ArcGIS Enterprise: Publishing Content and Services

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2022 ESRI MIDWEST USER CONFERENCE

Agenda

- The plumbing
  - ArcGIS Enterprise
  - ArcGIS Server
- The data
  - Registered data
  - Unregistered data
  - Data stores
- Scripting publishing workflows
- Other layers and service types
  - Bulk publishing
  - Hosted map image layers
- ArcMap-based runtime removal

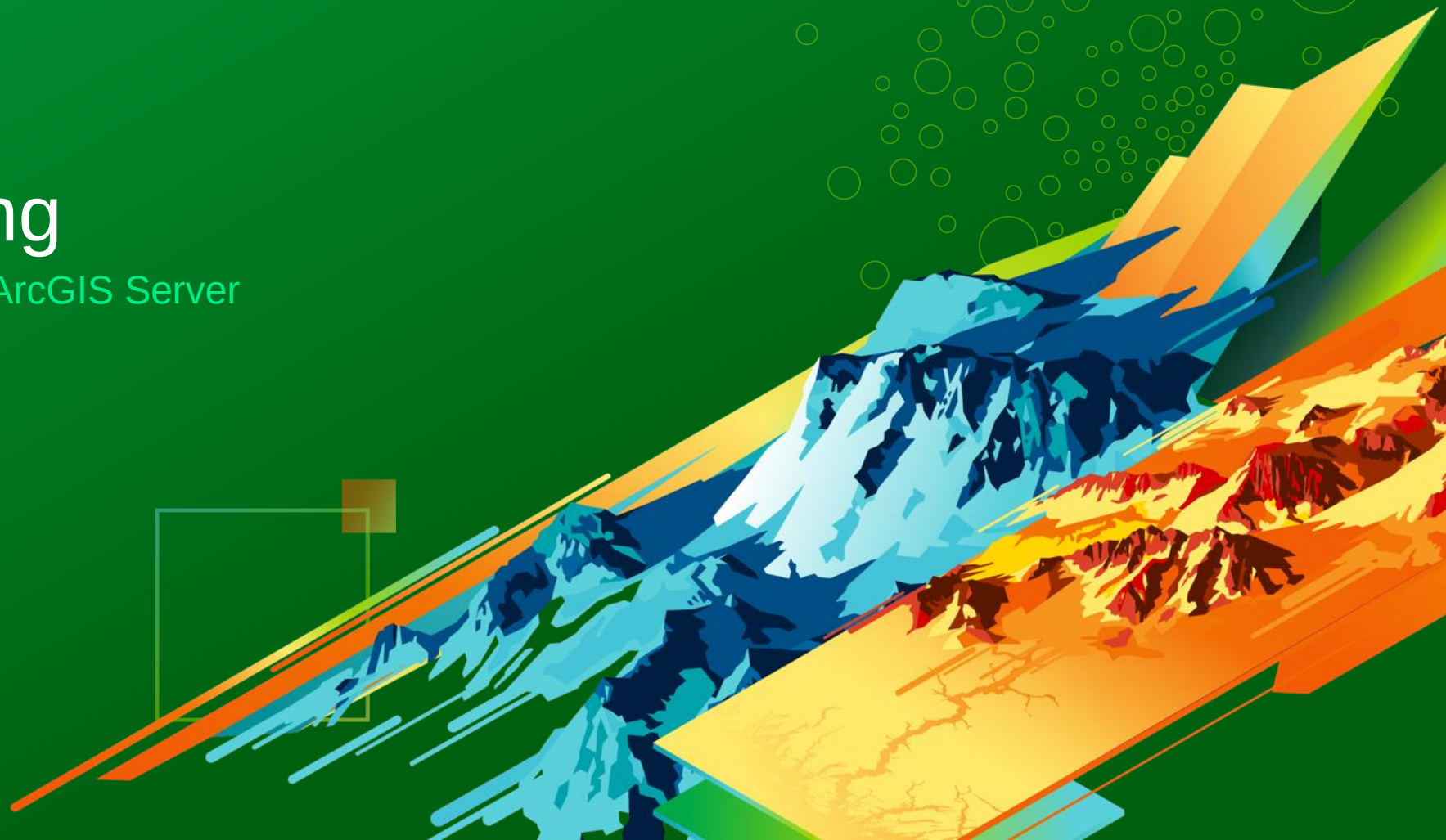
ArcGIS Enterprise

ArcGIS Pro

ArcGIS Online

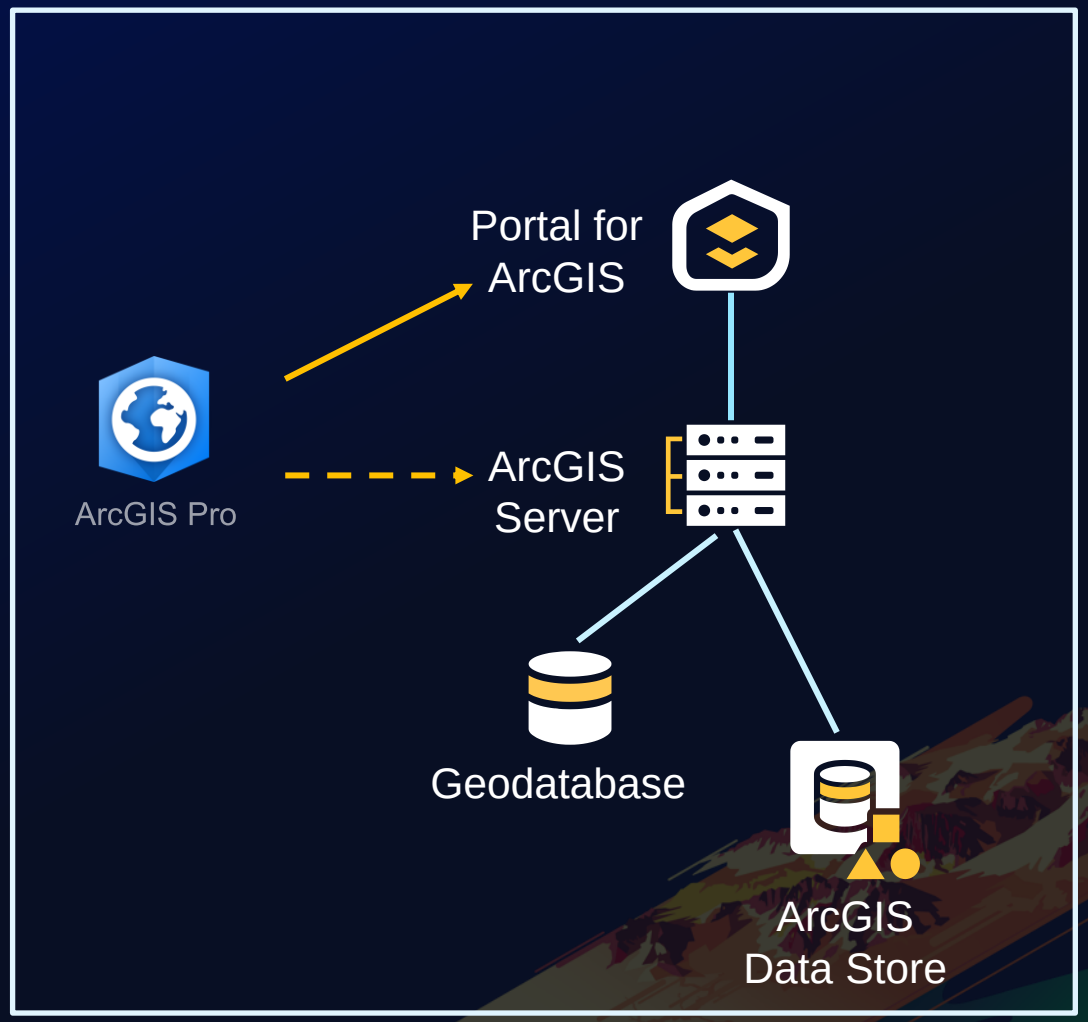
The plumbing

ArcGIS Enterprise and ArcGIS Server



Sharing from ArcGIS Pro

Sharing from ArcGIS Pro

