Suspense + GraphQL = Superpowers ✨

Jerel Miller and Alessia Bellisario,
Apollo Client

React Rally 2023

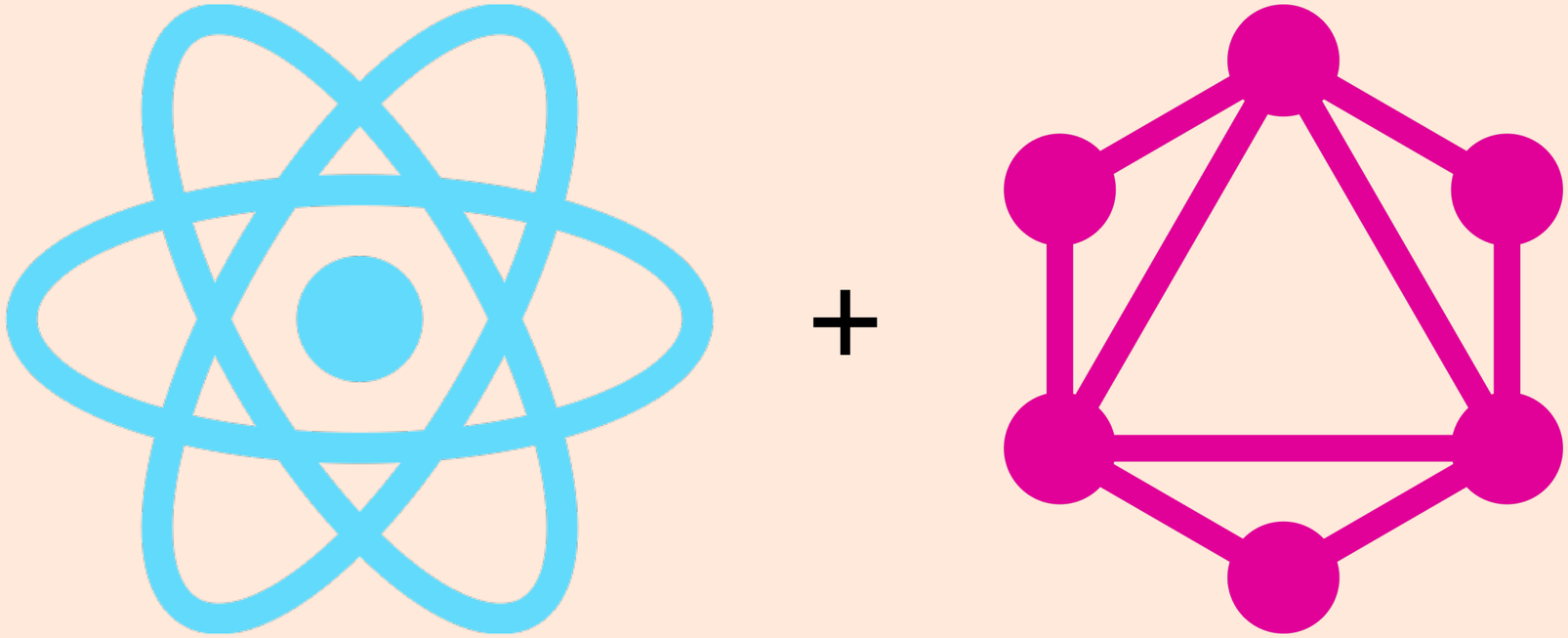
go.apollo.dev/c/suspense-talk

Jerel Miller / @jerelmiller

Principal Software Engineer

Alessia Bellisario / @alessbell

Staff Software Engineer



What this talk *is* about

- (Re-)introduction to Suspense concepts…
- for use in client-rendered web apps…
- using Apollo Client's Suspense hooks to leverage the best of both technologies

What this talk *is not* about

- React Server Components (RSC) and/or Streaming SSR
  - See our experimental package, @apollo/experimental-nextjs-app-support
- Implementing Suspense support in a data fetching library 😅

