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Seamless integration with Forge Webhooks

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Learning Objectives

- Know the capabilities of the Data Management API
- Explain what Webhooks are and how to use them
- Write software that integrates seamlessly with Forge
- Know where to find more help on Forge

Description

Take your Forge applications to the next level with the newly introduced Forge Webhooks API. Webhooks are an industry standard mechanism for subscribing to 'event notifications', allowing you to streamline and simplify your Forge workflows and leverage leading integration services such as Jitterbit, Zapier and Mulesoft. In this class we'll show you everything you need to get started with this simple but powerful tool.

Your Forge DevCon Expert(s)

Adam Nagy joined Autodesk back in 2005, and he has been providing programming support, consulting, training, and evangelism to external developers. He started his career in Budapest working for a civil engineering CAD software company. He then worked for Autodesk in Prague for 3 years, and he now lives in South England, United Kingdom. Twitter @AdamTheNagy

Monmohan Singh is a Software Architect in the Singapore office, as part of Cloud Platforms Team. He is passionate about building and extending Autodesk Forge platform to help our customers be more successful. Twitter @monmohan_singh

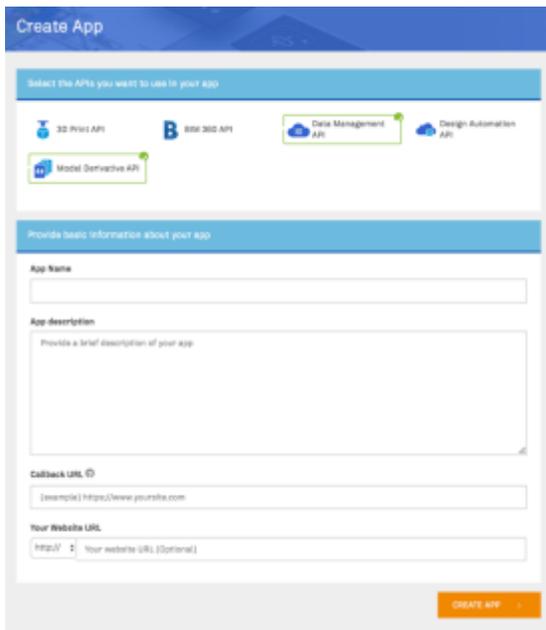
Know the capabilities of the Data Management API

Forge is a set of web services that you can use from any application. Since it can be accessed through HTTP protocol therefore almost all programming languages and environments support it.

The main parts currently available to 3rd parties are:

- Authentication
- Data Management API
- Model Derivative API
- Viewer
- Design Automation API

Before you can use any of the services you need to register a **Forge** app on <https://developer.autodesk.com>



The **Callback URL** will only be needed in case of 3-legged authentication. Once you created the app it will get a **Client ID** and **Client Secret** value that is needed for authentication.

Authentication

This is something that everyone will need in order to get access to the **Forge** services. It provides two types of authentication: 2-legged and 3-legged

2-legged authentication

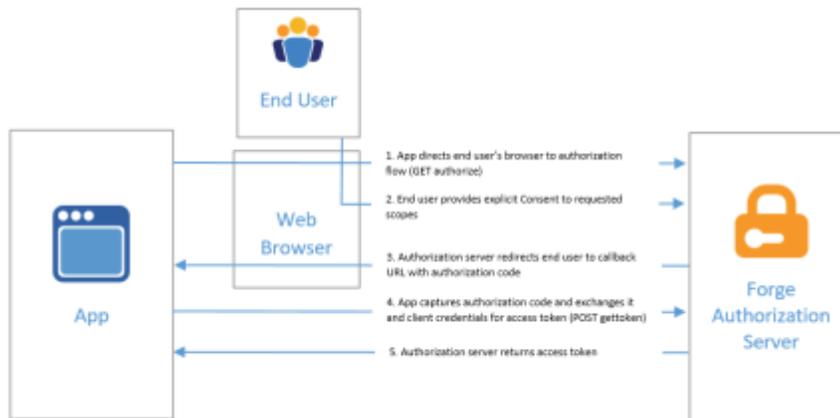
This authentication enables your application to access its own application specific data and so can be done without any user interaction.