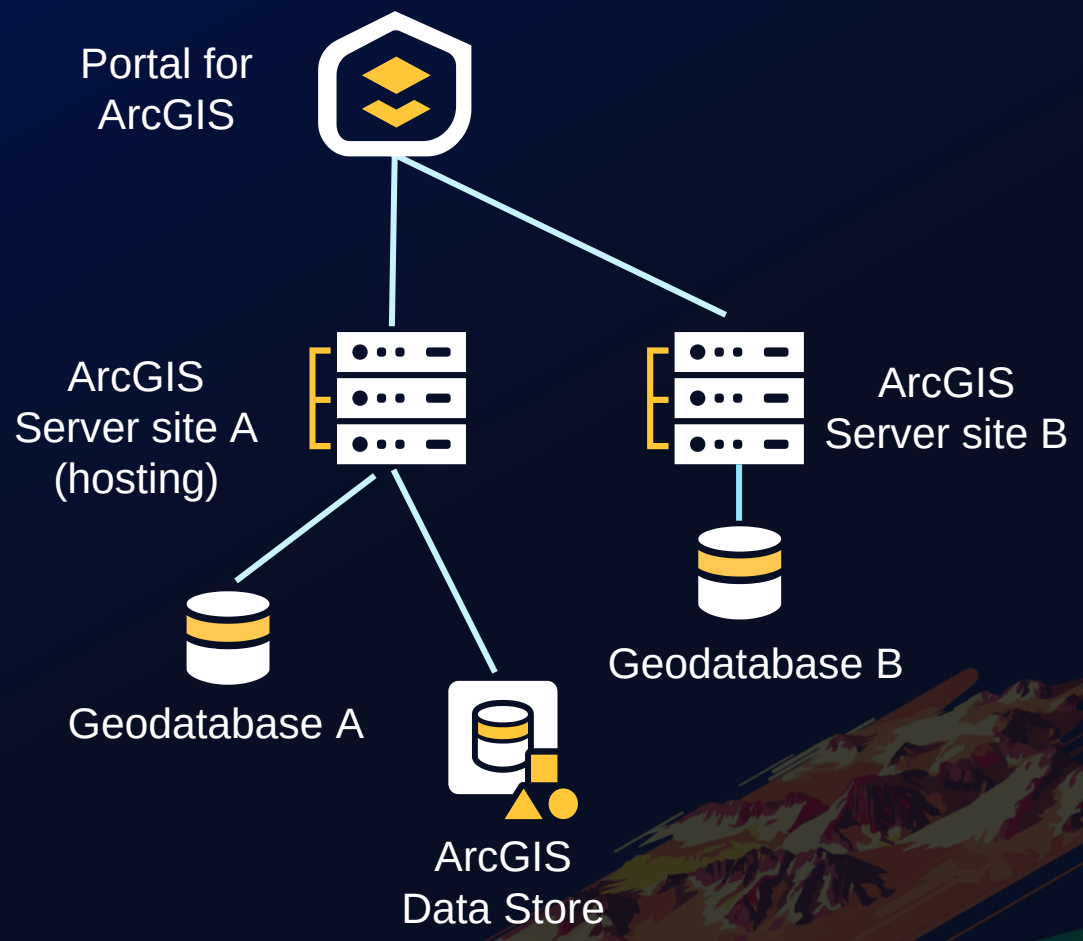


Concept Review: Base Deployment and Federated Servers

- ArcGIS Enterprise Base Deployment
  - Consists of a federated ArcGIS Server site
  - ArcGIS Data Store has been registered with the site as the registered managed database
  - The site is designated as the *hosting* server

