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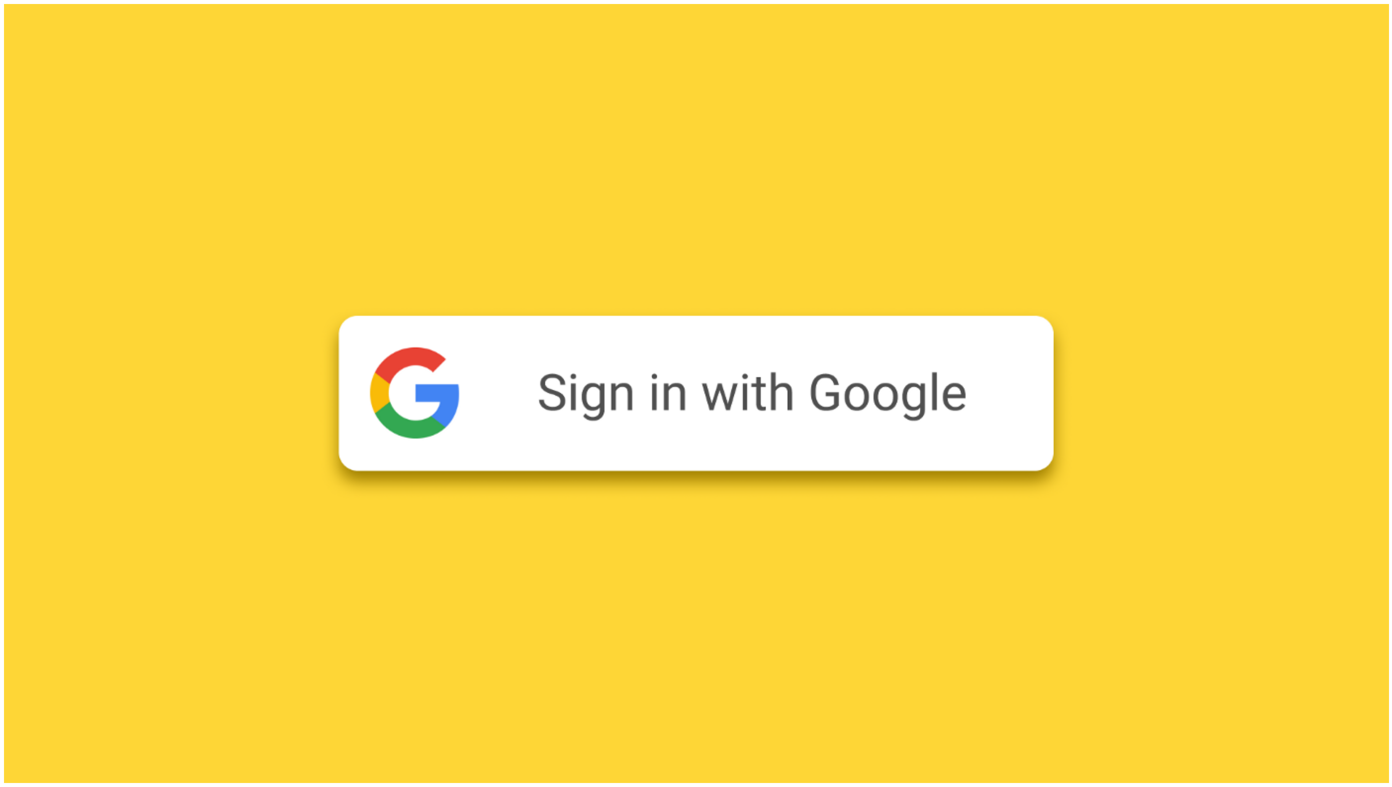
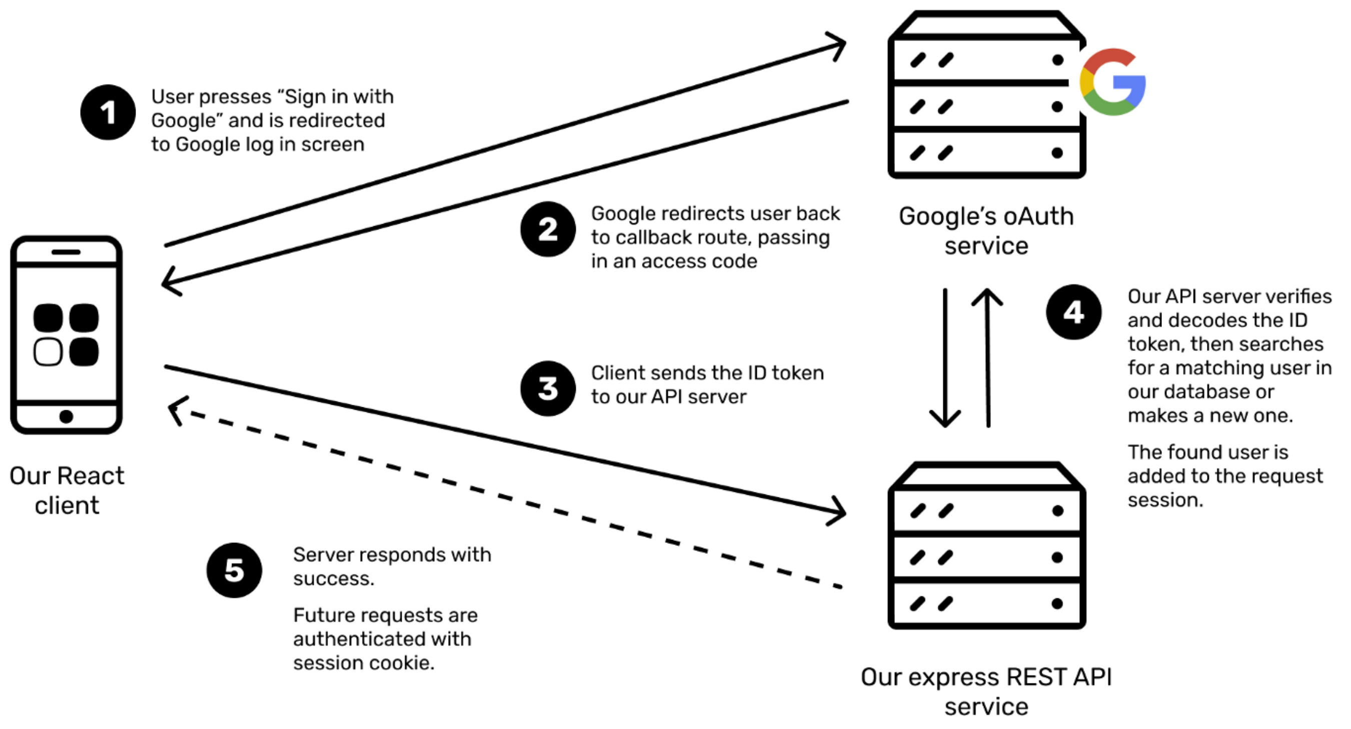


