

Esri Developer Summit

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Enabling High-Quality Printing in Web Applications

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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 : Tier 1

- ***Simple printing***
 - Out of the box Geoprocessing Service with ArcGIS Server
 - Small format
 - Synchronous
 - Token based secure services

High Quality Printing – 3 Tiered Approach : Tier 2

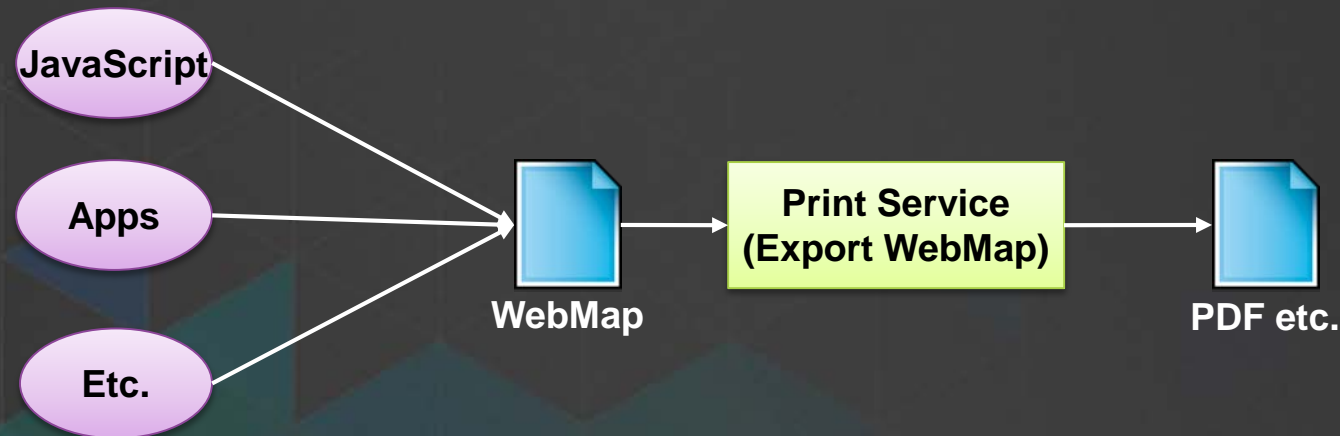
- ***Custom configuration***
 - Ability to supply your own templates
 - Asynchronous if desired
 - Handle HTTP secure services
 - Large format

High Quality Printing – 3 Tiered Approach : Tier 3

- ***Advanced cases***
 - Supported via ArcPy.Mapping
 - Map/Layer addition, replacement, etc.

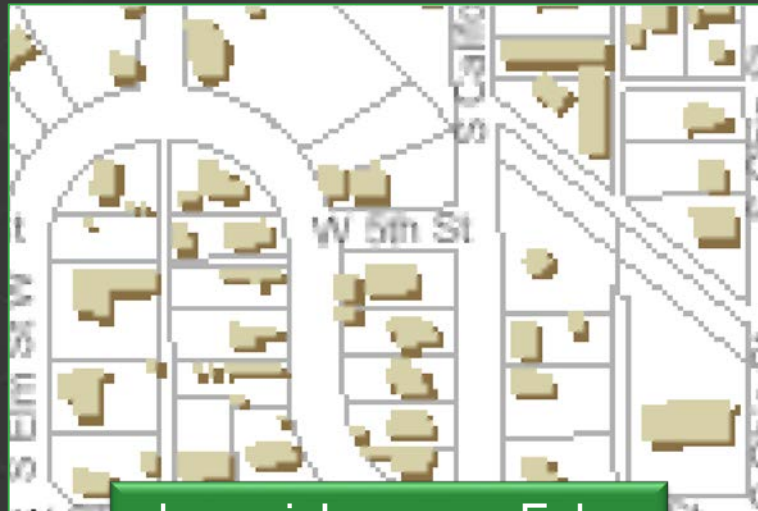
Printing Service Overview

- **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 typically created at 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