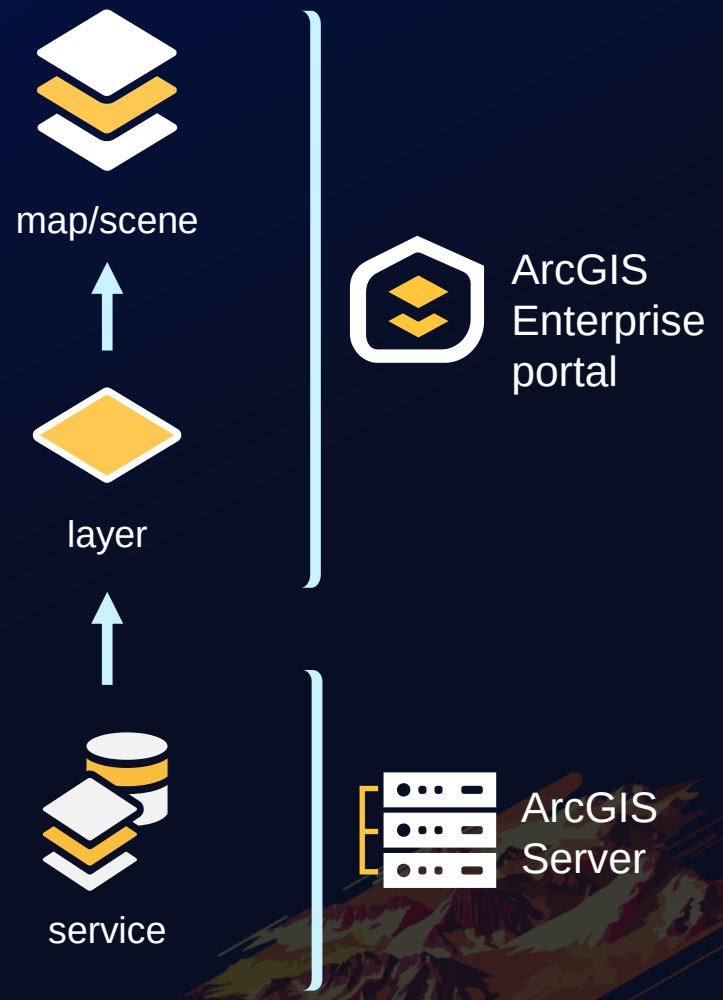
- Some organizations may also have additional ArcGIS Server sites that are federated with the same Enterprise Portal

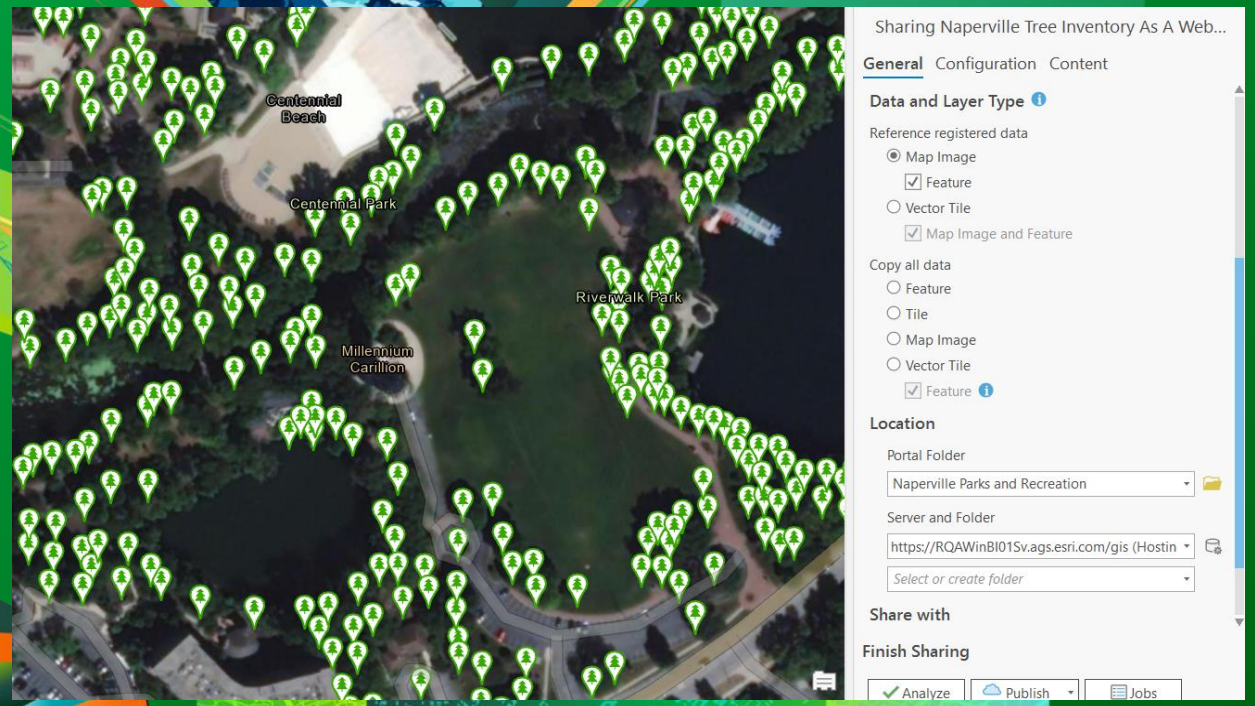
- When sharing from ArcGIS Pro, you decide which federated server site you want to share content to.



