Publishing image services in ArcGIS

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What is an image service?

- A way to make image and raster data available to the web and client applications using ArcGIS
- Can be used in web applications, ArcGIS for Desktop, ArcGIS Online, and other client applications
Other ways to serve imagery

• Map service
  - Published map document containing an image layer

• Other
  - Globe service, mobile service, geodata service…
## Image service versus map service

<table>
<thead>
<tr>
<th>Image service</th>
<th>Map service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serves imagery (and lidar) directly</td>
<td>Serves a map document containing imagery or vector data</td>
</tr>
<tr>
<td>Can be used as a data source</td>
<td>Client views map service as it was designed</td>
</tr>
<tr>
<td>Can query</td>
<td></td>
</tr>
<tr>
<td>Layer properties can be altered by client</td>
<td>Client cannot change layer properties</td>
</tr>
<tr>
<td>• Compression</td>
<td></td>
</tr>
<tr>
<td>• Rendering</td>
<td></td>
</tr>
<tr>
<td>• Band combinations</td>
<td></td>
</tr>
<tr>
<td>Can build cache</td>
<td>Can build cache</td>
</tr>
</tbody>
</table>
What can you do with an image service?

- Use it as an image (visual analysis)
- Use it as raster data (pixel analysis)
- Access it as a catalog (mosaic dataset)
How can you access an image service?

Desktop, Web, & Mobile Applications

Capabilities
- Imaging
- WCS
- WMS
- KML

SOAP
REST
Image service data sources

- Raster datasets
- Mosaic datasets
  - Managing imagery or lidar data
- Raster or mosaic layers
  - To control rendering
  - Preset some layer properties
  - Predefined query
ArcGIS for Server Image Extension

- It is a license added to ArcGIS for Server
- Extends the capabilities to serve imagery or lidar managed using mosaic datasets
  - as image services or
  - contained within other services, such as map services
- Allows you to serve a raster layer used to mosaic multiple rasters (Mosaic Function)
Publishing workflow changes

- New publishing workflow
- Register databases
- Share from data source
- Requires service definition (.sd)
Data movement when publishing

- Ensures the server can always see the data
- Data may be copied to the server when publishing
- Register data folders and geodatabases
  - Shared
  - Duplicate
How to publish an image service?

1. Connect to your server
2. Register the data locations (shared/duplicated)
3. Navigate to dataset and Share As Image Service
4. Define connection information
   - Server, service name
5. Modify the capabilities and parameters
   - Some capabilities are specific to the data
6. Analyze
7. Publish
Publishing interface
Image service capabilities

- Imaging

- Web Coverage Service (WCS)
  - Serves actual pixel information from source data
  - Supported in many image analysis and processing software packages
  - Useful for image analysis applications where full pixel depth (bits and bands) are required

- Web Map Service (WMS)
  - Supported for “rendered” image services
  - Useful for imagery base maps
**Imaging capability options**

Controlling what users can do with the image service

<table>
<thead>
<tr>
<th>Capability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image</td>
<td>The image can be displayed</td>
</tr>
<tr>
<td><em>Mensuration</em></td>
<td>Clients can use the image service with mensuration tools</td>
</tr>
<tr>
<td>Metadata</td>
<td>The client can see metadata for the image service and for each raster in a mosaic dataset</td>
</tr>
<tr>
<td>Catalog</td>
<td>The client can open the attribute table</td>
</tr>
<tr>
<td>Download</td>
<td>Rasters or lidar data can to be downloaded</td>
</tr>
<tr>
<td><em>Edit</em></td>
<td>Clients can add, delete, or update the data</td>
</tr>
<tr>
<td>Pixels</td>
<td>API developers can access the pixel blocks of the individual rasters in a mosaic dataset</td>
</tr>
</tbody>
</table>
Publishing interface – Parameters
Applies to all inputs
Publishing interface – Parameters

Applies to mosaic datasets & affects server load
Publishing image services
Enabling custom server-side processing

- Applicable to all image service inputs
- Can be turned off
- Uses raster function templates
- You can set a default
Image services with functions
Image service editing

- Sets up an image service can receive data
  - Add, remove, update properties
- Requires a mosaic dataset in an enterprise geodatabase
- Requires a location for upload and storage
- You can enable editor tracking
- You define the supported raster types
Image services for mensuration

- ArcGIS provides a set of tools for image mensuration, including tools to measure point, distance, area, and height from an image.
- This option is applicable to all image service inputs.
- Allowed mensuration methods are derived from source, but can be modified.
- Elevation source enable users to make measurements in 3D (e.g. building height + surface height).
Image services for mensuration
Image service cache

- It’s pre-generated tiles of imagery
- It is preprocessed imagery—it is not imagery that is processed on the fly
- Benefits:
  - Improved performance for basic images
  - Skip overview generation
  - Improved performance for slow formats
- Can be pre-generated or created on demand
- Tilling structure – by scale or by pixel size
Cached image service is unique

- Dual purpose image service is created

1. Provide the fastest access to the image as a tiled service

2. Provide access to the data, for queries, downloading, access to individual items, and to use in processing and analysis
Should I cache my image services?

- Caches work best with image services that do not change frequently
- If your data received updates you update the cache
- If the source data of an image service needs to be live consider a dynamic cache
Image service caching and sharing in ArcGIS Online
Questions?

Please review this session

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