Imagery Distribution Using ArcGIS Mapping Services

Paul Johnson
April 10, 2014
# Table of Contents

Introduction..................................................................................................................................................3
Configuring the ArcGIS Server ..................................................................................................................3
Preparing Data For Distribution Through the GIS Server .........................................................................5
Create an Image Service on the ArcGIS Server .........................................................................................7
Accessing Shared Image Services Using ArcGIS.com ..............................................................................10
Accessing Shared Image Services Using ESRI’s Portal ............................................................................12
Introduction
The purpose of this guide is to provide a “cookbook” on how to prepare and serve imagery datasets (e.g. USGS Digital Orthoquads) from an ArcGIS server to systems running ESRI’s Portal Services (e.g. ArcGIS.com, NOAA’s GeoPlatform, etc.). The cookbook assumes the user will have access to an already configured and running ArcGIS server as well as a basic knowledge of ESRI ArcGIS desktop products.

Configuring the ArcGIS Server
In order to increase the speed and ease of imagery data sharing using an ArcGIS server, it is advantageous to have the imagery dataset common to both the GIS Server and to the desktop users preparing the data. This means either 1.) having the desktop GIS users and the server accessing the same imagery dataset or 2.) having a duplicate dataset available to both the GIS server and desktop GIS users. The advantage of utilizing either of these methods is that users preparing datasets using desktop GIS programs will not need to copy data to the server during deployment. This is especially advantageous if the same dataset is to be shared both through image services and as a prepared map service. To register the dataset location (paths) for both the server and desktop users with the ArcGIS server the following steps must be followed:

1. Connect to the ArcGIS Sever Manager webpage.
   Either:
   a. Enter the address of the ArcGIS Server Manager into a web browser. Normally the URL is of the form: https://server:6443/arcgis/manager/ (replace server with the name or IP of the GIS server).
   - OR -
   b. Use ArcCatalog (see figure to the right) by right clicking on the server name located under the GIS Servers list and then selecting ArcGIS Server Manager....

2. Logon to the ArcGIS server by supplying administrator credentials (username and password) to the webpage (Figure 1a) to initiate a session.
3. On the ArcGIS Server Manager web page click on the **Site** button near the top of the page.

4. Click on the **Data Store** button on the left side of the page.

5. Click on the **Register Folder** button.
6. In the Register Folder dialog box fill out the following information:

**Name:** This is the name of the folder on the server that the shared Image Service will be stored in. It must be unique, but can contain spaces and alphanumeric characters.

**Publisher Folder Path:** Path used by the local desktop users to access the data. This can be in the format of a drive letter and path (e.g. C:\Workspace) or a network path (e.g. \server\Workspace).

**Publisher Folder Host Name:** Enter the computer hosting the publisher’s folder. This is only necessary if users within the lab are accessing the data through a drive letter location (e.g. C:\Workspace).

**Server Folder Path:** If the server is accessing the data through the same path as the users in the lab click on the “Same as publisher folder path” button. Otherwise, supply the path that the ArcGIS server is accessing the data through.

7. Click Create to finish the folder registration.

---

**Preparing Data For Distribution Through the GIS Server**

In order to maximize compatibility with other web services and the speed of data distribution, it is a best practice to have all datasets being distributed through the GIS server to have a common coordinate system, in this case “WGS_1984/Web_Mercator_Auxiliary_Sphere”. By utilizing this coordinate system, shared mapping services will be compatible with existing ESRI web mapping services (base maps, prepared datasets, user contributed datasets, etc.) and Google’s KML format without requiring the GIS server to re-project them.

There are numerous methods to migrate dataset from their starting projection to the Web Mercator projection, but for simplicity this cookbook will document the steps necessary using the ArcGIS desktop projection tools.

1. Verify that the metadata records for the imagery dataset are complete. Metadata can be verified in ArcCatalog by selecting the imagery dataset in the catalog tree and then clicking on the **Description** button (see figure to the right). If
metadata is not present for that dataset, the data preparer can either import the metadata from a file using the **Import** button or enter the metadata manually by clicking on the **Edit**.

2. Open ArcToolBox by clicking on the icon in either ArcMap (shown below on the left) or in ArcCatalog (shown below on the right).

3. In ArcToolbox scroll down the list and expand the **Data Management Tools** section, expand the **Projections and Transformations** section, expand **Raster**, and double click on the **Project Raster** selection.

4. In the “Project Raster” dialog box.
   i) Define the **Input Raster**. This can be done by clicking on the “Folder” button to the right of the input field and navigating to the desired raster.

   ii) Define the **Output Raster Dataset** by providing the path and name you wish to create.

   iii) Define the **Output Coordinate System** to be WGS_1984_Web_Mercator_Auxillary_Sphere.
This selection can be found by clicking on the icon to the right of the Output Coordinate System field (see figure above) and then expanding the Projected Coordinate System selection in the Spatial Reference Properties dialog box (see figure to right), expanding the World selection, and selecting WGS_1984/Web Mercator_Auxillary_Sphere, and clicking OK.

iv) Define a Geographical Transformation system if necessary. This is the transformation method used to move between the input coordinate system and the output coordinate system. The GIS program will supply a suggested transformation method.

v) Define Resampling Technique to be BILINEAR or CUBIC for continuous raster datasets (Imagery data).

vi) Define a new cell size if desired.

vii) Click OK

Create an Image Service on the ArcGIS Server
These steps will create and start the Image Service (web mapping service) on the GIS Server.

1. In ArcCatalog right click on the image to be shared and select Share As Image Service...

2. Click on the Publish a service button and select Next.
3. Connect to the ArcGIS server as an admin user and specify the desired name of the service you will be distributing your data through.

4. If you are publishing to an existing folder select the folder from the list (see figure below on left) and click continue. Otherwise, enter the name of the folder to be created and click on continue (figure below on the right).

5. Click on Item Description and supplement the information as necessary (the metadata previously entered for the dataset should have populated the information fields already).
6. Select **Capabilities** and turn on WCS (Web Coverage Service) and/or WMS (Web Map Service) if desired.

7. Click on **Caching** and enable if desired.

8. Click on **Analyze** to check for any potential problems with the service.
9. Click on the **Publish** button to create and start the Image Service on the GIS server.

Accessing Shared Image Services Using ArcGIS.com

ESRI provides an easy to use map management system through their ArcGIS.com website. This site, utilizing their ArcGIS server extension called Portal, provides users the ability to create maps and interact with data using nothing but a web browser. To load the Image Service, created in the steps above, into a map on ArcGIS.com follow these steps:

1. In a web browser connect to the ArcGIS server, normally through the URL [http://gisserver:6080](http://gisserver:6080) (replace server with the name or IP of the GIS server). Then click on the **Services Directory** link.

2. The ArcGIS REST (Representational State Transfer) Services Directory webpage will appear. Click on the link pointing to the folder created in the steps above.
3. On the Service Folder webpage click on the name of the Service created.

4. Click on the ArcGIS.com Map link.

5. The shared Image Service will now appear in the ArcGIS.com mapping program.
Accessing Shared Image Services Using ESRI’s Portal

To access shared imagery services through an ESRI Portal (e.g., NOAA’s GeoPlatform) do the following steps:

1. Navigate to the REST service following steps 1 to 4 defined in the section above. Copy the URL of the service from the web browser (see figure on the right).

2. Open the ESRI Portal (in this example ArcGIS.com) and click on the Add button and select Add Layer from Web.

3. Paste the REST URL copied in step 1 into the URL: field of the Add Layer from Web dialog box and then click Add Layer.
4. The image service will be added to the ESRI Portal map display.