How Web Maps, Layers, and Services Work Together

- Web Map (2D) or Web Scene (3D)
  - collection of web layers and mapping functionality
- Web Layer
  - portal item that exposes a service
  - references a service and can configure attribute pop-ups, symbology, etc.
- Web Service
  - exposes a URL for web clients to access data
  - data can be copied to the server or referenced from a shared location or enterprise geodatabase





Map image + feature layer

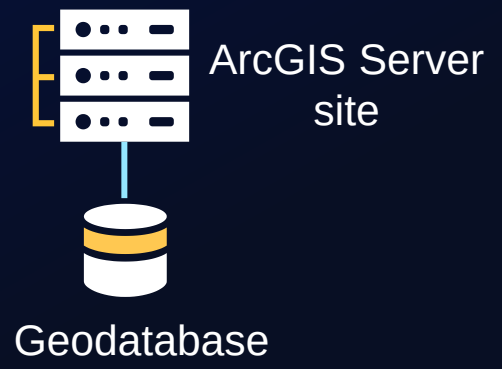
Demo Presenter

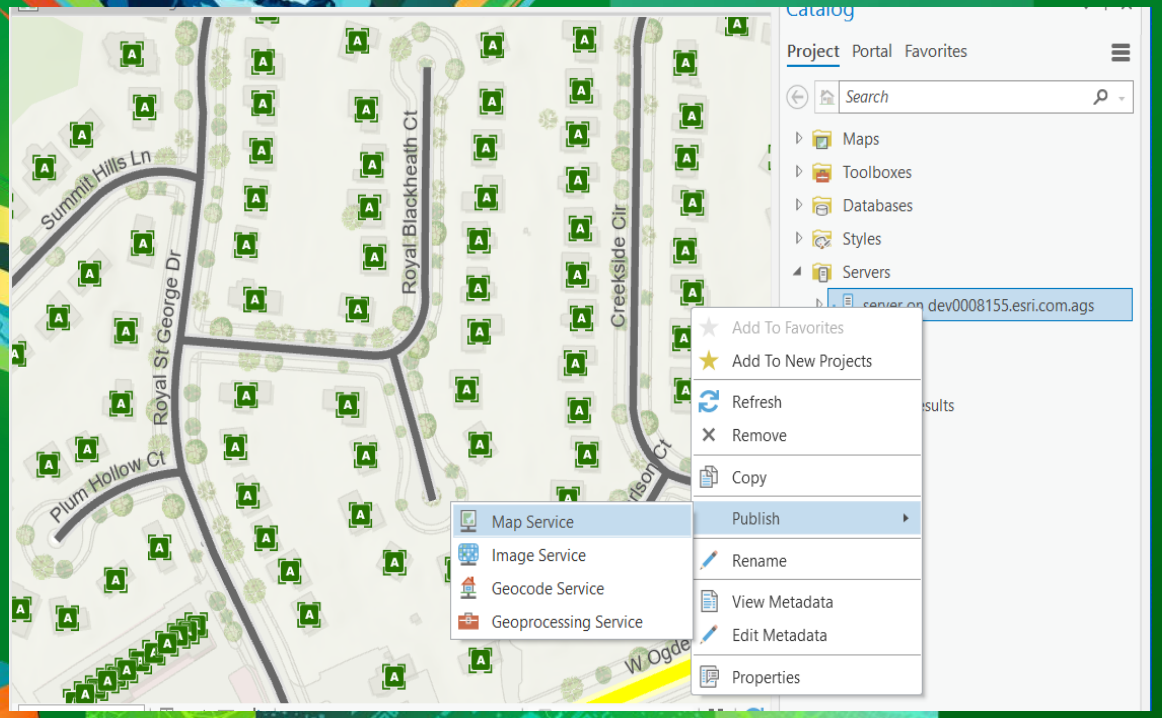
Publishing to standalone ArcGIS Server sites