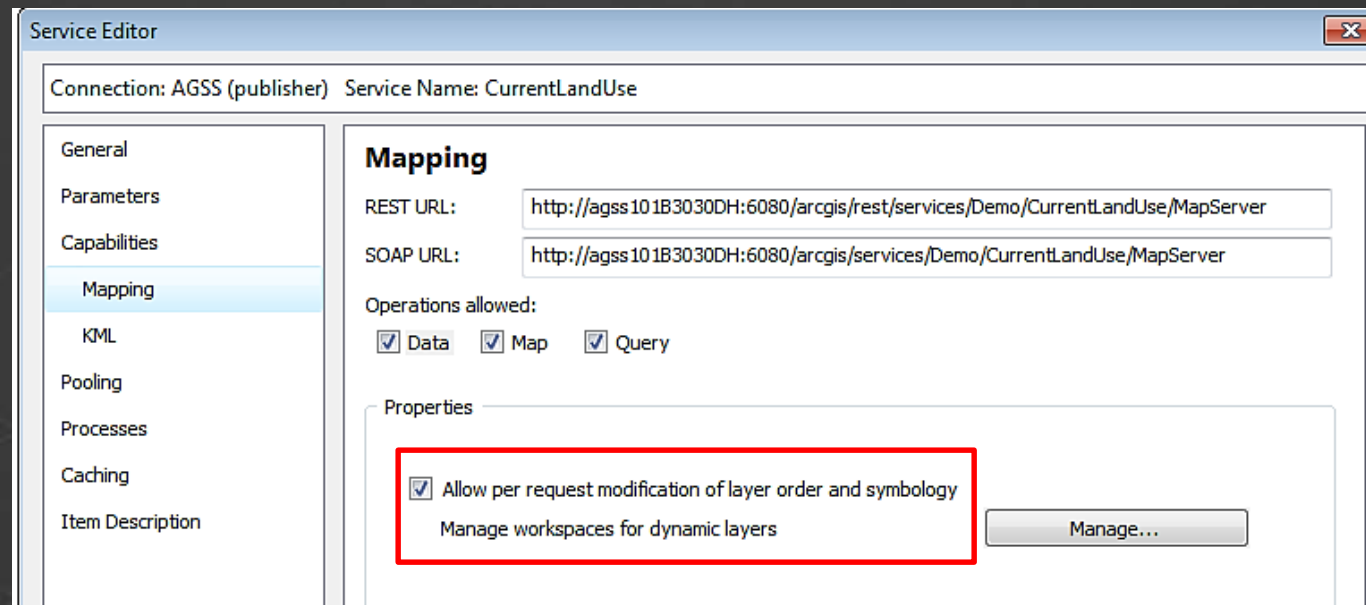
dynamicLayers = False
(600 DPI)



dynamicLayers = True
(600 DPI)

