

Progressive Web App Tooling: To the Lighthouse and Beyond

PROGRESSIVE WEB APP

ROADSHOW 2016 

Let's Go on a Journey

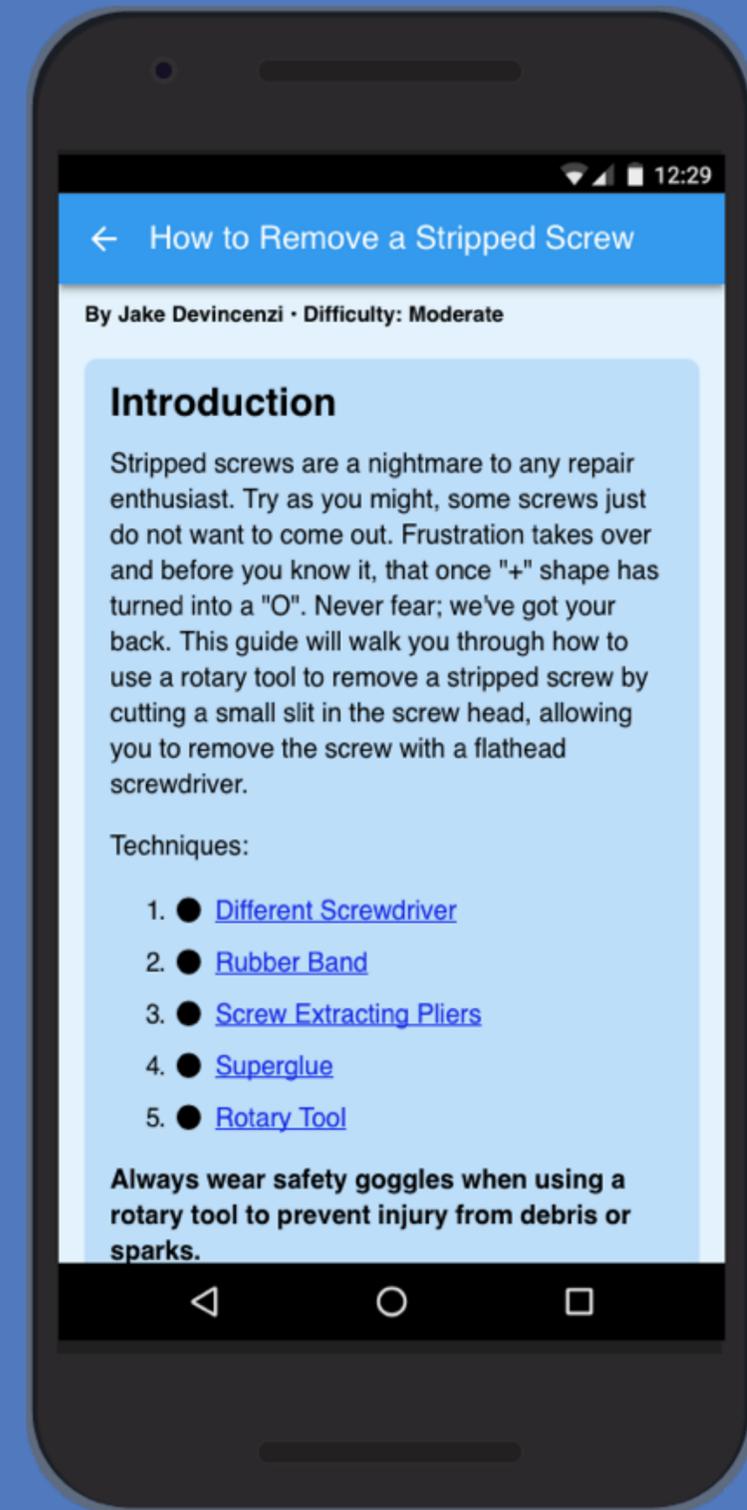
We'll transform a single page app
into a progressive web app.

Our Starting Point

Single page app, client-side render

Powered by the iFixit API

React for virtual DOM manipulation



Lighthouse



Lighthouse

offered by [lighthouse-extension-owners](#)

★★★★★ (7)

[Developer Tools](#)

2,209 users

ADDED TO CHROME



OVERVIEW

REVIEWS

SUPPORT

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Lighthouse

<https://platform-status.mozilla.org/>

Progressive Web App

Best Practices

View: User feature



Progressive Web App

99 / 100

These audits validate the aspects of a Progressive Web App.

App can load on offline/flaky connections

Ensuring your web app can respond when the network connection is unavailable or flaky is critical to providing your users a good experience. This is achieved through use of a [Service Worker](#).

- Has a registered Service Worker Yes
- URL responds with a 200 when offline Yes
- Manifest's start_url is in cache storage for offline use (Coming soon) 👍👍

Page load performance is fast

Users notice if sites and apps don't perform well. These top-level metrics capture the most important perceived performance concerns.

