Offline Sync for Progressive Web Apps

Bradley Holt
Program Manager, Developer Advocacy
Center for Open-Source Data and AI Technologies

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Bradley Holt
@BradleyHolt

#OfflineFirst 🗿️ • #PWA 📱 • @OfflineCamp 🌿 • @CouchDB 🍃 • @PouchDB 🍃 • #DDDesign 🗼 | Open Source Data & AI Developer Advocacy @IBM | he/him | opinions are my own

📍 Vermont, USA 🍁️ medium.com/@BradleyHolt
Web or mobile app?
MIND BLOWN
Progressive Web Apps

Provides both the discoverability of a web app and the reliable, fast, and engaging user experience of a native mobile app.
**Wego** reduced page load time from 12 seconds to between ½ to 3 seconds.

**Twitter Lite** is interactive in less than 5 seconds over 3G on most devices, with average load times reduced by over 30%.

Since launching their PWA, **Lancôme**’s mobile sales have increased 16% year over year with overall speed increases of 50%.

**PureFormulas’ PWA** saw 23% higher revenue than the m.dot website it replaced.

The **Forbes** Progressive Web App’s homepage completely loads in just 0.8 seconds.

The **Weather Channel** saw an 80% improvement in load time after shipping Progressive Web Apps in 62 languages to 178 countries.

**Konga** used 92% less data for the initial load of their PWA compared to their native app and 82% less data to complete a user’s first transaction.

Users of **Google I/O’s PWA** spent more time in the app than their Android counterparts, with homescreen saves up 900% over the previous year and half of signed-in users enabling notifications.

**AliExpress** improved conversion rate for new users by 104% across all browsers, with 2x more pages visited and 74% more time spent per session.
Twitter Lite PWA Significantly Increases Engagement and Reduces Data Usage

Twitter is a platform to find out what’s happening in the world. It has 328 million monthly active users around the world who consume, create and share information. With over 80% of users on mobile, Twitter wanted their mobile web experience to be faster, more reliable, and more engaging. The Twitter Lite Progressive Web App combines the best of the modern web and native features. It became the default mobile web experience for all users globally in April 2017. Twitter developed Twitter Lite to deliver a more robust experience, with explicit goals for instant loading, user engagement and lower data consumption.
Unable to connect to the Internet

Google Chrome can’t display the web page because your computer isn’t connected to the Internet.
Not just offline...
Reliable, fast, and engaging user experience—regardless of network connectivity
Zero-latency access to content & data
Offline, Online & -`\_(_(ツ)_/\_`-
The next billion people on the internet
Service Workers

Service Workers allow for fine-grained control over caching of content and assets, enabling cache-first web apps.
Service Workers

Method that enables applications to take advantage of persistent background processing, including hooks to enable bootstrapping of web applications while offline.

Details on partial support can be found on is ServiceWorker Ready?

Available behind the "Enable service workers" flag.
if ('serviceWorker' in navigator) {
    navigator.serviceWorker.register('/sw-test/sw.js', {scope: '/sw-test/'})
        .then(function(reg) {
            // registration worked
            console.log('Registration succeeded. Scope is ' + reg.scope);
        }).catch(function(error) {
            // registration failed
            console.log('Registration failed with ' + error);
        });
}
self.addEventListener('install', function(event) {
  event.waitUntil(
    caches.open('v1').then(function(cache) {
      return cache.addAll([
        '/sw-test/',
        '/sw-test/index.html',
        '/sw-test/style.css',
        '/sw-test/app.js',
        '/sw-test/image-list.js',
        '/sw-test/star-wars-logo.jpg',
        '/sw-test/gallery/',
        '/sw-test/gallery/bountyHunters.jpg',
        '/sw-test/gallery/myLittleVader.jpg',
        '/sw-test/gallery/snowTroopers.jpg'
      ]);})
  )
});
self.addEventListener('fetch', function(event) {
  event.respondWith(
    caches.match(event.request).then(function(resp) {
      return resp || fetch(event.request).then(function(response) {
        caches.open('v1').then(function(cache) {
          cache.put(event.request, response.clone());
        });
        return response;
      });
    }).catch(function() {
      return caches.match('/sw-test/gallery/myLittleVader.jpg');
    });
  });
});
IndexedDB enables app data to be stored locally within a browser.
IndexedDB - REC

Method of storing data client-side, allows indexed database queries.

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<th>Edge</th>
<th>Firefox</th>
<th>Chrome</th>
<th>Safari</th>
<th>iOS Safari</th>
<th>Opera Mini</th>
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Notes

1 Partial support in IE 10 & 11 refers to a number of subfeatures not being supported. Edge does not support IndexedDB inside blob web workers. See issue...
localForage wraps IndexedDB, WebSQL, or localStorage, providing a consistent API regardless of which storage mechanism is supported by the end user’s browser.
localforage.setItem('key', 'value').then(function () {
    return localforage.getItem('key');
}).then(function (value) {
    // we got our value
}).catch(function (err) {
    // we got an error
});
Sync is Hard
ONE DOES NOT SIMPLY
WRITE THEIR OWN SYNC ENGINE
“CouchDB’s superpower is sync. Sometimes I even try to explain it to people by saying, ‘CouchDB isn’t a database; it’s a sync engine.’ It’s a way of efficiently transferring data from one place to another, while intelligently managing conflicts and revisions. It’s very similar to Git. When I make that analogy, the light bulb often goes off.”

Nolan Lawson

*PouchDB & CouchDB: An interview with Nolan Lawson*
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PouchDB

Apache CouchDB

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```javascript
var db = new PouchDB('dbname');

db.put({
  _id: 'dave@gmail.com',
  name: 'David',
  age: 69
});

db.changes().on('change', function() {
  console.log('Ch-Ch-Changes');
});

db.replicate.to('http://example.com/mydb');
```
Pokedex.org

An offline-capable Progressive Web App built with Service Worker and PouchDB
Multi-User Apps with Hoodie
Apache CouchDB

PouchDB

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Cloudant Envoy
Shopping List

A series of **Offline First demo apps**—each built using a different stack

https://ibm-watson-data-lab.github.io/shopping-list-demo
Create an Offline First shopping list Progressive Web App

Build a Progressive Web App to provide the convenience of a web app with the performance of a native app

Get the code for Vanilla JS  Get the code for React  Get the code for Preact  Get the code for Polymer

Get the code for Ember.js  Get the code for Vue.js  View the demo  Try the app

Last updated Sep 08, 2017  |  By Bradley Holt, Mark Sturdevant, Lorna Jane Mitchell, Maureen McElaney, Val Barbosa, Glynn Bird, Teri Chadbourne, Raj Singh, Patrick Titzler, Mark Watson
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Offline Camp

We are building an Offline First community, one campfire at a time. Offline Camp has visited the Catskills of New York, the Central Coast of California, Berlin, and Oregon.
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Building the #OfflineFirst community, one campfire at a time.

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Thank you

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