



Esri International Developer Summit  
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# Enabling High-Quality Printing in Web Applications with ArcGIS for Server

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# High Quality Printing on the Web

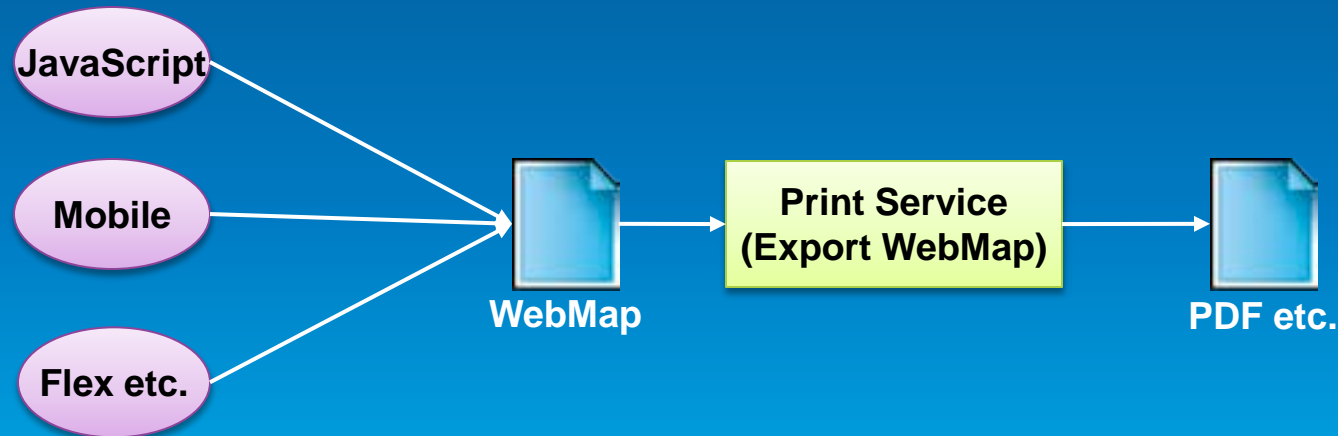
- **Primary Goals:**
  - Create a printable document (**PDF preferably**)
  - Have that document printed to **'exact' scale**
  - Leverage **ArcMap layouts**
  - Support **large format plots**
  - Display **ALL contents of my Web map**
    - Services, graphics, feature layers, etc.
  - Be able to **modify the map content during the process**
  - **High DPI**
- **We created a 3 tiered approach to meet these needs**

# High Quality Printing – 3 Tiered Approach

- ***Simple printing***
  - Out of the box Geoprocessing Service with ArcGIS Server
  - Small format
  - Synchronous
  - Token based secure services
- ***Custom configuration***
  - Ability to supply your own templates
  - Asynchronous if desired
  - Handle HTTP secure services
  - Large format
- ***Advanced cases***
  - Supported via ArcPy.Mapping
  - Map/Layer addition, replacement, etc.

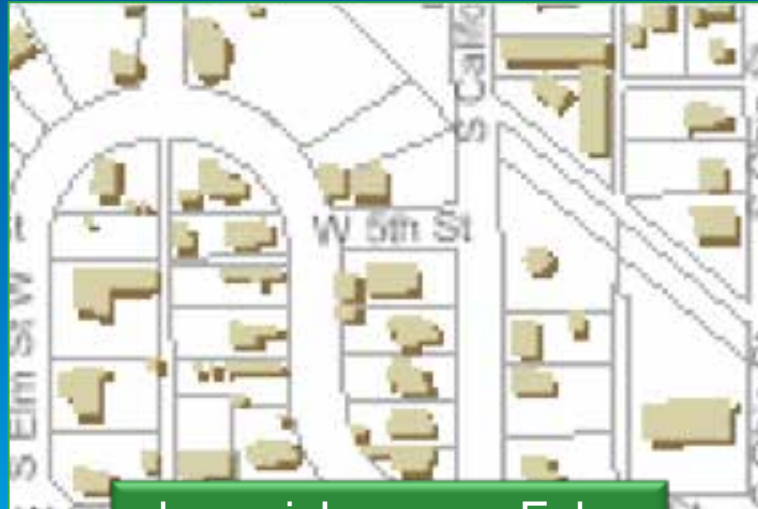
# Printing Service Overview

- **Print services are powered by WebMaps**
  - Consistent format produced by all the ArcGIS APIs
  - JSON based spec for sharing services, graphics, symbols etc.
- **Note: The services in the WebMap must be accessible to the Print Service**
  - HTTP security is a special case