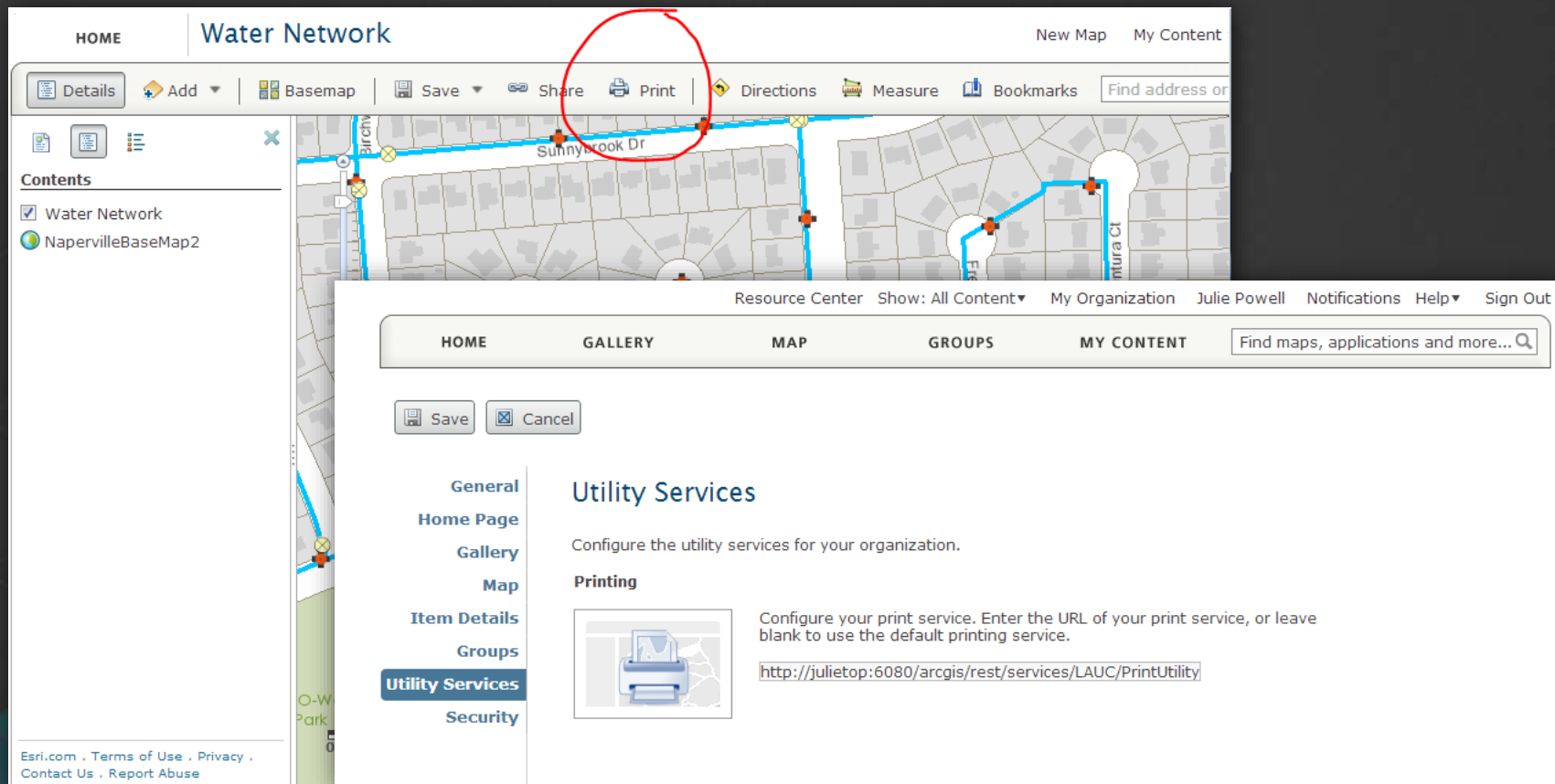
Enabling Dynamic Layers

- Option in properties of cached service



ArcGIS Online Organization & Portal

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

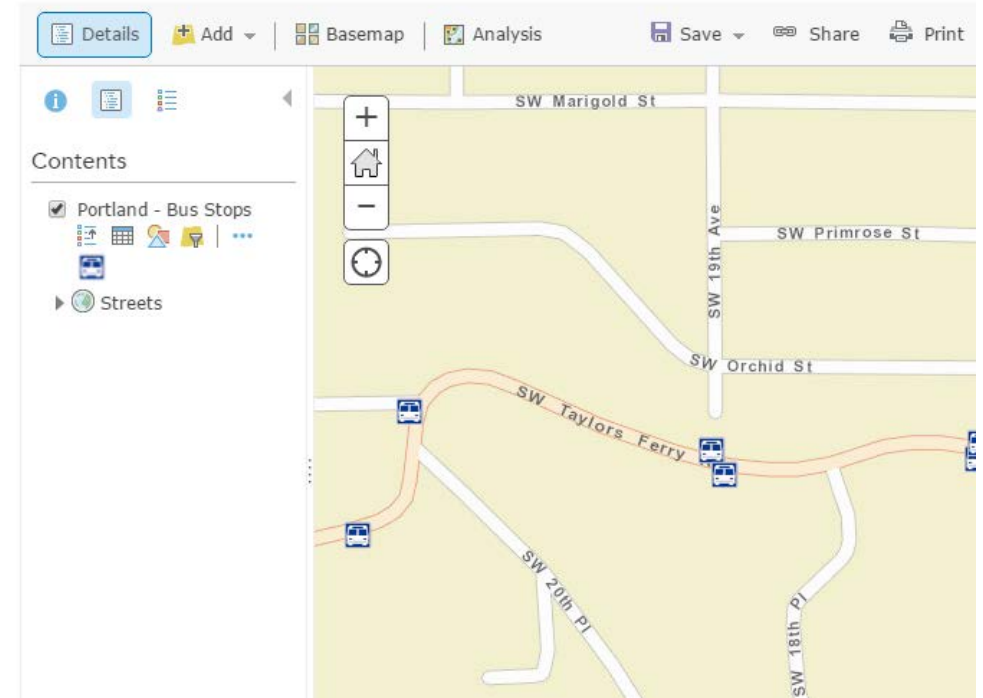


The screenshot displays the ArcGIS Online interface for a map titled "Water Network". The top toolbar includes buttons for "Details", "Add", "Basemap", "Save", "Share", "Print", "Directions", "Measure", and "Bookmarks". The "Print" button is circled in red. Below the map, a modal window titled "Utility Services" is open, showing a "Printing" section with a printer icon and a text input field containing the URL `http://julietop:6080/arcgis/rest/services/LAUC/PrintUtility`. The left sidebar shows the "Contents" panel with "Water Network" and "NapervilleBaseMap2" listed. The top navigation bar includes "HOME", "GALLERY", "MAP", "GROUPS", and "MY CONTENT".

Demo

Out of Box Print Service

Home ▾ Portland Bus Stops



ArcGIS REST Services Directory

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

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

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

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

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

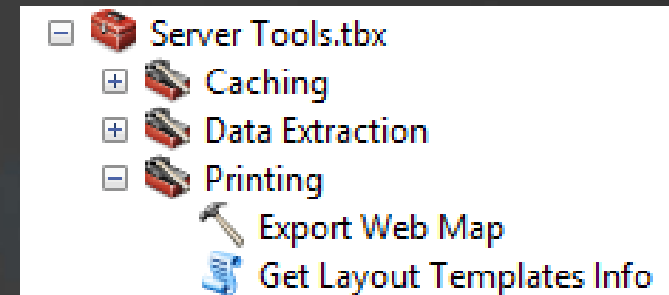
Result Map Server Name:

MaximumRecords: 1000

Child Resources: [Info](#)