- Standalone ArcGIS Server sites
  - Site is not *federated* with a portal

- Common pattern for long time deployments. Not recommended for new installations except for pure data dissemination scenarios.

- Since ArcGIS Pro 2.4 it is possible to publish directly to standalone ArcGIS Server 10.6+ sites !
  - All traditional service types are supported including map, feature, image, geocoding, and geoprocessing services.
  - Newer service types require the full ArcGIS Enterprise stack (e.g. vector tile layers).





Publishing map and feature services to a standalone server

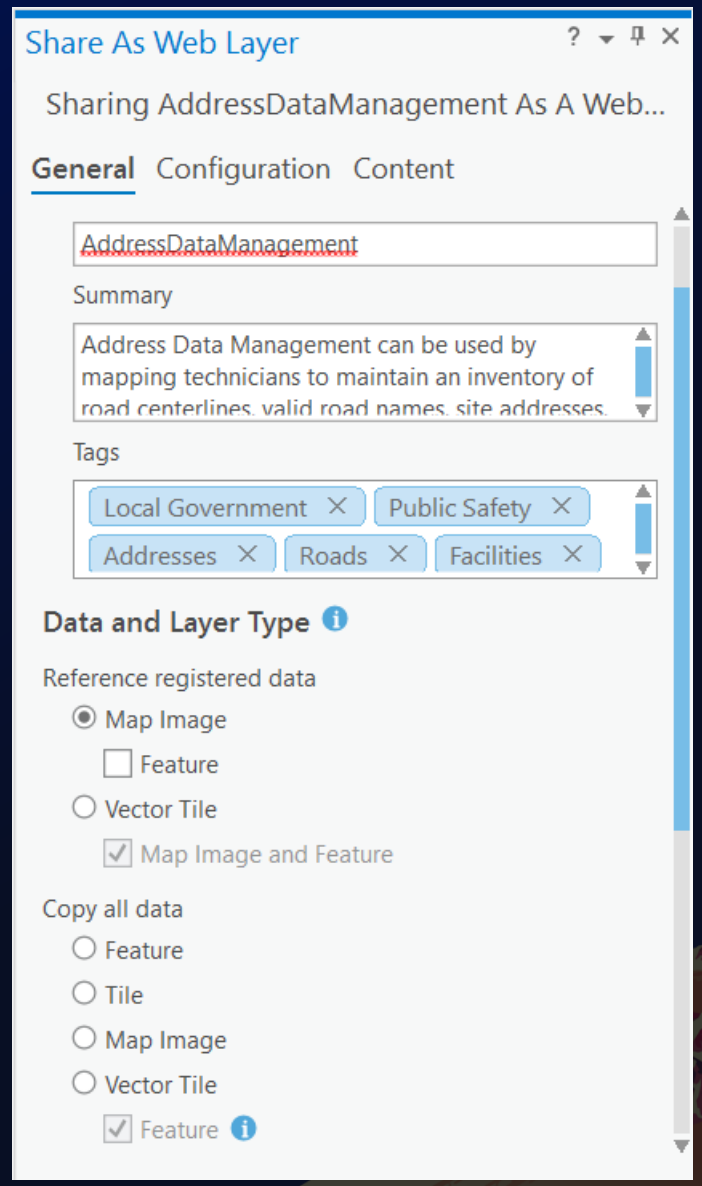
Data

What happens to your data when you share with ArcGIS Pro?