# Printing Cached Services

- Tiles created using 96 DPI
- 10.1 added dynamic layer support for Map Services
  - Allows for printing at higher DPI than cached images
  - You must have Publisher or Admin privileges to update the service



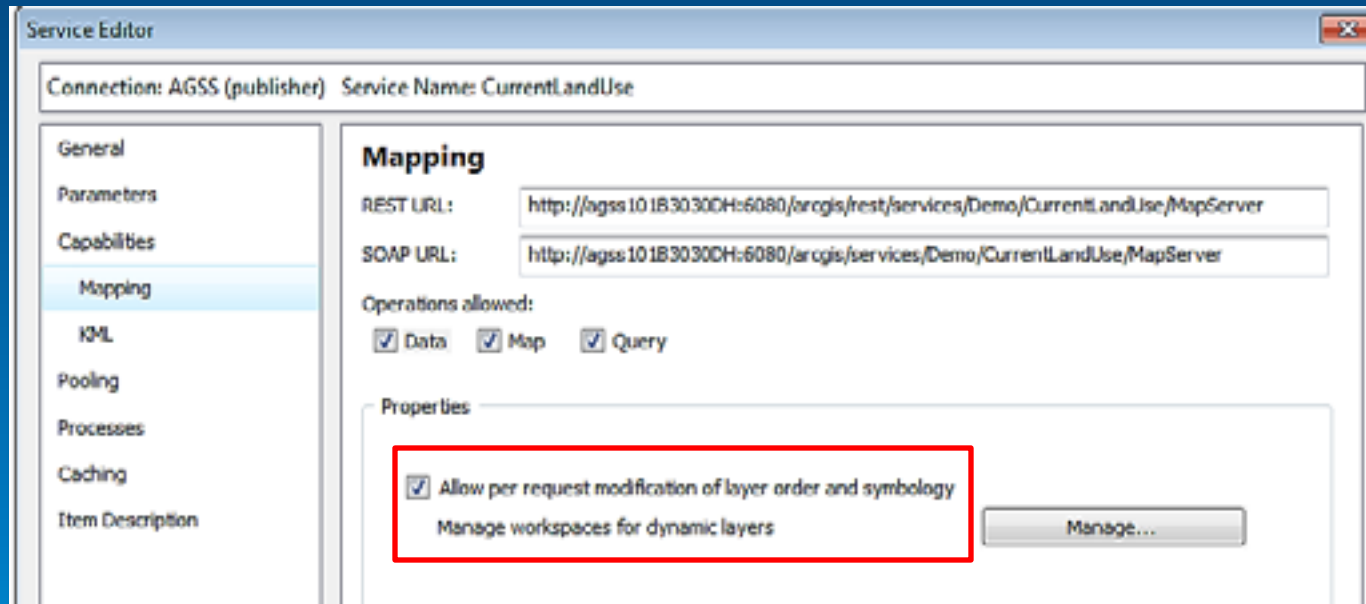
dynamicLayers = False  
(600 DPI)



dynamicLayers = True  
(600 DPI)