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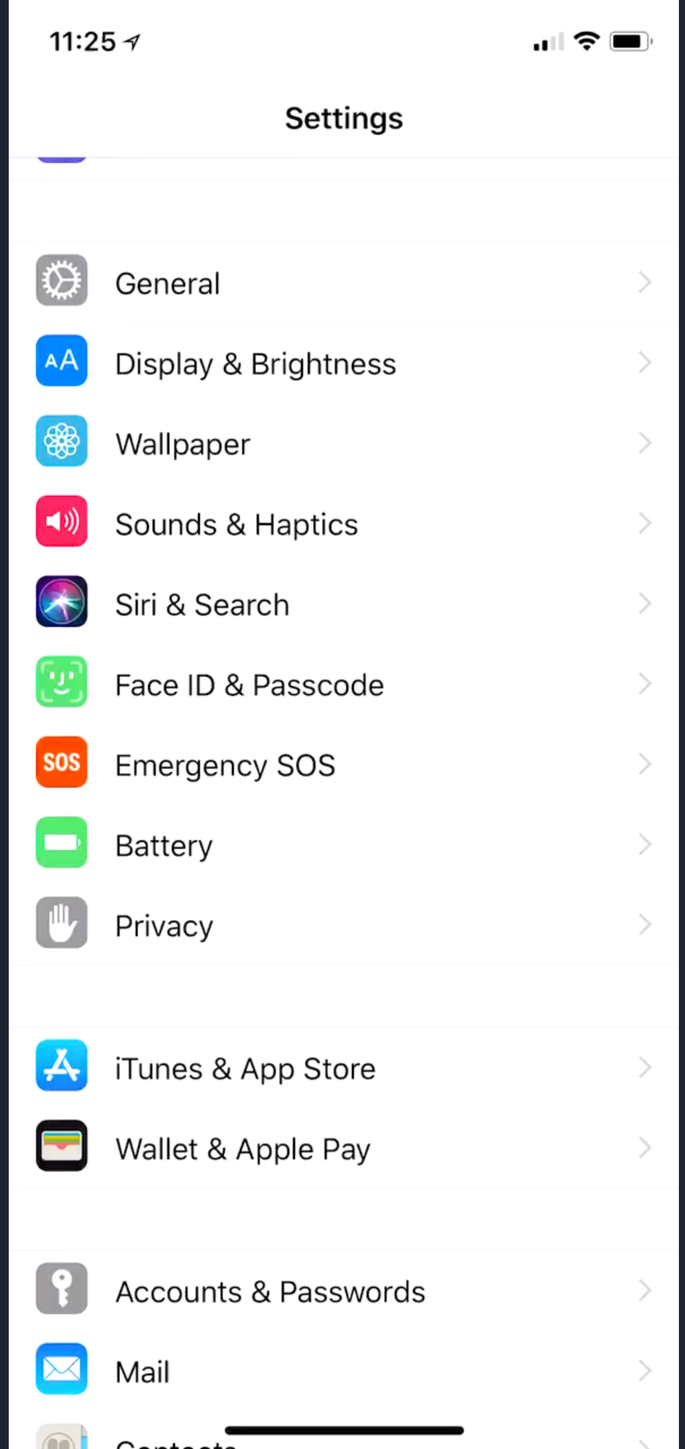
One reason iOS feels so much nicer than the web: fewer unnecessary loading states. Look what happens when you tap an option in the Settings app: rather than transition immediately and show a spinner, it pauses for a moment until the view is ready.

