Publishing Maps to your ArcGIS Server

The ArcGIS application works with maps. Using the ArcGIS application, you can discover and open maps that are hosted at ArcGIS Online. Using the ArcGIS.com web site you can create your own maps and view them in the ArcGIS application and then share them with others either privately within your organization or with everyone that visits ArcGIS Online. The maps themselves can include map layers published openly to the web or can include services that are published to your own secure on-premise ArcGIS Server.

For some organizations however, hosting maps on the ArcGIS.com web site is not a viable solution. Due to privacy concerns, you may want to open and use maps within the confines of your corporate intranet and leverage the VPN capabilities of your smartphone device.

It is required that you have ArcGIS Server 10.0 or higher (.NET or Java Edition) installed on your corporate web server. You can leverage 9.x map services but you must use 10.0 ArcGIS Server to host your maps.

Mobile Content Server

When you install ArcGIS Server 10.0 (.NET or Java Edition) on your web server, the install includes an on-premise "mobile content server" that is a repository for the maps you can open on your smartphone device. It is the same content server used to store Windows Mobile projects for deployment to rugged mobile devices.

The default location of the rest endpoint of the mobile content server can be found at http://<server-name>/<arcgis-instance>/mobile/content. You will see two sources for content storage at that rest endpoint – "MobileWeb" and "WindowsMobile".

Mobile Content Directory

Content

Content Root

Content Type
MobileWeb
WindowsMobile

Child Resources: All Items

Supported Interfaces: REST

If you are using ArcGIS on rugged Windows Mobile or Windows Tablet devices, your projects will be stored inside of the WindowsMobile folder.

MobileWeb is the root folder location for storing maps used inside of the ArcGIS application on your smartphone device.

Discovering Map Content and Navigating Folders

Click MobileWeb to navigate into the Maps folder and discover content stored inside of your on-premise ArcGIS Server. Here you should see a list of folders. By default, there is one folder called "Maps" that was created for you when you installed ArcGIS Server. If you are going to create and host a large number of maps within your content server, you can create additional folders by clicking on the Create Folder link found as a Supported Operation directly beneath the list of folders.

Mobile Content Directory

Content > MobileWeb

Content Type (MobileWeb)
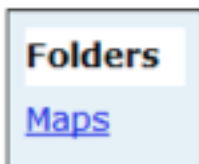
Folders

Maps

Supported Operations: Create Folder

Child Resources: All Items

Supported Interfaces: REST

Creating Maps
If you click on the Maps folder, you can create and upload your own maps to the server using the Supported Operation link titled Add Item.

Mobile Content Directory

Content > MobileWeb > Maps

Content Type (MobileWeb) – Folder (Maps)

Folder Details

Folder Title: Maps

Items		
Item	**Content Type**	**Uploaded**

Supported Operations: Add Item   Delete Folder

Supported Interfaces: REST

However before you add your map, you will need to first compose the map to upload and to do that you need to understand the Map format.

Understanding the JSON Map format
The Mobile Content Server uses JSON to format the content of the Map. This is the same format shared with maps hosted at ArcGIS.com.

A map is composed of Operational Layers and BaseMap layers. Both Operational and BaseMap layers correspond to ArcGIS services. For each layer type, certain information is required:
- URL – this is the URL to the specific service you wish to add.
- Visibility – whether or not the layer is visible in the application when opened (true or false)
- Opacity – a number between 0 – 1 that defines transparency (0.5 is 50% transparent)
- Title – the title used in the legend

Here is an example of a map that is shared with everyone and its JSON:
http://www.arcgis.com/sharing/content/items/46232670fc984e73a22d39cf13b78ad0/data?f=pjson

```
{
  "operationalLayers": [{
    "url": "http://sampleserver5a.arcgisonline.com/ArcGIS/rest/services/Events/FeatureServer/0",
    "visibility": true,
    "opacity": 1,
    "mode": 1,
    "title": "SS5_Events - Events"
  }],
  "baseMap": {
    "baseMapLayers": [{
      "opacity": 1,
      "visibility": true,
      "url": "http://services.arcgisonline.com/ArcGIS/rest/services/World_Topo_Map/MapServer"
    }],
    "title": "World_Topo_Map"
  },
  "widgets": null,
  "version": "1.1"
}
```

There is much more to the JSON structure however the operational and base map layer definition is what is critical to composing a map.