- First meaningful paint (target value: 1,000ms) 100 (1019.19ms)
- Speed Index (target value: 1,000) 85 (2660)
- Content scrolls at 60fps (Coming soon) 👍👍



Compatible with your device

Lighthouse

<https://github.com/GoogleChrome/lighthouse>

[Website](#)

[Report Abuse](#)

Additional Information

Version: 1.1.2

Updated: August 9, 2016

Size: 703KiB

Language: English

Use Lighthouse
to Establish a Baseline

goo.gl/S07woZ

```
$ node lighthouse-cli/index.js https://ifixit-pwa.appspot.com/
```

```
Lighthouse results: https://ifixit-pwa.appspot.com/
```

```
Name: Progressive Web App
```

```
Description: These audits validate the aspects of a Progressive Web App.
```

```
App can load on offline/flaky connections: 100%
```

```
-- Has a registered Service Worker: true
```

```
-- URL responds with a 200 when offline: true
```

```
Page load performance is fast: 99%
```

```
-- First meaningful paint: 100 (948.8ms)
```

```
-- Speed Index: 98 (1283)
```

```
- First Visual Change: 982ms
```

```
- Last Visual Change: 1775ms
```

```
-- Content scrolls at 60fps: ~\_(\ツ)\_/~
```

```
-- Touch input gets a response in < 150ms: ~\_(\ツ)\_/~
```

```
... & more ...
```

Lighthouse: Fantastic Tool

...but not a destination!

Opportunities for Improvement

- Server-side rendering
- Service worker
- Web app manifest

Progressive Web App

21 / 100

These audits validate the aspects of a Progressive Web App.

App can load on offline/flaky connections

Ensuring your web app can respond when the network connection is unavailable or flaky is critical to providing your users a good experience. This is achieved through use of a [Service Worker](#).

- Has a registered Service Worker
- URL responds with a 200 when offline
- Cache contains start_url from manifest

No
No
No

Page load performance is fast

Users notice if sites and apps don't perform well. These top-level metrics capture the most important perceived performance concerns.

- First meaningful paint (target: 1,600ms)

(2747.9ms) 77

Server-side rendering

Improves time to first paint.

Content no longer depends on JavaScript.

See What Changed:

goo.gl/a6P8z3

Confirm in Lighthouse &
Various Browsers

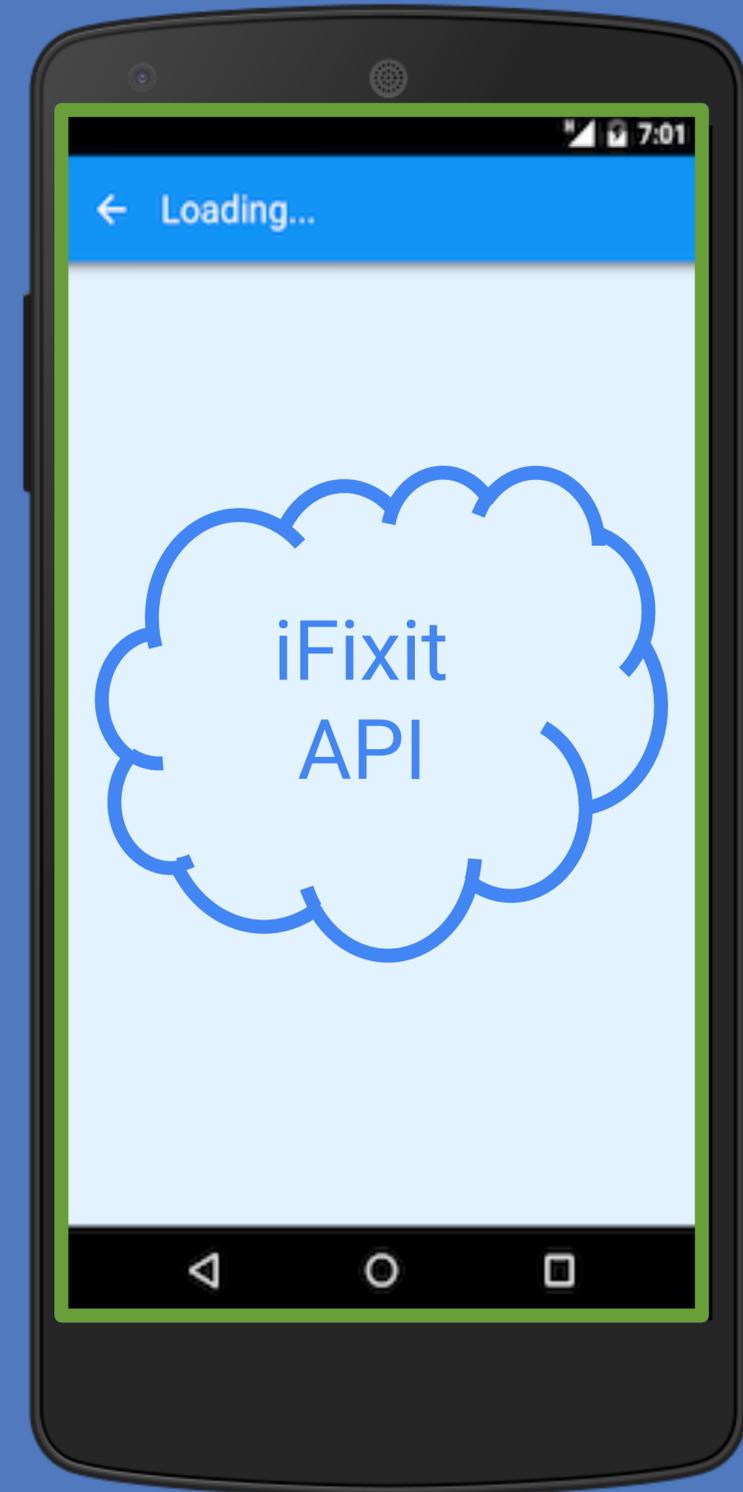
Adding a Service Worker

Make it work offline

Remember:

**Treat service workers as
progressive enhancement!**

We're using the
App Shell +
dynamic content
model.



Know your network traffic!

| Name Path | Me... | Status Text | Initiator | Size Content | Time Latency | Timeline – Sta |
|--|-------|----------------|-----------------------------|--------------------|------------------|---|
|  dFehAI2SRQC2hnrY.stan... d3nevzfk7ii3be.cloudfront... | GET | 200 OK | <u>(index):12</u> Parser | 15.7 KB 15.2 KB | 113 ms 113 ms |  |
|  5Zbcawuy11eUiuw4.stand... d3nevzfk7ii3be.cloudfront... | GET | 200 OK | <u>(index):12</u> Parser | 35.3 KB 34.8 KB | 155 ms 67 ms |  |
|  qWOHtBmCQpUvHckS.st... d3nevzfk7ii3be.cloudfront... | GET | 200 OK | <u>(index):12</u> Parser | 12.2 KB 11.8 KB | 52 ms 51 ms |  |
|  ePEj1IJOPyc1FBfN.standard d3nevzfk7ii3be.cloudfront... | GET | 200 OK | <u>(index):12</u> Parser | 16.5 KB 16.0 KB | 62 ms 62 ms |  |
|  Fu1ZajDHpheFtmen.stand... d3nevzfk7ii3be.cloudfront... | GET | 200 OK | <u>(index):12</u> Parser | 7.7 KB 7.3 KB | 43 ms 43 ms |  |

See What Changed:

goo.gl/4CJLMj

Confirm in Lighthouse &
Various Browsers

The Dev Tools Application Pane

All your service worker debugging in one

The screenshot shows the Chrome DevTools interface with the Application pane selected. The left sidebar contains the Application pane with sub-items: Manifest, Service Workers (selected), and Clear storage. Below that is the Storage pane with Local Storage, Session Storage, and IndexedDB. The main content area displays the Service Workers section for the URL **http://localhost:8080/**. It includes control buttons: Offline, Update on reload, Bypass for network, and Show all. Below these are three blue links: [Update](#), [Push](#), and [Unregister](#). The worker details show the source as [service-worker.js](#), received on 8/12/2016 at 4:12:44 PM. The status is **#0 activated and is running** with a green dot and a [stop](#) link. The clients list shows [http://localhost:8080/](#) with a [focus](#) link.

Application

- Manifest
- Service Workers**
- Clear storage

Storage

- Local Storage
- Session Storage
- IndexedDB

Service Workers

Offline Update on reload Bypass for network Show all

http://localhost:8080/ [Update](#) [Push](#) [Unregister](#)

Source [service-worker.js](#)
Received 8/12/2016, 4:12:44 PM

Status **● #0 activated and is running** [stop](#)

Clients [http://localhost:8080/](#) [focus](#)

Add a Web App Manifest

Provides useful Add to Homescreen metadata.

Don't forget about carefully chosen `<meta>` tags!

manifest.json

```
{  
  "name": "The Washington Post",  
  "short_name": "Wash Post",  
  "icons": [{  
    "src": "icon-48x48.png",  
    "sizes": "48x48",  
    "type": "image/png"  
  }, { ... }],  
  "start_url": "/index.html",  
  "display": "standalone",  
  "orientation": "portrait",  
  "background_color": "#000000",  
  "theme_color": "#000000"  
}
```



See What Changed:

goo.gl/dpwRa6

Confirm in Lighthouse &
Various Browsers

The Journey Continues

Lighthouse can guide you along

Links and such

→ **iFixit Client Sample Code**

goo.gl/4EhFAC

→ **Lighthouse Project Page**

goo.gl/A6pBhj

→ **Instant Loading with Service Workers**

youtu.be/jCKZDTtUA2A

→ **Progressive Web App Code Labs**

goo.gl/Bxdx99

Thank You!

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