# Enabling Dynamic Layers

- Option in properties of cached service



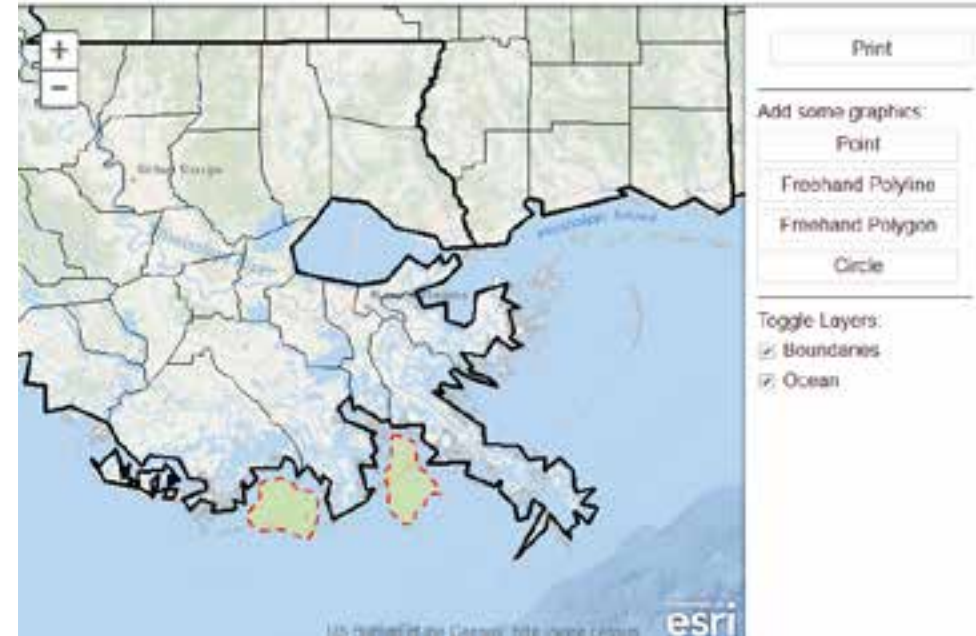
# ArcGIS Online Organization & Portal

- Register your own print service
- Print on-premises services behind a firewall

The image shows a screenshot of the ArcGIS Online interface. The top navigation bar includes 'HOME', 'Water Network', 'New Map', and 'My Content'. Below this is a toolbar with icons for 'Details', 'Add', 'Basemap', 'Save', 'Share', 'Print', 'Directions', 'Measure', and 'Bookmarks'. The 'Print' icon is circled in red. The main map area displays a street map with a blue line representing a water network. On the left, a 'Contents' panel shows 'Water Network' and 'NapervilleBaseMap2'. Below the map, a 'Utility Services' configuration page is open, showing a 'Printing' section with a printer icon and a text input field containing the URL: `http://juleitop:6080/arcgis/rest/services/LAUC/PrintUtility`. The page also includes a 'Save' button and a 'Cancel' button.

# Demo

## Out of Box Print Service



[ArcGIS REST Services Directory](#)

[Login](#) | [Get Token](#)

[Home](#) > [services](#) > [Utilities](#) > [PrintingTools \(GPServer\)](#)

[Help](#) | [API Reference](#)

[JSON](#) | [JSON](#)

### Utilities/PrintingTools (GPServer)

**Service Description:** The PrintingTools service is used by web application developers to export the contents of a webmap to pdf, jpeg, png or other formats. This service is generally used in the context of providing applications with printing functionality.

#### Tasks:

- [Export Web Map Task](#)

**Execution Type:** esriExecutionTypeSynchronous

**Result Map Server Name:**

**MaximumRecords:** 1000

**Child Resources:** [Info](#)



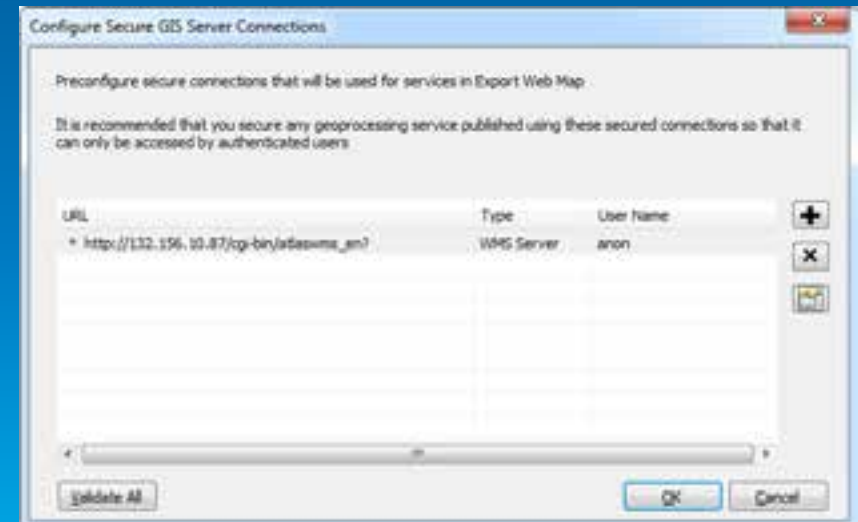
# Custom Configuration

- **Publish the Export Web Map tool as your own service**
  - Use your own layout templates
  - Choose to make the service asynchronous if desired
    - This choice depends on the size of your prints and the length of time they'll take
  - **Configure service security**
    - Token security handled automatically
    - HTTP security must be configured