Reading and Creating JSON from ArcGIS Online
Perhaps the best way to understand the JSON format is to look at examples from ArcGIS Online. You can read the JSON of a map that you create in ArcGIS Online by manipulating the URL in your web browser:

1. Open a map using ArcGIS Online and then look at the URL of the map item in your browser. Note that each map is an "item" and that the item has an id. For example, the Topographic map can be opened using the following URL (http://www.arcgis.com/home/item.html?id=d5e02a0c1f2b4ec399823fdd3c2fdebd). Inside of this URL, "d5e02a0c1f2b4ec399823fdd3c2fdebd" is the item id.

2. To view the JSON of this map, open a new tab on your web browser and paste the following URL: (http://www.arcgis.com/sharing/content/items/d5e02a0c1f2b4ec399823fdd3c2fdebd/data?f=pjson). Note the item id in the formation of the URL.

The key elements in the structure of the URL are
"http://www.arcgis.com/sharing/content/items" + "/itemid" + "/data?f=pjson"

Note: This approach will work for maps that are shared with everyone. If you receive a 400 or 403 error attempting this with your map, it may be that your map is not shared. If this happens, you can still access the JSON however you need to first generate a token and then pass the token inside of the URL as follows:

1. Generate a token that you can use by calling "generateToken?f=json&request=gettoken" passing both username and password. In the example below, change "myusername" and "mypassword" to your EsriGlobal username and password. Note that a referrer is required but the text can be anything you choose it to be.
Here is an example:
https://www.arcgis.com/sharing/generateToken?f=json&request=gettoken&username=myusername&password=mypassword&Referer=MyToken

Note that we are using HTTPS instead of HTTP to generate the token.

The URL will generate a token that you can use in step 2. An example of the result of generating the token:

```
"{"token" :
"QbEq7l8HoCiUDrW9tS7I0PgjFGagX9UCJwCV4Op8J_pvDUPEQCzSy3Twct734ZG8","expi
res" : 13061295319
    "
```

Here the token itself is indicated in **bold** text.

> 2. Once you have the token, you can now use that token value to retrieve the JSON for a map as follows:
> [http://www.arcgis.com/sharing/content/items/0a27f5cb1f07478fbdf117b7023 1c5c2/data?f=pjson&token=QbEq7l8HoCiUDrW9tS7I0MAJLxXaS4Vzt-TJRjIhg2TjxX98_FN9jD1ZfeWTdvwk](http://www.arcgis.com/sharing/content/items/0a27f5cb1f07478fbdf117b70231c5c2/data?f=pjson&token=QbEq7l8HoCiUDrW9tS7I0MAJLxXaS4Vzt-TJRjIhg2TjxX98_FN9jD1ZfeWTdvwk)

Note that here we are including "&token=" + token value to the end of the URL. This will use the token value to request the formatted JSON from the item specified.

Once you have received valid JSON using your web browser, you can copy and paste that JSON into a text file for upload into your content server.

Uploading your map to the Mobile Content Server
Once you have created your map and properly validated the JSON structure, click the Add Item supported operation link to upload your item to the server.