This is quite straight forward as you just have to send an HTTP request to the <https://developer.api.autodesk.com/authentication/v1/authenticate> endpoint with

information about the **Client ID** and **Client Secret** of your app and the service will return an **access token** which can be used to access the other **Forge** services..

3-legged authentication

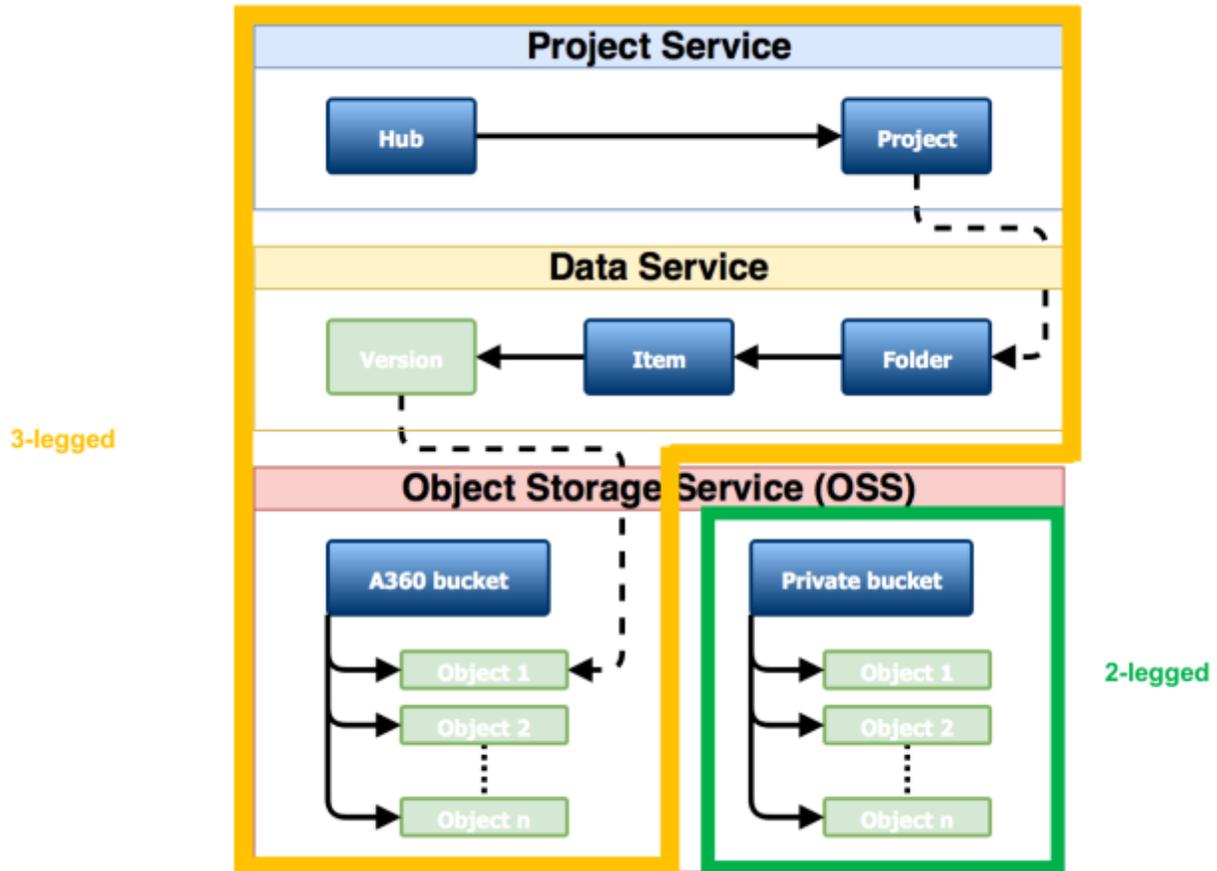
This authentication enables your application to access user data and requires the user to approve the application's access to their data



In this case your app needs to redirect the user to the Autodesk authentication website and once the user approved your app's access to their data, the Autodesk server will call your app's **Callback URL** (provided when registering your app) to send a **code** that your app can exchange for an **access token**.