# Configuring Secured Services

- HTTP security requires configuration
  - Add service connections for each secure service before publishing
  - “Edit” the tool to edit security configurations
- **Secure the print service itself if you configure security for services**



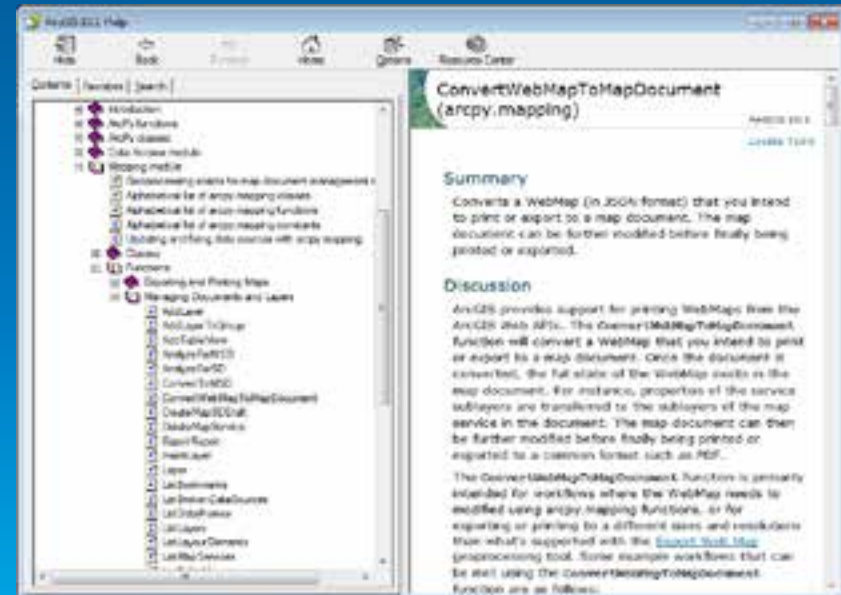
# Demo

Printing with custom templates



# Custom Print Workflows: ArcPy.Mapping

- New ArcPy.Mapping method for converting Web Maps to MapDocuments
- ConvertWebMapToMapDocument (webmap\_json, {template\_mxd}, {notes\_gdb}, {extra\_conversion\_options})
- Secure services handled via the *extra conversion options* parameter



# ArcPy.Mapping Workflows

- **Once a WebMap is converted to a map document**
  - Full capabilities of ArcPy.Mapping on the document
  - Modify content
  - Add content
  - Export using custom options
  - etc.
  
- **See the ArcPy.Mapping help for examples...**



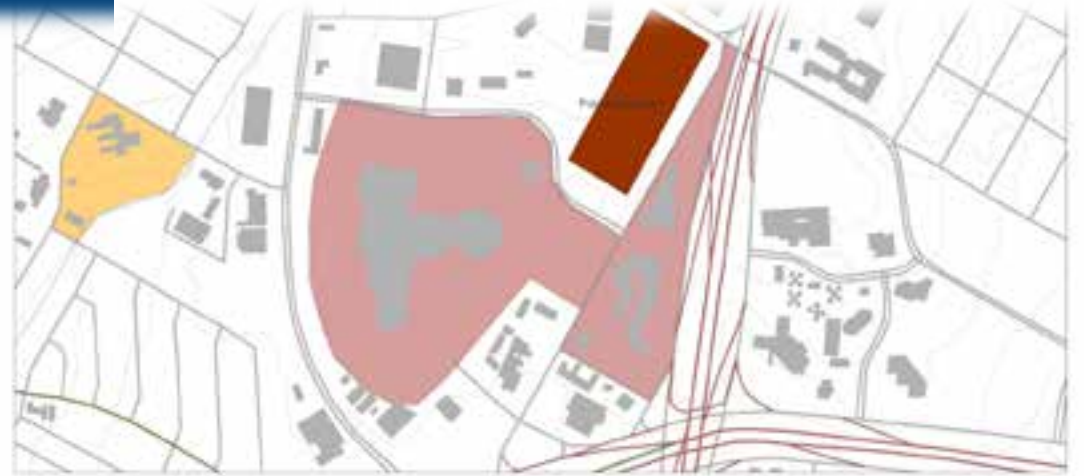
# ArcPy.Mapping Help Examples

- Use the web help
  - updated samples and discussion
  - two new tutorials:
    - Basic high-quality web map printing:  
<http://bit.ly/XEwg8p>
    - Advanced web map printing:  
<http://bit.ly/WU1nQh>