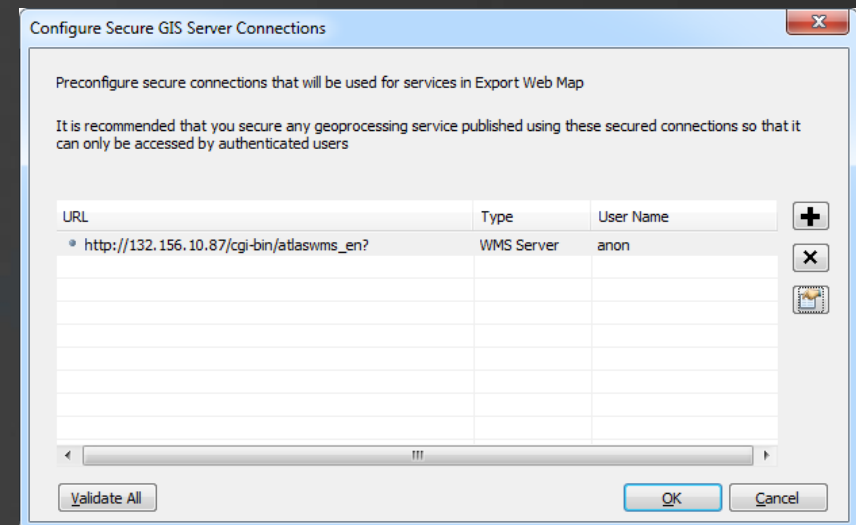
Custom Configuration

- **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



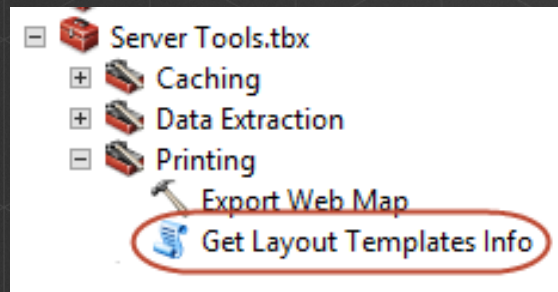
Configuring Secured Services

- 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**

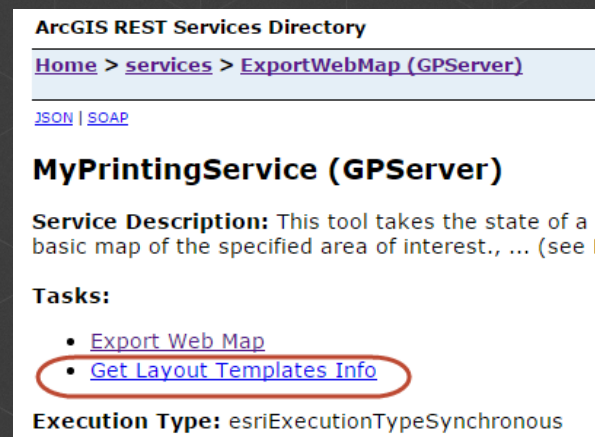


What's new in 10.4?

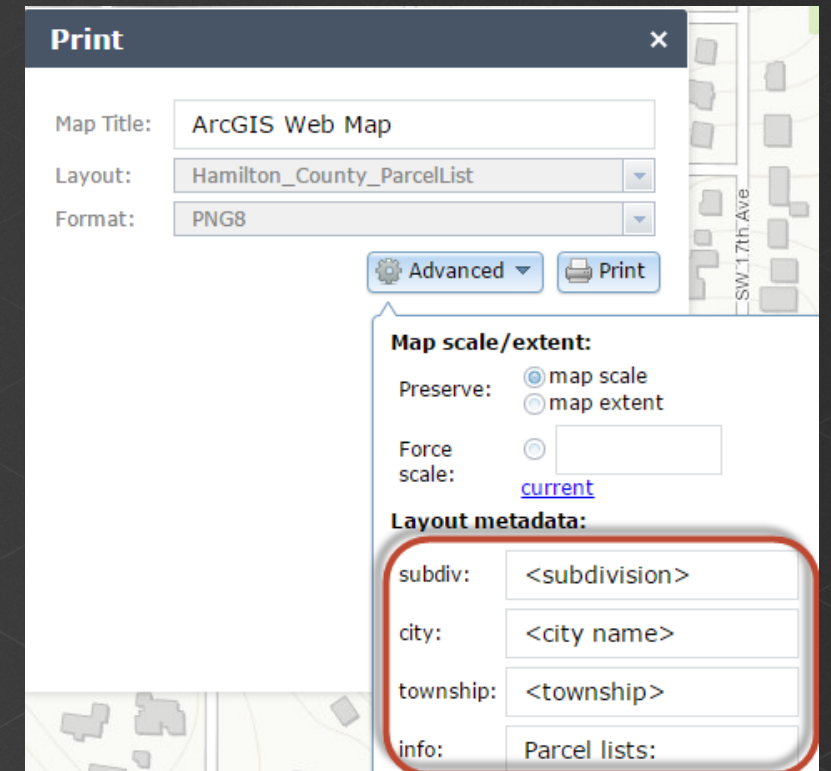
- New task with Printing Services to return metadata about available layout templates
 - It is an ArcPy script tool.
 - Can be used any ArcGIS Version from 10.1



Tools in Desktop



Tasks in Service Directory



Custom Text Elements showing up in WAB

What's new in 10.4?