Data Management API

The **Data Management API** will provide access to any data stored on the **Forge** servers – whether it's in your app's private bucket on **OSS** or user data stored in one of the **A360** type servers (**BIM 360 Docs**, **Fusion Team**, etc.)



Depending on which types of data you want to access (data in **private bucket** or user data in **A360** type storages) you need to use **2-legged** or **3-legged** authentication to get the appropriate **access token**.

In case of **A360** type servers the data is organized by the **Project Service** and the **Data Service**, and the actual raw file data is stored on **OSS**.

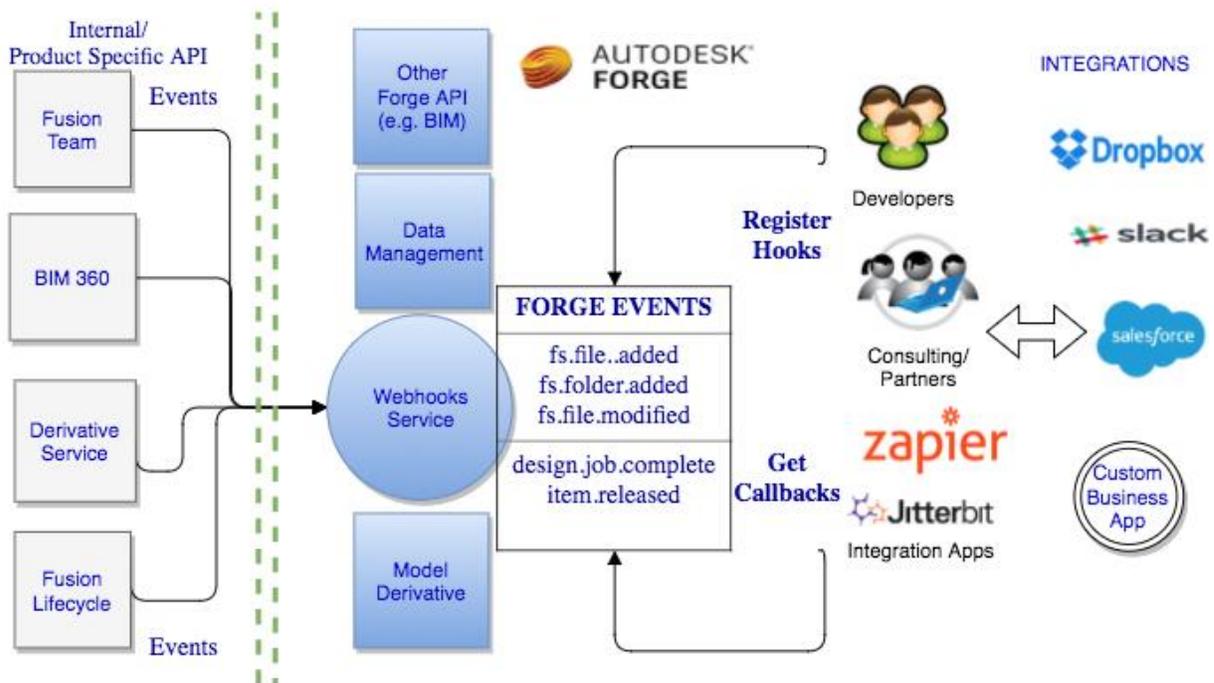
Here is a list of the main **endpoints** provided by **Data Management API**:

/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

Explain what Webhooks are and how to use them

A Webhook sends data to endpoints (URLs) when a certain event occurs. It is triggered by events occurring in web applications. It then sends real-time data to applications listening to it. Since the data is sent immediately, using a Webhook is more efficient than frequently polling for updates.