How to build Google login into a React app and Node/Express API

Let’s make an React app and API that lets us log in with Google.

We’ll show a “Log in with Google” button on our homepage, and rely on Google‘s servers to tell us some facts about the user (like their email address), which we’ll then store and use to authenticate the user in future.


1
User presses "Sign in with Google" and is redirected to Google log in screen
2
Google redirects user back to callback route, passing in an access code
Google's oAuth service
3
Client sends the ID token to our API server
4
Our API server verifies and decodes the ID token, then searches for a matching user in our database or makes a new one.
The found user is added to the request session.
Our React client
5
Server responds with success.
Future requests are authenticated with session cookie.
Our express REST API service

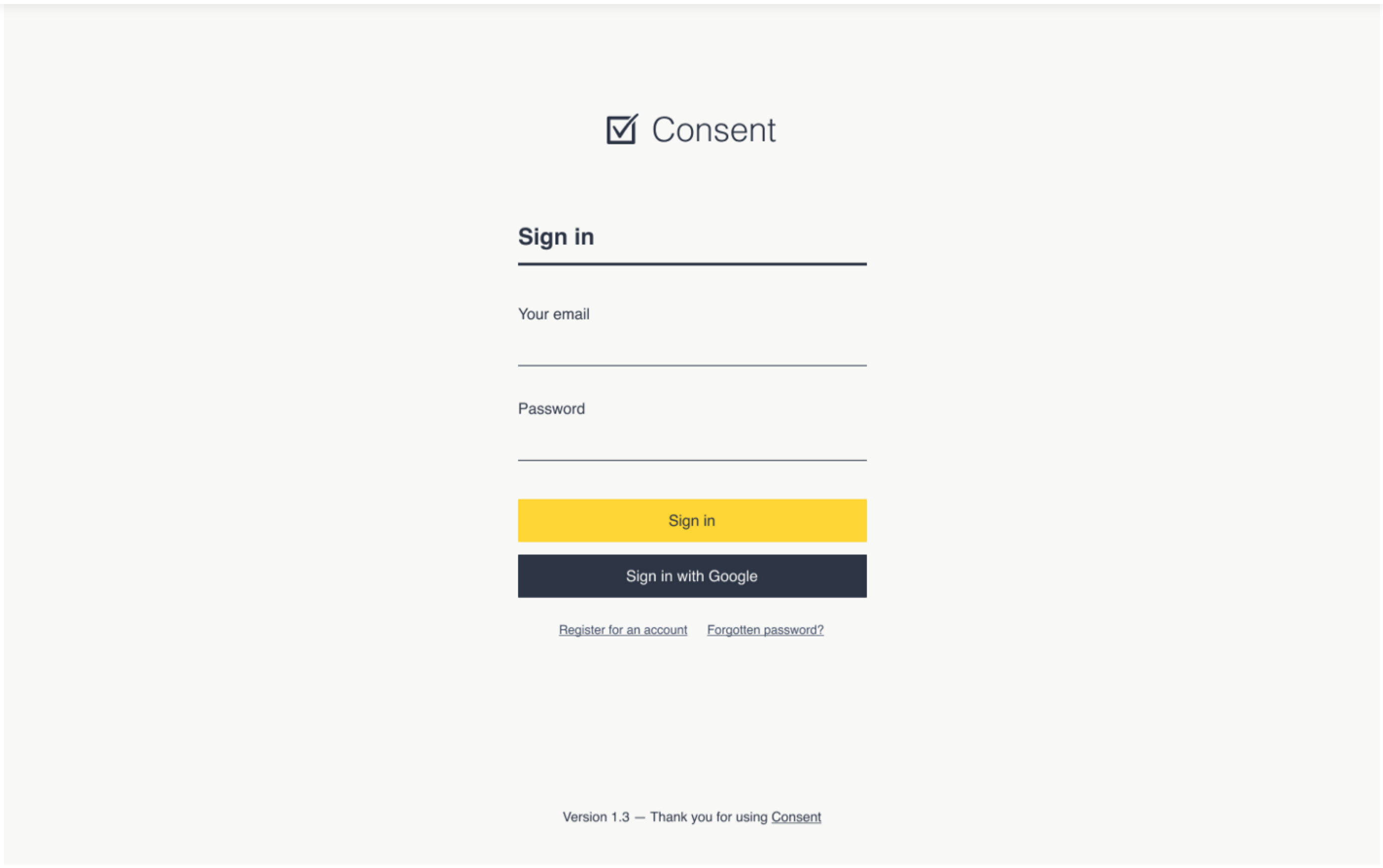
The three-part flow we're creating.

Why do this? Well, at minimum we can save the user from having to create and remember another password. We can also re-use other information from Google, like their profile picture and full name. Longer term, we could integrate other Google services on the user's behalf.

You'll need

- A React application that makes requests of your API (create-react-app is just fine!)
- An express.js API we want to authenticate against

At the moment, our app only has basic username and password login.



The completed sign in screen for our example app. The “Sign in with Google” button is the important part.