Results of Get Layout Templates Info Task

```
{  
  "pageSize": [ 8.5, 11.0 ],  
  "layoutTemplate": "Hamilton_County_Portrait",  
  "activeDataFrameSize": [ 7.75, 8.0 ],  
  "layoutOptions": {  
    "hasAuthorText": false,  
    "hasCopyrightText": false,  
    "hasTitleText": false,  
    "hasLegend": false,  
    "customTextElements":  
      [{ "subdiv" : "" }, { "city" : "" }, { "township" : "" }, { "info" : "Parcel lists:" }]  
  }  
}
```


Demo

Printing with custom templates

Web Printing: using my layouts with custom texts

Find parcels within: ft

▾

Selected streets segments: 1
Snow Owl Dr (865.34 ft)

Selected parcels: 18

_ags_e994ef285f594fbc95e22aecf0186fe7.pdf - Adobe R

File Edit View Window Help

1 / 1 75%

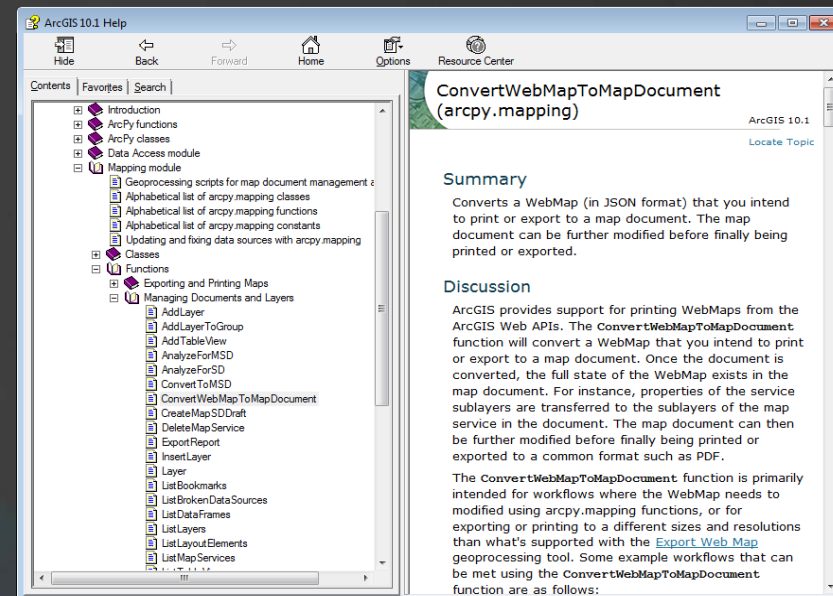
Selected parcels: 18

1610280202018000	0	Cx
1610280202018000	0	Cx
1610280104040000	132	
1610280104040000	132	
1610280202025000	132	
1610280202025000	132	
1610280104041000	132	
1610280104041000	132	
1610280202020000	132	
1610280202020000	132	
1610280202024000	132	
1610280202024000	132	
1610280104029000	577	
1610280104029000	577	
1610280202023000	132	
1610280202023000	132	
1610280202021000	132	
1610280202021000	132	
1610280202022000	132	
1610280202022000	132	
1610280104042000	132	
1610280104042000	132	
1610280202001000	575	
1610280202001000	575	
1610280202019000	132	
1610280202019000	132	
1610280202028000	132	
1610280202028000	132	
1610280104028000	576	
1610280104028000	576	
1610280202000000	576	
1610280202000000	576	
1610280104043000	132	
1610280104043000	132	

