions:autodesk.core:File" : "versions:autodesk.bim360:File"

- POST projects/:project_id/versions
  Creates a new version for an item
  - data.attribute.extension.type
    "versions:autodesk.core:File" : "versions:autodesk.bim360:File"

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BIM 360: Create Folder

- BIM 360 Team
  - POST projects/:project_id/folders
    3-legged
    2-legged

- BIM 360 Docs
  - POST projects/:project_id/commands
    3-legged
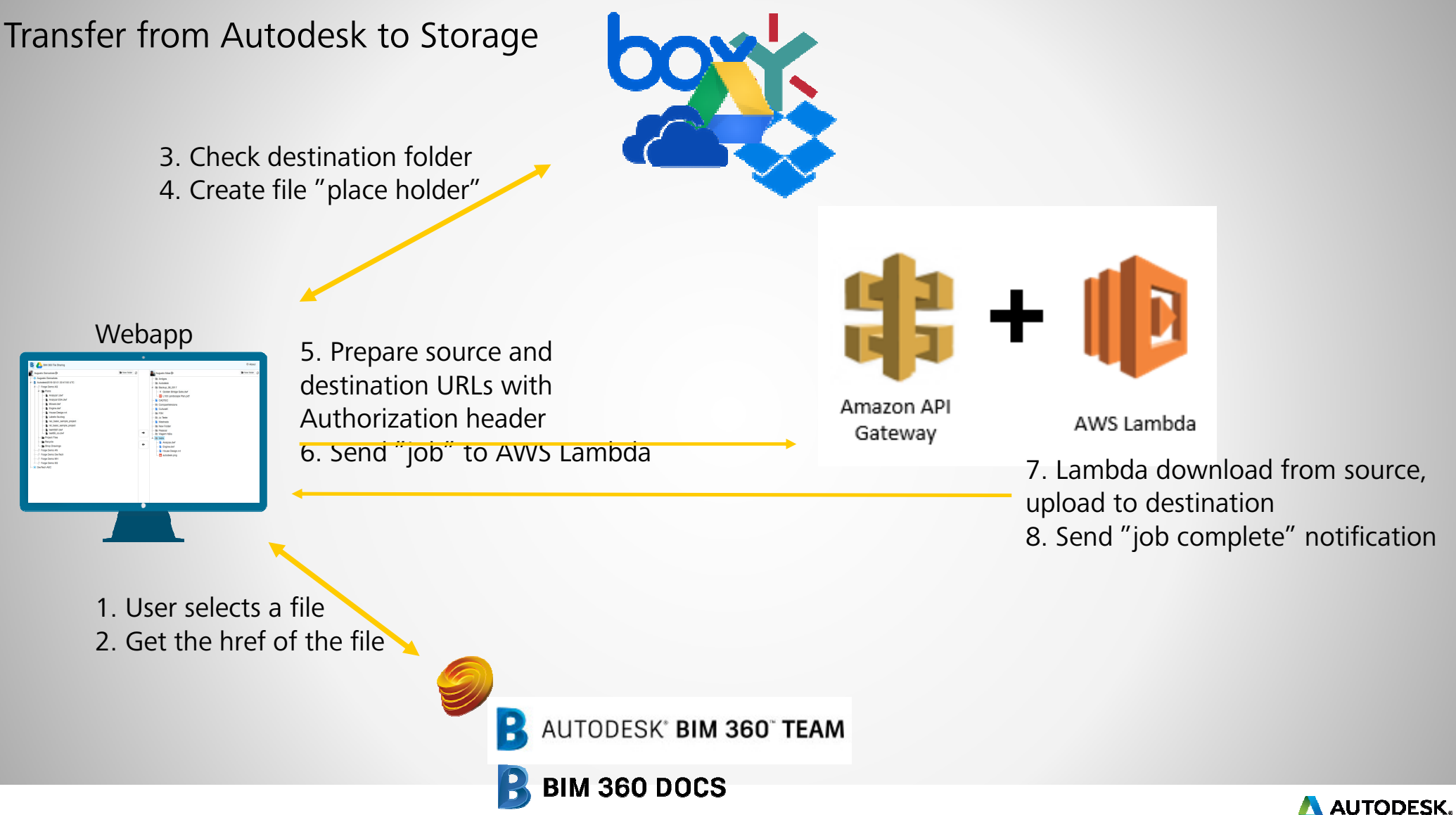   2-legged <u>only with</u> x-user-id (as of August/2017)

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Transferring files

Why AWS Lambda?
## Benefits of "server-less" approach

- Scalable
  Automatically scales your application by running code in response to each trigger

- Multiple transfers
  Code runs in parallel and processes each trigger individually, scaling precisely with the size of the workload

- On-demand
  Runs your code without requiring you to provision servers

- Cheaper (for high demanding tasks)
  Pay for only the compute time you consume, avoid a big server idle most of the time