2:31 PM · Jan 20, 2018



The status quo:

The status quo:

`useQuery`

Albums.js

```
import { useQuery, gql } from "@apollo/client";

const GET_ALBUMS_QUERY = gql`
  query GetAlbums {
    albums {
      id
      year
      title
    }
  }
`;

export default function Albums() {
  const { data, loading } = useQuery(GET_ALBUMS_QUERY);

  if (loading) return <Loading />;

  return (
    <ul>
      {data.albums.map((album) => (
        <li key={album.id}>
          {album.title} ({album.year})
        </li>
      ))}
    </ul>
  );
}

function Loading() {…
```

Browser Tests Terminal

https://zqx5rr.csb.app/

Open The Beatles artist page

Console 0 Problems 0 React DevTools 0

ArtistPage.js | Albums.js

```jsx
import { Suspense } from "react";
import Albums from "./Albums.js";

export default function ArtistPage({ artist }) {
  return (
    <>
      <h1>{artist.name}</h1>
      <Suspense fallback={<Loading />}>
        <Albums artistId={artist.id} />
      </Suspense>
    </>
  );
}

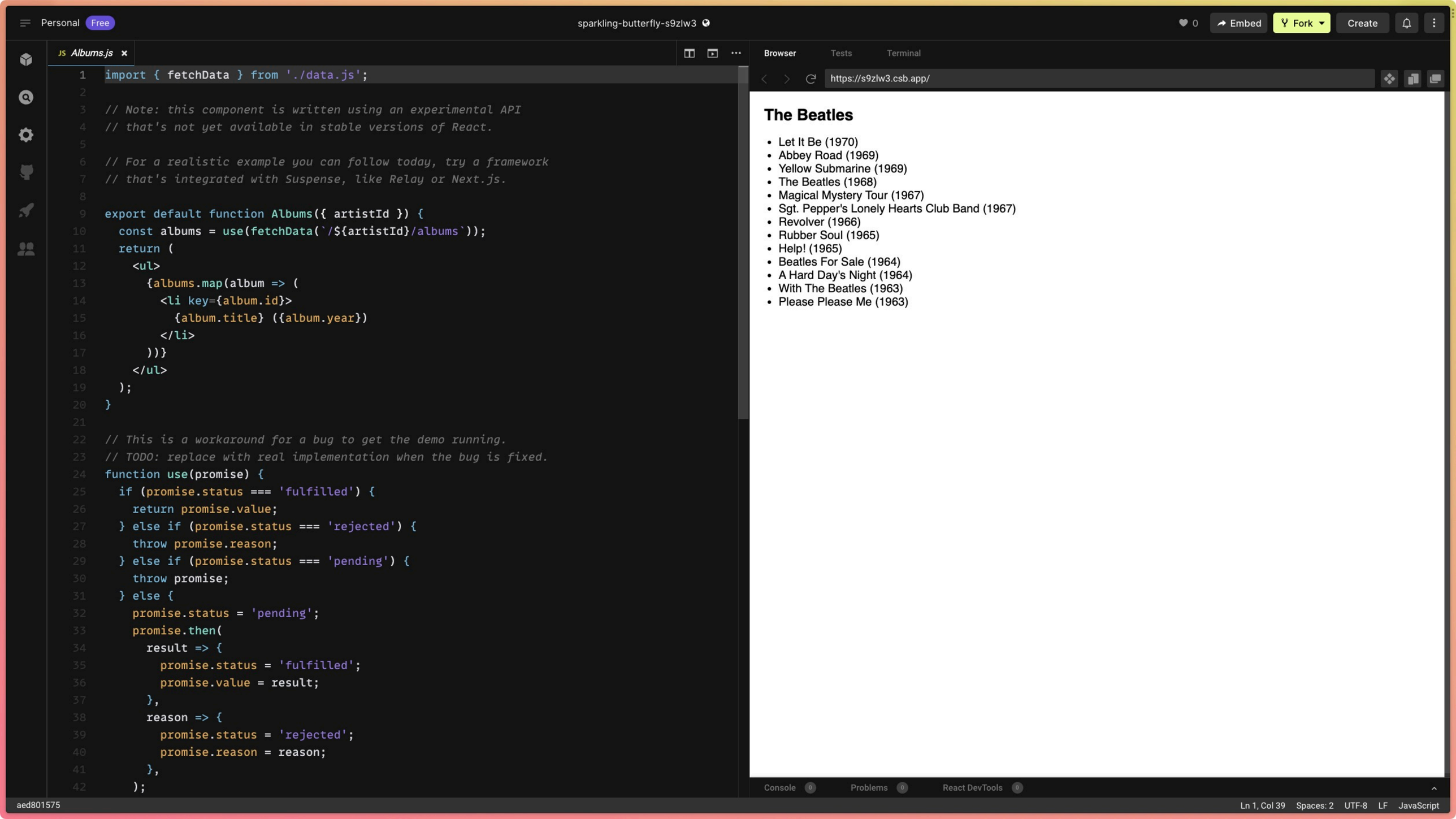
function Loading() {
  return <h2>🌀 Loading...</h2>;
}
```

