Web AppBuilder for ArcGIS: A Deep Dive in Enterprise Deployments

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Agenda

Subhead Here

- Patterns
- Installation
- Configuration
- Security
- Application Development
- Deployment
- Post-Deployment
Enterprise Deployment

What is it and what does it mean?
Implementation Patterns
Web GIS

- ArcGIS Online
  - Esri Managed
  - Multi-tenant
  - Scale
  - Automatic Updates

- ArcGIS Enterprise
  - Your infrastructure
  - Customization
  - You control SLA
  - Integrated security

- Hybrid
  - Use technologies from both implementations
Implementation Patterns
Web AppBuilder

- Embedded Version
  - Hosted
  - Fully – integrated
  - Built In
- Developer Edition
  - Required for customization
    - Widgets
    - Themes
  - Direct Access
    - Doesn’t require launching from a webmap
    - Widgets
Common Enterprise Patterns

Most Common

- Portal for ArcGIS with Dev Edition
- ArcGIS Online with Dev Edition
- Portal for ArcGIS with Embedded Version
- ArcGIS Online Embedded Version

Less Common
Installation

Getting Started…
Installation…
Where do we get the JSAPI?

Web AppBuilder for AcGIS

<install dir>\client\stemapp\env.js

OR

Default Location
https://js.arcgis.com

Portal jsapi: http://webserver/webadaptor/jsapi/jsapi/
File location: C:\Program Files\ArcGIS\Portal\framework\jsapi
Installation…

Nodejs

- Two options
  - Windows Service
  - Run as user

- As User
  - Startup.bat
  - Command Line
    - Add node.js to PATH
    - Navigate to <wab install>/server
    - node server.js

- Windows Service
  - Navigate to <wab install>/server
  - Install npm
  - npm run-script install-windows-service
Installation…
Adding the app to portal

Add an application

Add an item from your computer or reference an item on the Web.

Type:
- Web Mapping
- Mobile
- Desktop
- Application
- Application Extension (Operations Dashboard)
- Application Extension (AppBuilder)

Title:
Web AppBuilder

Tags:
WAB × web appbuilder × appid ×

Add Item  Cancel
Installation...
Registering the app with portal (not necessary on web-tier-authenticated portals)
Installation

OAuth

Updated Item Page

Application Settings

Data Source

URL

App Registration

App ID: UtxmlforE35tjX6h
App Secret
Show Secret
App Type: Multiple
Redirect URI's:

Signininfo.json

```json
{
    "portalUrl": "http://[webserver]/[webadaptor]",
    "appld": "UtxmlforE35tjX6h",
    "supportsOAuth": true,
    "isWebTier": false
}
```
Configuration
Updating the defaults
Configuration...
Sharing the app to your portal

Share Item

Home page

Tags
web, app, builder

Credits (Attribution)

Acknowledge this item's source.

URL
https://dt-ntorrey101.esri.com:3344/wc
Configuration...
Disabling embedded Web AppBuilder

webmap > Save > Share

Create a Web App > Web AppBuilder tab
Disabling embedded Web AppBuilder...

```
C:\Program Files\ArcGIS\Portal\customizations\10.4\webapps\arcgis#home\js\arcgisonline\config.json

searchArcGISOOfflineEnabled: true,
publishTilesFromFeaturesEnabled: true,
federatedServerConfigEnabled: true,
hostedServerConfigEnabled: true,
findFeaturesWebMapEnabled: true,
webAppBuilderEnabled: true,
sceneViewerEnabled: true,
restrictOrganizationPageToAdmin: false,
```
Configuration...
Disabling embedded Web AppBuilder...

webmap > Save > Share

Create a Web App > Web AppBuilder tab
Configuration
Add custom widgets to your portal

- Add virtual directory
  - Enable
  - anonymous access
  - HTTPS
  - CORS
  - JSON Handler
- Register widget manifest
- Share to Users
Use Your Certificates

- WAB ships with a self-signed cert
  - Functional, but not ideal for enterprise users, not allowed elsewhere
- You can use your own certificate and replace the default cert
  - Domain or commercially-signed “CA cert”
  - You’ll need server certificate and key pair
- Create .pem files
  - Convert .pfx certificate into a certificate/key pair
  - Replace cacert.pem and cakey.pem in \server
  - Restart WAB
Enterprise Development
Enterprise Development

What do we consider to be “Enterprise” Development?