Entering Content Server credentials

Clicking on the link you will be challenged to enter a username and password. You will need to enter a valid username and password that is inside of the "agsadmin group" on your web server. If you have created a local account (not a domain-based account) on the web server, you do not need to include the domain name in your username entry as the server will assume it is local user and will try to use it to authenticate.
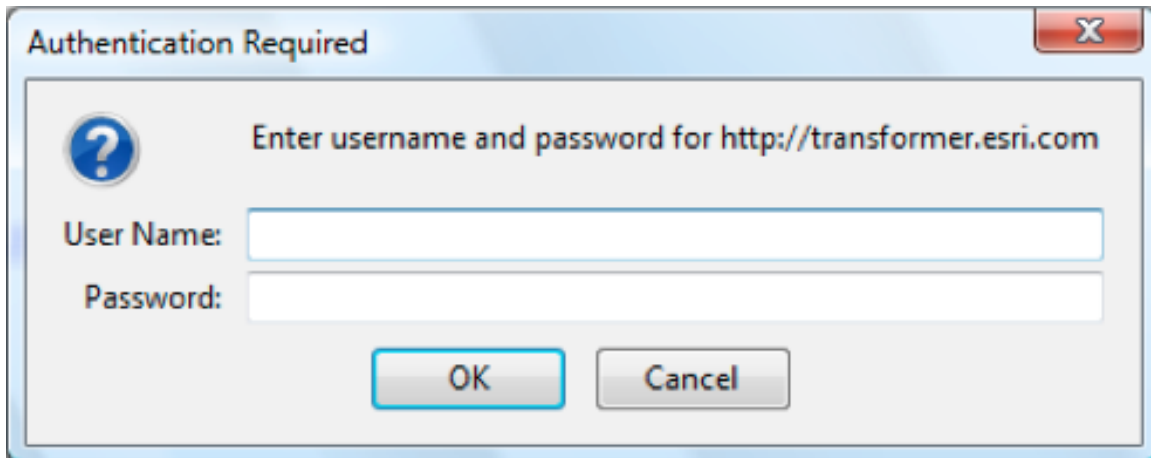
Note: If you are using Internet Explorer, and you have Wnodws Integrated Authentication turned on, and your log in account and machine is in the same domain of your server machine, IE will take advantage of using Windows Authentication and you will not be prompted. It will use your logged in credentials automatically. Please keep in mind that Windows Authentication only works if you enter only machine name (like http://servername) and not a fully qualified domain name such as http://servername.mydomain.com.

Entering your Map

The Add Item page requires that you enter in a number of details (in addition to the formatted JSON map content):

- Text – this is the JSON for the map. Copy and paste your map content into the text field.
- Item – a unique identifier for the map (you do not need to enter any details here).
- Title – name given to your map. The title appears at the rest endpoint and can be different than the Name.
- Name – a user-friendly name for the map.
- Description – a long description detailing metadata content for the map.
- Snippet – a short description about the map. Also referred to as the Summary in ArcGIS Online.
- Extent – Enter the bounding coordinates in format "xMin,yMin,xMax,yMax" using GCS coordinates. For example (95.2428, 25.8693, 82.3669, 33.0089).
- Thubnail – you can upload a default image to represent the map. It is recommended that if you choose to do so that you create a small png file representing the map extent or another image meaningful to the map user that is browsing the server looking for the appropriate map to open.
- Type – the type is "Web Map". Do not change this.
- Format – determines whether or not the resonse will be in HTML or JSON. Leave as HTML.

[],"baseMap":{"baseMapLayers":
[{"url":"http://services.arcgisonline.com/ArcGIS/
rest/services/World_Topo_Map/MapServer"}],"title"
:"Topography"}}

Text

Item   RoseBowl

Overwrite existing file?   ○ True   ⦿ False

Name   Rose Bowl in Pasadena

Title   Rose Bowl in Pasadena

Description   Bowl stadium in Pasadena, site of the 2010 BCS Championship football game.The Rose Bowl is one of the featured areas of the City of Pasadena, California basemap that was recently added to the World Topographic Map.

Snippet   This map features a detailed view of the Rose Bowl stadium in Pasadena, site of the 2010 BCS Championship football game.

Extent   -118.1712,34.1594,-118.1627,34.1632

Thumbnail   C:\temp\rose_bowl.jpg   [Browse...]

Type   Web Map

Format: HTML ▾

[Add Item]

Once all of the content has been entered into the appropriate fields, click the Add Item button at the bottom of the page.

NOTE: You can delete Maps nd folders on your web server using the rest pages as well. Look to the Supported Operations either at the level of the item or the level of the folder for the "Delete link".

Connecting to your ArcGIS Server in the ArcGIS application

On your smartphone device you can open the maps that you have created using the steps above by connected to your ArcGIS Server:

1. Within the ArcGIS application on your smartphone navigate to "ArcGIS Servers" to create a new connection to the server.

2. Enter in the address of your content server. The address will need to include the <host>/<instance>/mobile. You may want to enter in the URL of the content server into your mobile web browser to ensure that your device has access to the hosted map content first.