Browser | Tests | Terminal

https://x6x8hw.csb.app/

Open The Beatles artist page

Console 0 | Problems 1 | React DevTools 0


Personal
Free
sparkling-butterfly-s9zlw3
0
Embed
Fork
Create
Albums.js
import { fetchData } from './data.js';
// Note: this component is written using an experimental API
// that's not yet available in stable versions of React.
// For a realistic example you can follow today, try a framework
// that's integrated with Suspense, like Relay or Next.js.
export default function Albums({ artistId }) {
const albums = use(fetchData(`/${artistId}/albums`));
return (

{albums.map(album => (
<li key={album.id}>
{album.title} ({album.year})

))}

);
}
// This is a workaround for a bug to get the demo running.
// TODO: replace with real implementation when the bug is fixed.
function use(promise) {
if (promise.status === 'fulfilled') {
return promise.value;
} else if (promise.status === 'rejected') {
throw promise.reason;
} else if (promise.status === 'pending') {
throw promise;
} else {
promise.status = 'pending';
promise.then(
result => {
promise.status = 'fulfilled';
promise.value = result;
},
reason => {
promise.status = 'rejected';
promise.reason = reason;
},
);
Browser
Tests
Terminal
https://s9zlw3.csb.app/
The Beatles
Let It Be (1970)
Abbey Road (1969)
Yellow Submarine (1969)
The Beatles (1968)
Magical Mystery Tour (1967)
Sgt. Pepper's Lonely Hearts Club Band (1967)
Revolver (1966)
Rubber Soul (1965)
Help! (1965)
Beatles For Sale (1964)
A Hard Day's Night (1964)
With The Beatles (1963)
Please Please Me (1963)
Console
Problems
React DevTools
aed801575
Ln 1, Col 39
Spaces: 2
UTF-8
LF
JavaScript

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        promise.value = result;
      },
      reason => {
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        promise.reason = reason;
      },
    );
    throw promise;
  }
}
```

https://github.com/acdlite/rfcs/blob/first-class-promises/text/0000-first-class-support-for-promises.md

```ts
export const __use =
  realHook ||
  function __use<TValue>(promise: Promise<TValue>) {
    const statefulPromise = wrapPromiseWithState(promise);