- Generally it’s a project that has more than one developer contributing
- Typically it’s a project that is deployed into multiple environments (i.e., development, staging, and production)
- Usually it’s a project that has grown into a significant amount of complexity
  - Application code that doesn’t “fit” cleanly into a single widget
  - Out of the Box widgets have been customized or extended
  - WAB code itself may have been modified
Source Code Management Paradigms

- Essential for team collaboration
- There are a few different ways to do this
- We have a recommended approach but one size doesn’t always fit all.
Source Code Management Paradigms

No Source Control

- !

Source Control Everything

- arc-gis-web-appbuilder
- client
- stemapp
- ...
- docs
- server

Source Control a Single Application

- arc-gis-web-appbuilder
- client
- stemapp
- ...
- docs
- server
- apps

Source Control Only your Code

- my-project
- build
- src
- custom
- libs
- widgets
- wab *

* Added to gitignore
App Build Process

Overview

your repo
widgets

Build

stemapp
widgets

app creation in Builder

apps/2
widgets

apps/4 - n
widgets
App Build Process
Digging into the build process

- With Gulp you build concise tasks for each build step
- Build as many as you need
- Checkout other WAB sessions for more on this
- https://github.com/nbrueggemann/wab-dev-env-sample
Typically configurations point to services your widget depend on. There may need to change for deployments to different environments.

### Typical Config
```
{
  "service": {
    "url": "https://sampleserver6.arcgisonline.com/arcgis/rest/services/..."
  }
}
```

### But We Need
```
{
  "service": {
    "url": "dev-service-url"
  }
}
```
```
{
  "service": {
    "url": "staging-service-url"
  }
}
```
```
{
  "service": {
    "url": "prod-service-url"
  }
}
```
We use gulp-replace as a way to build these configurations for us.

Target one env at a time: gulp --env=dev (yargs for arguments)
Code Beyond Widgets

- Focus is typically on widgets and themes but customizing doesn’t have to stop there
- Very valid reasons for putting code outside of widget
  - Shared code between widgets
  - Core application business logic
- Where should this code go?
  - custom/libs
  - “custom” folder is used so your code doesn’t end up in the root of libs folder in wab.
Code Beyond Widgets
Shared code between widgets

my-project
src
custom
libs
filter-status
Dijit files...
Code Beyond Widgets
Update build process to handle libs folder

your repo
widgets
custom/libs

stemapp
widgets
custom/libs
app creation in builder

apps/2
widgets
custom/libs

apps/4 - n
widgets
custom/libs
Code Beyond Widgets

Drawbacks

• You lose the ability to pick up your widget and share it by itself.
Additional Tips and Tricks

• Peek into WAB and take a look around
• Understanding WAB configs
Getting to know jimu.js Better

• Web App Builder dev docs are good. But we have the code so we might as well dig into it!
• There’s some good utilities available that aren’t talked about. Examples:
  - CSVUtils
  - GeoJsonConverters
  - A whole slew of dijits
Deployment
Proxies
Overview

- Cross Domain Resources
- Oauth 2.0 app logins
- Referer limiting
- Rate Limiting
- Token Based authentication
- logging

https://github.com/esri/resource-proxy/
Deploy to the same web server as your Deployed App
Proxies
Configure Web AppBuilder App to use proxy

```
httpProxy: {
  useProxy: true,
  alwaysUseProxy: false,
  url: "",
  rules: [{
    urlPrefix: "http://yourwebserver/yourwebadaptor/sharing/rest",
    proxyUrl: "http://yourproxyfolder/proxy.php"
  }]
}...
```

[downloaded-app]/config.json
Proxies
Accessing Secure Services

[proxy-folder]/proxy.config

```xml
<serverUrls>
    <serverUrl
        url="http://services.arcgisonline.com"
        matchAll="true"
    />

    <serverUrl
        url="http://webserver/portal/sharing/rest"
        matchAll="true"
        clientid="xxxyyy12345"
        clientsecret="aaabbbccc987654321"
        oauth2Endpoint="https://webserver/portal/sharing/rest/oauth2/token"
    />
</serverUrls>
```
Web AppBuilder for ArcGIS: Advanced Development Tools and Techniques

Thursday 2:30 pm - 3:30 pm Primrose C-D
Gavin Rehkemper and George Bochenek

Javascript Applications for the Enterprise: Building for Production

Thursday 5:30 pm - 6:30 pm Pasadena/Sierra/Ventura
Randy Jones and George Bochenek
Thank You!

Questions?

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