Tips for working with disconnected web mapping apps

Andy Gup, Javier Abadia
Why disconnected JavaScript?

Mobile web map used in areas of intermittent or no internet

Ability to reload or restart web map in areas of intermittent or no internet

Lightweight cross-browser functionality
Need a full featured, robust offline solution?

ArcGIS Runtimes for iOS, Android, Qt and .NET!

Includes integrated support for offline editing and synchronization.

Also fully supports related tables, sub-types, domains and much more.
TrailYelper
Mtn Biking/Hiking app
Use Cases

When would you consider offline use of web maps?

• Viewing simple maps
• Lightweight data collection
  - VGI
  - Simple editing

• Devices
  - laptop
  - smartphone / tablet
What would the developer need to do?
Enhancing an online app with offline functionality

- Keep a local copy of HTML/CSS, [all] Javascript code and other static resources (imgs)
- Keep a local copy of map data…
  - Basemap tiles
  - feature layers
- Keep temporary local copy of edits made to the feature layers…
  - including new attachments
- …and “teach” the JS API to use the local data instead of fetching/pushing data through the network
Is it possible?
Yes, but it can be complicated!

- HTML5 application cache mechanism
  - cache HTML, CSS, images and .js files
- HTML5 storage APIs
  - indexed db (50Mb +)
    - async, store key,value pairs, more capacity
    - Increasing support (more when using shim)
  - Websql (50Mb +)
    - Spec no longer maintained. Chrome, Safari, Opera
  - localStorage
    - sync, store key,value pairs, low capacity (<5Mb)
    - good browser support
Is it possible?
What mechanisms can we use to do what we need to do?

• HTML5 application cache mechanism
  - cache HTML, CSS, images and .js files

• HTML5 storage APIs
  - indexed db (50Mb +)
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good for…

Restarts and reloads
Basemap tiles
Feature edits
Demos
Tiles, TPKLayer
Disconnected JavaScript workflows

Scenario 1 – online > offline > online
Simplest scenario, if we don’t need to support “browser reload” (scenario 2)
1. no need to cache code and static resources (e.g. css, html, js already loaded online)
2. Feature layer already temporarily cached via mode SNAPSHOT

Scenario 2 – online > offline > online (+ restart/reload)
Scenario 3 – offline tiles-only (TPKLayer)
Feature Editing
Attachments included!
## Candidate Recommendation

- **data client-side**, allows indexed database queries.

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Offline-editing-js project

Lightweight libraries and sample apps:

https://github.com/Esri/offline-editor-js
Recap

Reminder: the ArcGIS Runtimes already have built-in, robust support for full offline use cases.

Carefully examine your workflows: intermittent vs no internet.

Offline support in JavaScript is challenging and some things not possible or recommended.
Questions?

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