Transfer from Autodesk to Storage

3. Check destination folder
4. Create file "place holder"

Webapp

5. Prepare source and destination URLs with Authorization header
6. Send "job" to AWS Lambda

Amazon API Gateway + AWS Lambda

7. Lambda download from source, upload to destination
8. Send "job complete" notification

1. User selects a file
2. Get the href of the file

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BIM 360 DOCS

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Transfer from Storage to Autodesk

1. User selects a file
2. Get the href of the file
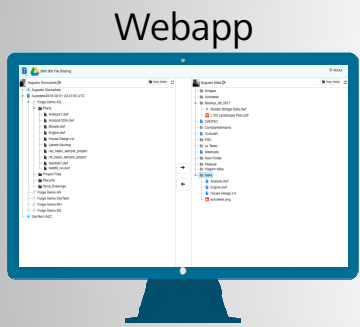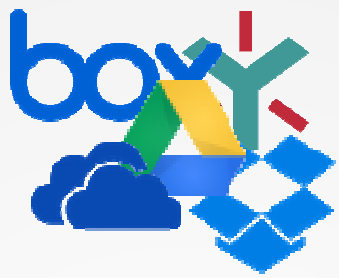
Webapp

5. Prepare source and destination URLs with Authorization header
6. Send "job" to AWS Lambda

Amazon API Gateway ＋ AWS Lambda

7. Lambda download from source, upload to destination
8. Send "job complete" notification

9. Create Version on Autodesk

3. Check destination folder
4. Create file "place holder" (i.e. storage location)

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Learn more

- **AWS Lambda**
  aws.amazon.com/lambda
  aws.amazon.com/api-gateway

- **Transfer to Storages sample**
  forge.autodesk.com/blog/transfer-storages-sample

- **Transferring files with AWS Lambda**
  forge.autodesk.com/blog/transferring-files-aws-lambda

- **Running Forge Viewer on AWS Lambda Server and API Gateway**
  forge.autodesk.com/blog/running-forge-viewer-aws-lambda-server-and-api-gateway

Libraries?

npm
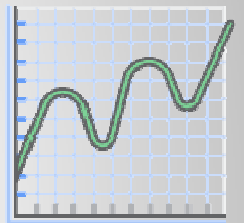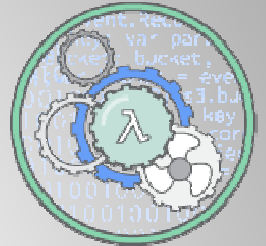
- Sample bim360appstore-data.management-nodejs-transfer.storage

- npm install forge-apis@0.4.1

nuget

- Sample data.management-csharp-sample

- Install-Package Autodesk.Forge -Version 1.0.2

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- Java   github.com/Autodesk-Forge/forge-api-java-client

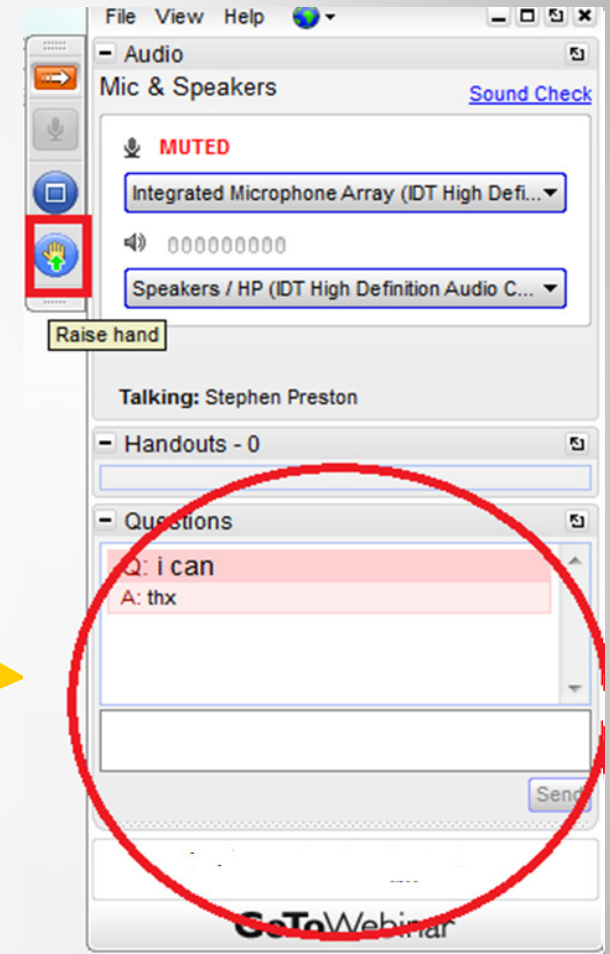- PHP   github.com/Autodesk-Forge/forge-php-client

What's next?

- Register & get a key
  developer.autodesk.com

- See documentation & tutorials
  developer.autodesk.com/en/docs/data/v2

- Reuse code **GitHub**
  github.com/Autodesk-Forge

- Ask questions stackoverflow
  TAG: autodesk-data-management

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Thank you!

Happy programming!

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