    switch (statefulPromise.status) {
      case "pending":
        throw statefulPromise;
      case "rejected":
        throw statefulPromise.reason;
      case "fulfilled":
        return statefulPromise.value;
    }
  };
```

https://github.com/apollographql/apollo-client/blob/main/src/react/hooks/internal/__use.ts

Note

Only Suspense-enabled data sources will activate the Suspense component. They include:

- Data fetching with Suspense-enabled frameworks like Relay and Next.js
- Lazy-loading component code with `lazy`

Suspense **does not** detect when data is fetched inside an Effect or event handler.

The exact way you would load data in the `Albums` component above depends on your framework. If you use a Suspense-enabled framework, you'll find the details in its data fetching documentation.

Suspense-enabled data fetching without the use of an opinionated framework is not yet supported. The requirements for implementing a Suspense-enabled data source are unstable and undocumented. An official API for integrating data sources with Suspense will be released in a future version of React.

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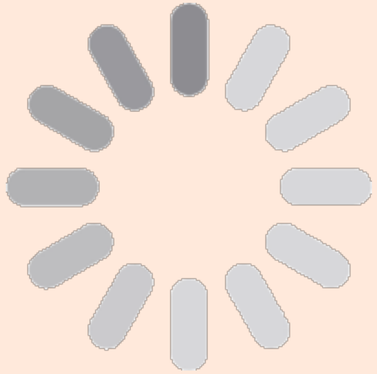
OK everyone, you can use Suspense for data fetching now

1:08 PM · May 4, 2023

319 **Reply** **Copy link**



loading states

more than coordinating loading states

much more than coordinating loading states