11.00 x 8.50 in

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



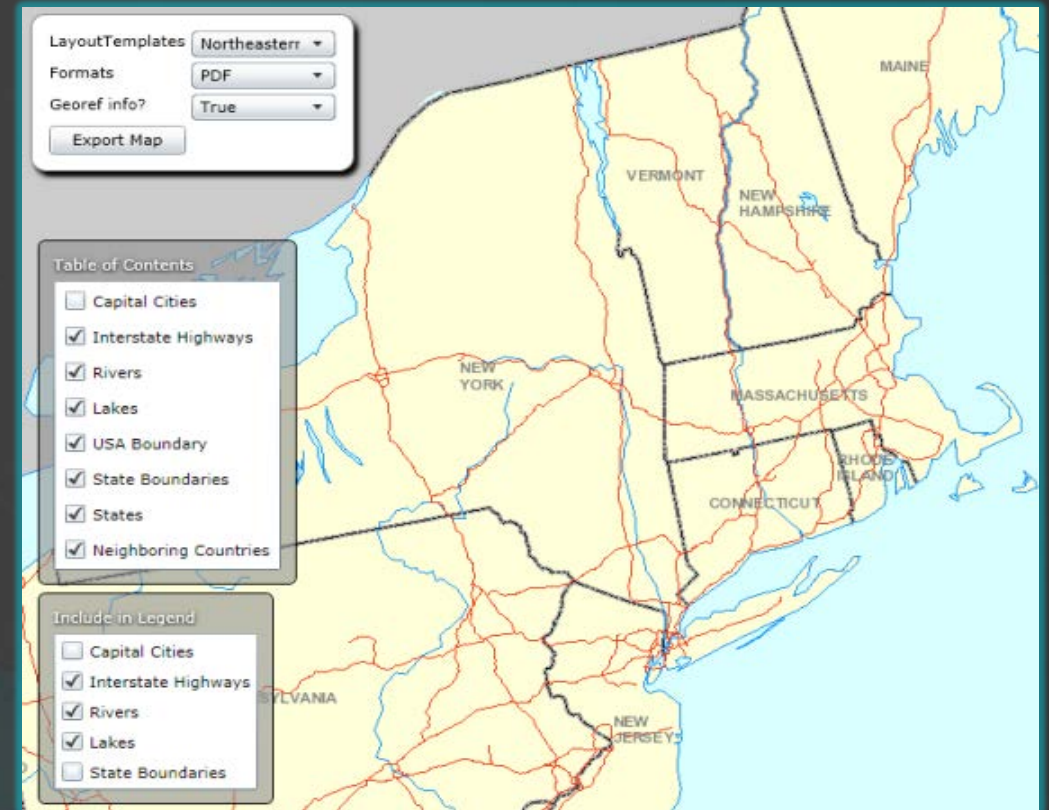
ArcPy.Mapping Workflows

- **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

Vector printing

Layers

- Other 2
- Webmap
- Other
- polygonLayer
- Outline
- Lots
- Image

Parcel: 073-006-002



Legend:

- Lots
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery
- High Resolution 30cm Imagery

Scale:

1:4,514

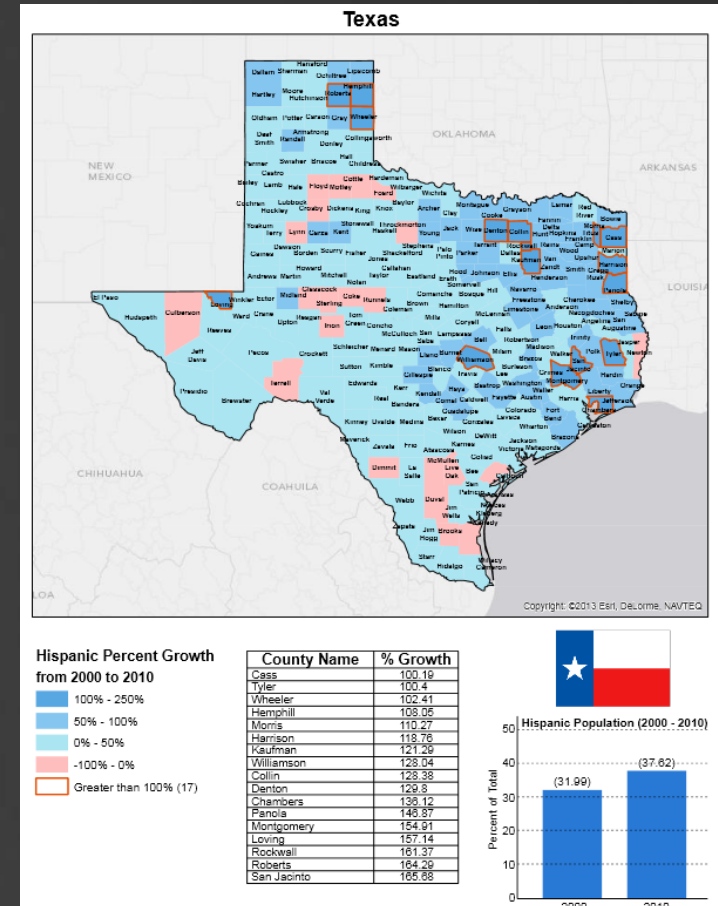
0 0.0375 0.075 0.15 mi

0 0.05 0.1 0.2 km

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroX, Geoprocessing, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