# Demo

Large format printing



Map Prepared by Geo  
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1:10,000  
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- | Symbol/Color | Map Description       |
|--------------|-----------------------|
| Red outline  | Class 1 General Use 1 |
| Red outline  | Class 2 General Use 2 |
| Red outline  | Class 3 General Use 3 |
| Red outline  | Class 4 Retail 1      |
| Yellow       | Education Center      |
| Dark Red     | Shopping Center       |

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# Web API Status for Printing

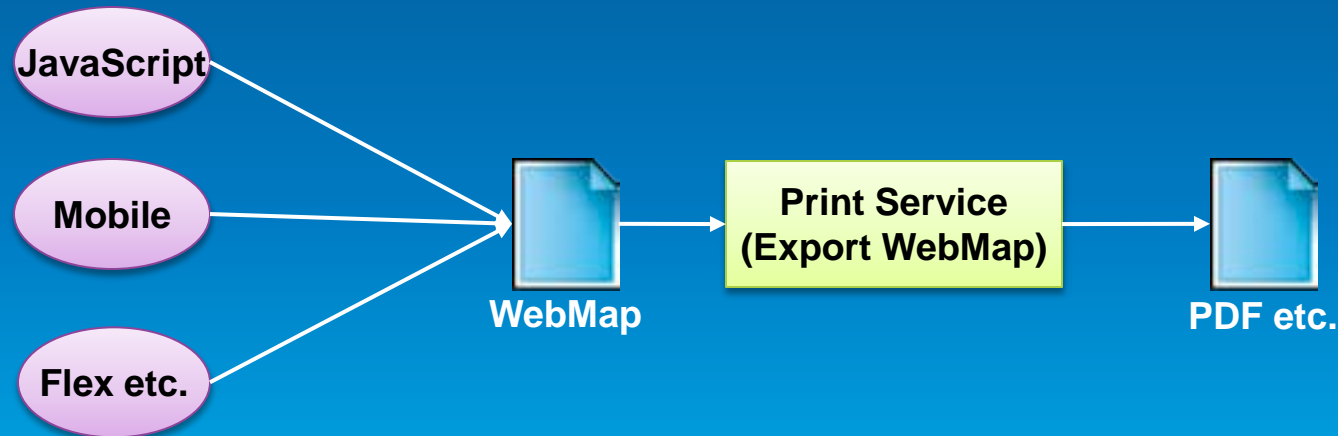
- Printing support was added at early 3.x versions of the WebAPIs
- JavaScript: Print Dijit
- Flex: PrintTask
- Silverlight: PrintTask
- Samples on [developers.arcgis.com](http://developers.arcgis.com)

## Wait! You didn't actually print anything

- **Printing services are about generating printable documents (PDF etc.)**
- **If you wish to send the output to a physical printer automatically**
  - Use the ArcPy.Mapping workflow
  - Local printers – xcopy to local share on some printers
  - Cloud printing workflows (e.g. [Google Cloud Print](#))
    - Driverless printing
    - Simple APIs that can be called from Python

# Printing Service Recap

- **Print services are powered by WebMaps**
  - Consistent format produced by all the WebAPIs
  - JSON based spec for sharing services, graphics, symbols etc.
- **You can use the out of the box tool, a custom configuration, or an ArcPy.Mapping approach**



## Other Related Sessions and Survey

- **Related sessions:**
  - **Python Map Automation—Beyond the Basics of arcpy.mapping**
  - **Wednesday 2:30pm - 3:30pm Primrose C/D**
- **Please fill out the survey for this session**
  - <http://www.esri.com/events/devsummit/session-rater>
  - **Search by session name: *Enabling High-Quality Printing in Web Applications with ArcGIS for Server***
  - **Your comments help us with sessions for future conferences**



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