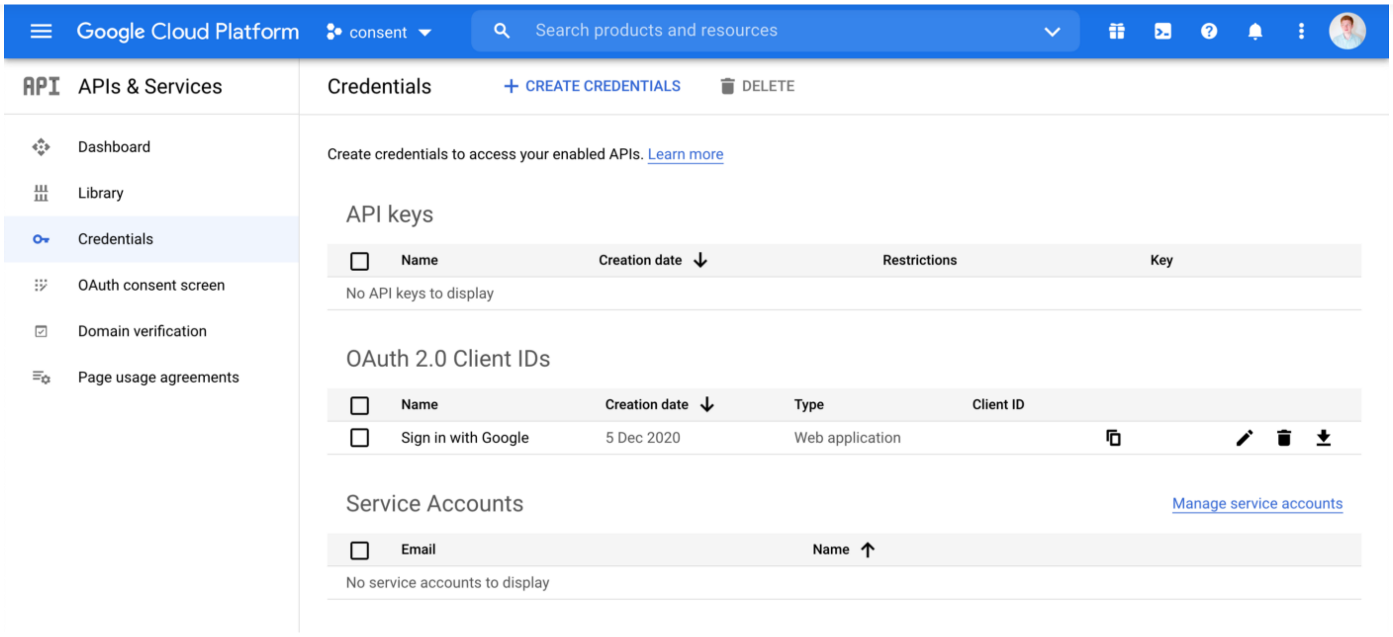
1. Set up a Google Cloud project

First, you’ll need to create a Google Cloud project.

You’ll need to configure your **OAuth consent screen**. Choose **external**. Google will then ask for the app’s name and logo, plus some developer contact details.

It will then ask what **scopes** we want to request — special permissions to read data and take action on behalf of our users. For our example we don’t need any of these.

Lastly, we’ll add our own Google account as a test user.



Create credentials to access your enabled APIs. Learn more

API keys

Name	Creation date ↓	Restrictions	Key
No API keys to display			

OAuth 2.0 Client IDs

Name	Creation date ↓	Type	Client ID
Sign in with Google	5 Dec 2020	Web application	

Service Accounts

Manage service accounts

Email	Name ↑
No service accounts to display	

Once we've created our credentials, we should see something like this.

Now we can go to the **Credentials** screen and create a new **oAuth client ID** for a web application. Name it something like "Log in with Google".

Google will ask us for authorised origins and a redirect URI. We just care about local testing for now, so we can use this value for both:

```
http://localhost:3000
```

Google will then give us a **client ID** and a client secret. We'll only need the client ID for this example.

2. Add a login component to our React app

First, make the client ID from earlier available in a .env file.