Introducing…

Introducing...

`useSuspenseQuery`

Suspenseful useQuery...
that fetches data...
integrated with React 18 Suspense...
including transitions

APOLLO

Home

Search

Your Library

Liked Songs
Playlist · Spotify

Your Episodes
Playlist · Spotify

React Rally 2023
Playlist · Jerel Miller

Ivy Dance
Playlist · miller.liz

The Luminary Radio
Playlist · Spotify

Dream on Dreamer Radio
Playlist · Spotify

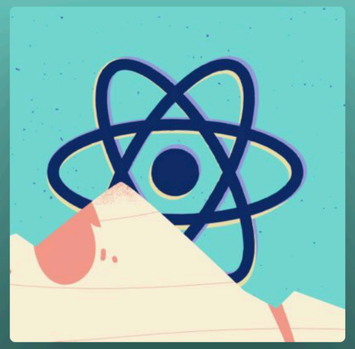
Sleep Token Radio
Playlist · Spotify

My recommendation playlist
Playlist · Jerel Miller

Ultimate Rock Gaming
Playlist · Spotify

Adrenaline Workout
Playlist · Spotify

Jerel Miller



PLAYLIST

React Rally 2023

Jerel Miller · 6 songs

#	TITLE	ALBUM	DATE ADDED	
1	Blank Space Taylor Swift	1989	17 minutes ago	3:51
	Writing On The Walls Underoath	Define The Great Line	18 minutes ago	4:02
3	Winter Seeds Freelance Whales	Diluvia	7 minutes ago	5:05
4	The Artist In The Ambulance Thrice	The Artist In The Ambulance	7 minutes ago	3:39
5	In the End Linkin Park	Hybrid Theory (Bonus Edition)	6 minutes ago	3:36
6	Look What You Made Me Do Taylor Swift	reputation	6 minutes ago	3:31

Writing On The Walls
Underoath

2:20 4:02

Listening on Jerel's Apollo MacBook Pro

APOLLO

Home

Search

Your Library

Liked Songs
Playlist · Spotify

Your Episodes
Playlist · Spotify

SIDEBAR

The Luminary Radio
Playlist · Spotify

Dream on Dreamer Radio