Similarly, the Forge Webhooks API allows applications to listen to any Forge event, and receive notifications when they occur. When an event is triggered, the Forge Webhooks API sends a notification to a callback URL you have defined.



What can you do with Forge Webhooks API today?

Forge Webhooks API exposes Data Management events in this first release. Applications should be able to create hooks and listen to changes in Data irrespective of which product it resides in, BIM360 Docs, Fusion Team or BIM Team.

All significant Data change events trigger notification like adding and Item, adding a version to an Item, creating a Folder or updating a folder etc. For the list of supported events and when they are triggered see

<https://developer.autodesk.com/en/docs/webhooks/v1/overview/webhooks-events/>.

More Forge events (Model Derivative for example) would be added in subsequent releases

How to create a Webhook on Data Management Events?

1. Select your scope i.e. Folder or Project you are interested in
 - a. Notifications are limited to data changes within a Project or Folder so you must choose the one you are interested in.
2. Select the event (one or more) that you want to listen to
 - a. For the list of events see <https://developer.autodesk.com/en/docs/webhooks/v1/overview/webhooks-events/>.
3. Get your Callback URL ready
 - a. You will need a Web Server that can to receive HTTP POST calls from Forge Webhooks Service
 - b. For the payload that you receive as part of POST see here <https://developer.autodesk.com/en/docs/webhooks/v1/reference/http/>
 - c. The callback payload has enough context so that you can then use Forge Data Management API to know more about the resource, if the need be

Example

Below call will create a hook which receives callbacks whenever a file is added in the given folder.

```
curl -X 'POST'
```

```
-v 'https://developer.api.autodesk.com/webhooks/v1/systems/data/events/fs.file.added/hooks'
```

```
-H 'Content-Type: application/json'
```

```
-H 'authorization: Bearer bNU4P0trbQKNSzxWksLPTzSbbmUz'
```

```
-d '{
```

```
  "callbackUrl": "http://bf067e05.ngrok.io/callback",
```

```
  "scope": {
```

```
    "folder": "urn:adsk.wipprod:fs.folder:co.wT5lCWIXSKeo3razOfHJAw"
```

```
  }
```

```
}'
```

More tutorials here - <https://developer.autodesk.com/en/docs/webhooks/v1/tutorials/>

Write software that integrates seamlessly with Forge

Previously, in order to get up-to-date on the state of our services you had to keep polling our servers. That is a waste of resources regarding our servers, your servers and the network traffic.

Now, with the introduction of **Webhooks**, other services can let **Forge** know what sort of changes they want to be informed of and get a notification.

At the moment it's only available for the **Data Management API**, but even that is involved in quite a few workflows.

You may have a service that synchronizes data stored on **Forge** servers (**A360**, **Fusion Team**, etc) with other storage services. Based on the changes we could do various things. We could automatically notify stakeholders (**email**, **SMS**, **Slack**, etc), could automatically analyze the latest file version, make comparisons between the file versions, make **PLM** type of status changes, etc.

In our sample you'll be able to select an **A360** type folder, specify what sort of changes you are interested in, and the way you'd like to be notified about it.

Know where to find more help on Forge

The following are the places for most of the Forge related information:

Forge developer site

<https://developer.autodesk.com>

Here you'll find a list of all the available **Forge API's** and their documentation including **step-by-step tutorials** to get you started.

Stackoverflow

<https://stackoverflow.com/>

This is where we provide public support for developers. You can find information on how to ask questions there on the following link:

<https://developer.autodesk.com/en/support/get-help>

Forge blog

<https://forge.autodesk.com/blog>

We keep posting **Forge** related articles on the above website about frequently asked questions, latest API's, interesting topics we run into, upcoming events.

Autodesk-Forge GitHub repository

<https://github.com/autodesk-forge>

We have lots of samples on **GitHub** that you can have a look at. Many of them has a **live version** as well, so you can see the sample in action before looking at the source code.