We'll use the popular **react-google-login** package to display a "Log in with Google" button that will handle displaying the Google login prompt and retrieving information about the user.

```
npm i react-google-login
```

We can render the component in our app like:

```
<GoogleLogin
    clientId={process.env.REACT_APP_GOOGLE_CLIENT_ID}
    buttonText="Log in with Google"
    onSuccess={handleLogin}
    onFailure={handleLogin}
    cookiePolicy={'single_host_origin'}
/>
```

When we click the button, it will trigger a pop-up where we can choose the Google account we want to log in with.

Then, the component will trigger the `handleLogin` function, passing in a Google user profile object, which contains an encrypted **ID token**.

We want to use this information to log a user into our own back-end, so the next step is to send the ID token to *our own* API:

```
const handleLogin = async googleData => {

  const res = await fetch("/api/v1/auth/google", {
      method: "POST",
      body: JSON.stringify({
      token: googleData.tokenId
    }),
    headers: {
      "Content-Type": "application/json"
    }
  })

  const data = await res.json()
  // store returned user somehow
```

Next, we need to write an API route and controller to handle this request and complete the cycle.

3. Authenticate the user against our own API

We need to verify the Google-provided ID token is valid, and if so, either update or create a matching user in our database.

We'll use Google's official node.js auth library to verify and decode the ID token. This is a *vital* step — accepting a plain user ID or email would provide no security at all.

```
npm i google-auth-library
```

We'll also need to provide in the same `CLIENT_ID` from earlier as environment config.

In our API, we could write some Express route like:

```
const { OAuth2Client } = require('google-auth-library')
const client = new OAuth2Client(process.env.CLIENT_ID)

server.post("/api/v1/auth/google", async (req, res) => {

    const { token }  = req.body

    const ticket = await client.verifyIdToken({
        idToken: token,
        audience: process.env.CLIENT_ID
    });
    const { name, email, picture } = ticket.getPayload();

    const user = await db.user.upsert({
        where: { email: email },
        update: { name, picture },
        create: { name, email, picture }
    })
```

This handles POST requests to `/api/v1/auth/google` , verifying and decoding the token, pulling out the three pieces of information we want to store, performs an upsert operation on our database, and returns the retrieved user as JSON.

Here, we're using Prisma to speak to our database, but Mongoose, Sequelize, Knex or anything else will look similar.

Doing an *upsert* means we can keep our local database up to date if the user changes their picture or name on Google.

4. Manage the user's session

We're nearly there.

We've verified the user and stored some information about them, but we can't expect them to sign in every time they call our API, so we need to remember the currently logged in user.

We're going to do this with plain old sessions and cookies.

We *could* use a JSON web token (JWT) instead, but since this is an API that will only be consumed by our own app, and won't be operating on a massive scale, we don't need to bother with the extra overhead of JWTs.

```
npm i express-session cookie-parser
```

Once you've set up sessions, we need to make a small modification to the `/api/v1/auth/google` POST handler from earlier:

```
...

const user = await db.user.upsert({
res.status(201)
res.json(user)

...
```

Now, anywhere else in our API we can check the currently signed in user by accessing `req.session.userId`, and send an unauthorised response if it isn't set.

Here's some middleware that does that:

```
server.use(async (req, res, next) => {
    const user = await db.user.findFirst({where: { id:
req.session.userId }})
    req.user = user
    next()
})
```

Making a call to our database ensures that we're always getting the most recent information about the user — if their account is removed from our database, their access is immediately revoked.

Once we have that middleware in place, asign out route is very simple to create:

```
server.delete("/api/v1/auth/logout", async (req, res) => {
    await req.session.destroy()
    res.status(200)
    res.json({
        message: "Logged out successfully"
    })
})
```

As is a route to simply return the currently logged in user:

Next steps

You'll probably need to use a context provider and hook to handle the currently logged in user in your React app. Here's a Github Gist showing what one could look like.

This approach could be extended for other federated login providers. We could implement other UI on the front-end, and then POST tokens to different `/api/v1/auth/:provider` routes, where the tokens will be decoded, a user found and added to the session.

See Google's docs on doing this sort of thing.

The Express route examples in this tutorial use async/await, so we need to handle errors differently.

Finally, here's a Github Gist with some of the code samples from this tutorial.