Playlist · Spotify

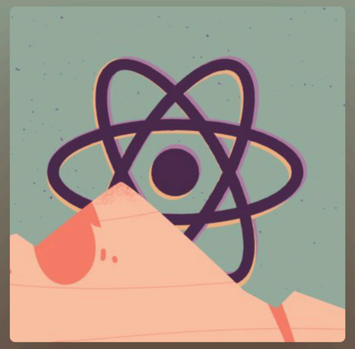
Sleep Token Radio
Playlist · Spotify

My recommendation playlist
Playlist · Jerel Miller

Ultimate Rock Gaming
Playlist · Spotify

Adrenaline Workout
Playlist · Spotify

USER MENU



PLAYLIST

React Rally 2023

Jerel Miller · 6 songs

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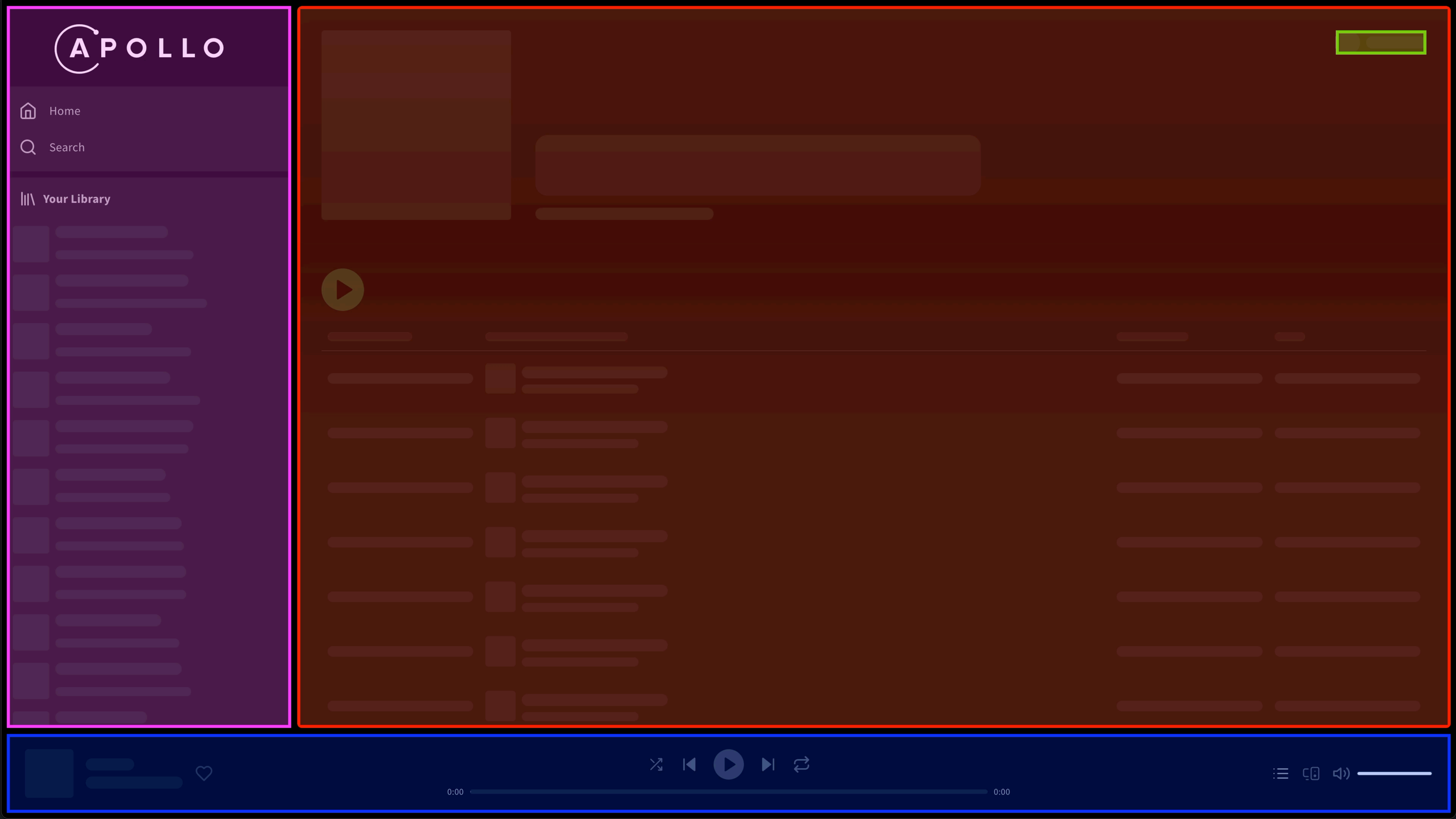
Writing On The Walls
Underoath

2:20

4:02

PLAYBAR

Listening on Jerel's Apollo MacBook Pro


APOLLO
Home
Search
Your Library
0:00
0:00

Let's write some <code />

If we had more time...

Avoiding request waterfalls with useBackgroundQuery

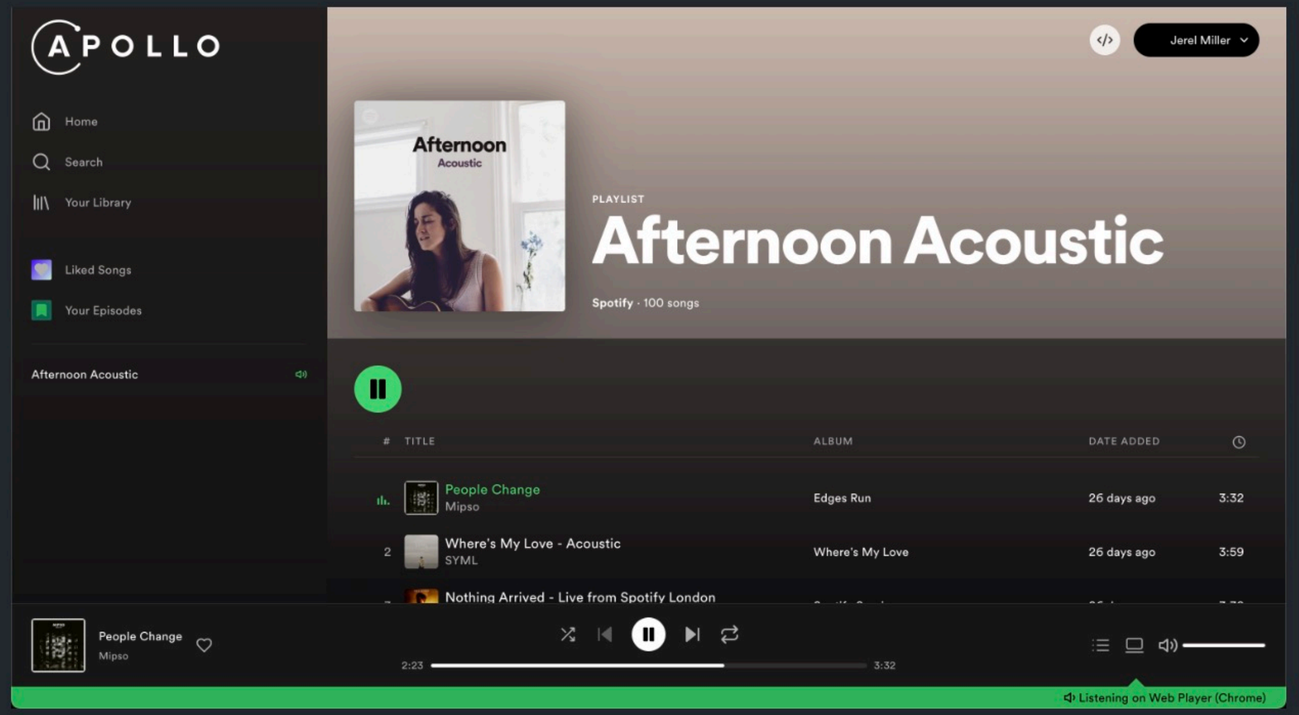
Reading queries with useReadQuery

Looking to the future 🔮

- 3.9.0, currently in planning phase
  - Suspenseful useFragment
  - *lazy* useBackgroundQuery for interactivity and preloading

README.md

React + Apollo Spotify Showcase



Architecture

The overall API architecture is made up of two GraphQL servers, one exposing subscription/mutation functionality and the other exposing query functionality. Both GraphQL servers use the Spotify REST API as their datasource, but we are hosting the subscription server on dedicated infrastructure (Railway) and the other on serverless functions (Netlify).

TypeScript 99.1% JavaScript 0.5%
CSS 0.2% HTML 0.1%
MDX 0.1% SCSS 0.0%

Thank you!

go.apollo.dev/c/suspense-talk