Tables with ArcPy.Mapping

- Data Driven Pages with Dynamic Tables and Charts Sample
 - <http://bit.ly/11Hwtur>
 - Took the sample code and customized it for my needs



Demo

ArcPy.Mapping

Printing Driving Directions
with Web App Builder for ArcGIS

Esri World Geocoder

Directions

277 N Avenida Caballeros, Palm Springs, California, 92262

380 New York St, Redlands, California, 92373

ADD DESTINATION

BY CAR BY TRUCK WALKING

SHOW MORE OPTIONS

GET DIRECTIONS CLEAR

75.36 kilometers · 51 minutes

ZOOM TO FULL ROUTE

1. Start at 277 N Avenida Caballeros, Palm Springs, California, 92262



<start>

- | | | |
|-----|---|-------|
| 1. | Start at 277 N Avenida Caballeros, Palm Springs, California, 92262 | 0.00 |
| 2. | Go north on N Avenida Caballeros toward E Amado Rd | 0.55 |
| 3. | Turn left on E Alejo Rd | 0.80 |
| 4. | Turn right on N Indian Canyon Dr | 1.61 |
| 5. | Turn left on CA-111 N (E Vista Chino) | 0.11 |
| 6. | Turn right at N Palm Canyon Dr / W Vista Chino to stay on CA-111 N (N Palm Canyon Dr) | 5.13 |
| 7. | Take ramp and go on I-10 W | 55.45 |
| 8. | At exit 77B take ramp on the right to Tennessee Street | 0.35 |
| 9. | Turn left on Tennessee St | 0.61 |
| 10. | Turn left on W Redlands Blvd | 0.43 |
| 11. | Turn right on New York St | 0.33 |

12. Finish at 380 New York St, Redlands, California, 92373, on the left 0.00

API Status for Printing

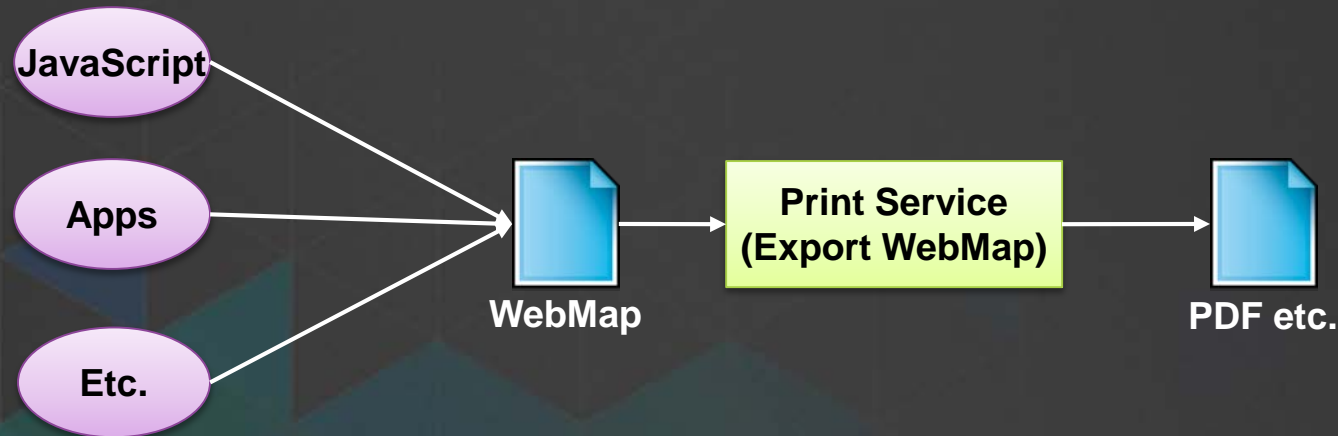
- Printing support in ArcGIS Web and Mobile APIs:
 - JavaScript: Print Dijit
 - ArcGIS Runtime SDK for Java: PrinterJob
 - .NET SDK (Desktop, Store, and Phone APIs): Print Task
-
- Samples on developers.arcgis.com

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**



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Questions?

Please fill out survey

