Creating Geoprocessing Services

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(also offered tomorrow, July 12, 16B, 10:15-11:30)
Before we start.....

- Both ArcMap and ArcGIS Pro
- The terms “geoprocessing services” and “web tools” can be used interchangeably

- Generally, the process of publishing is the same between ArcMap and ArcGIS Pro

- Goals
  - To understand what you need to know when publishing (data, tool, etc)
  - To see the User Interface (UI) differences between ArcMap and Pro
  - Be aware of any “gotchas” or differences between the software versions
Design your service

• Where does data come from?
  - Already on the server
  - Upload
  - Feature layer from map/feature service

• How do you want to view results?
  - Client downloads and draws features (if needed)
  - Draw features with Map Service
Creating Geoprocessing Service workflow

- Create tool
- Document tool
- Run tool
  - [AM] From Results Window, publish as service
  - [Pro] From the Share tab or Geoprocessing History

- Set service name, parameters, etc in the Service Editor / Web Tool UI
  - Analyze
  - Publish
- Consume in a WebApp, ArcMap, ArcGIS Pro etc.
1. Data on server

Supporting Text
Parameter transformation

- Parameter types converted to supported types when publishing
- You can update the Input Mode depending on the parameter type
  - **User Defined Value**: allows the end user to interactively add features or enter text and number values, files, etc
  - **Choice list**: allows the end user to select from a list of layers already on the server
  - **Constant value**: hard codes the parameter; the end user will not be able to provide input
Data Store

- Data Store tells ArcGIS Server about your data
- Data Store acts as a lookup table
- Without a Data Store entry, all required data is copied to the server

**Note:** Set the federated server of your Portal when publishing with ArcGIS Pro
Service Editor (ArcMap)

- Import configuration settings
- Multiple results = multiple tasks
- See how the task will look to someone consuming from Desktop
- Analyzer errors and warnings

Share as a Web Tool (ArcGIS Pro)

- Multiple history items = multiple tools
- Analyzer errors and warnings
Execution Mode

- Execution mode defines how the client interacts with service while it executes
  - Synchronously: the client waits for the server to finish executing and then gets the result.
  - Asynchronously: client must ask the server if its finished then get the result. The client is free to do other work during this time.
  - Can only use a Result Map Service with Async.
  - Synchronous services are typically fast services
2. Upload data

Supporting Text
Script Tools

- Paths and data handled the same as models
- Output and Intermediate paths
  - `os.path.join(arcpy.env.scratchFolder, "out.shp")`
  - `os.path.join(arcpy.env.scratchGDB, "out")`
  - `in_memory/out`

- Create GP Service with Python (DevSummit 2016) - [http://esriurl.com/gpServicePy](http://esriurl.com/gpServicePy)
Result Map Service

• A result map service (RMS) provides an additional way to get results from the Geoprocessing Service.

• An image is returned to the client.
  - The data can still be downloaded.

• Use a RMS when:
  - Want better cartography than the client can support
  - It is impractical to render a large dataset in a client.

• Execution must be Asynchronous when using a RMS
3. Steam data to server

Supporting Text
• The service layer is passed to the geoprocessing service as input. Web App code is the ‘glue’ between the two services.
Useful links

- Quick tour of Authoring and Sharing GP Services - http://esriurl.com/gpSrvQuick or http://esriurl.com/gpSrvQuickPro
- Data, Slides, apps: http://arcgis.com
  - Search: “UC2017”, “GP” (check show desktop content on the left)
More presentations

• **Python: Building Geoprocessing Tools**
  - Tuesday 1:30-2:45 06E
  - Friday 9:00-10:15 01A

• **ModelBuilder: Introduction**
  - Tuesday 10:00-10:30 Tech Theater 19
  - Wednesday 11:00-11:30 Tech Theater 19

• **ModelBuilder: Advanced Topics**
  - Wednesday 1:30-2:45 06D
  - Thursday 10:15-11:30 06D

• **ModelBuilder: Tips and Tricks**
  - Tuesday 3:15-4:30 31A
  - Wednesday 3:15-4:30 30E