Sharing Data Options

1. Reference registered data
   - Registered data will be referenced, unregistered data will be copied

2. Copy all data
   - Both registered and unregistered data will be copied



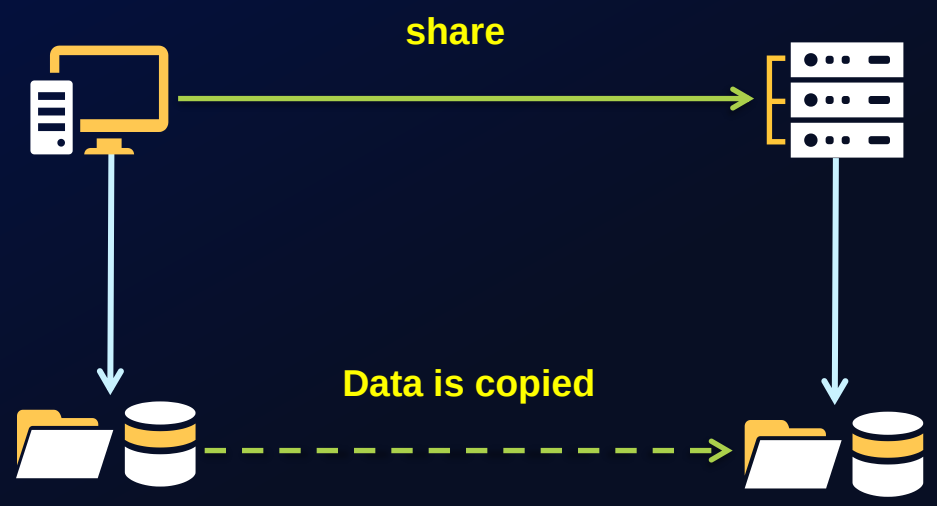
Working with Registered Data

- Designed to support enterprise editing workflows
- Data sources are registered with the federated server
- Source data is referenced, not copied

- Known as *user-managed data stores*

Working with Unregistered Data

- Source data is copied to the server machine
- Does not support enterprise data updates
- Maintains a static copy of your data

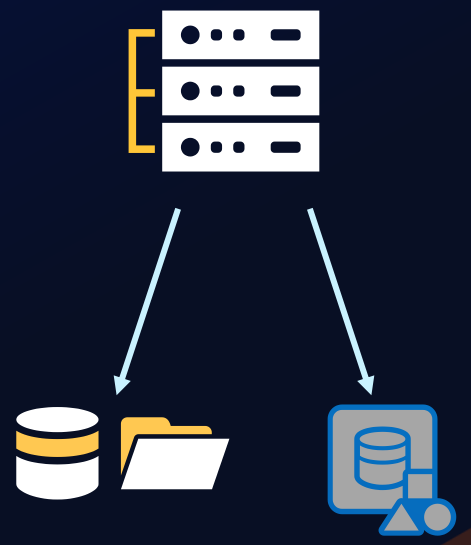


- *Copy all data* option in ArcGIS Pro
  - All source data is treated as unregistered data

- Known as *ArcGIS-managed data stores* or *hosted data*

Understanding Data Stores

- Data store items
  - Locations registered with the server that contains data used by services: can be folders and database connections
  - Operating System account that is running ArcGIS Server must have read/write access
  - User-managed data stores: shapefiles in folder, enterprise geodatabases in SQL Server, Oracle, PostgreSQL, etc.



- ArcGIS Data Store
  - Part of the base ArcGIS Enterprise deployment
  - Database is managed by the server
  - Not a general purpose database. It’s used to store data copied to the server for hosted services, and data that is the result of analysis run within the Enterprise portal
  - An ArcGIS-managed data store

Data stores

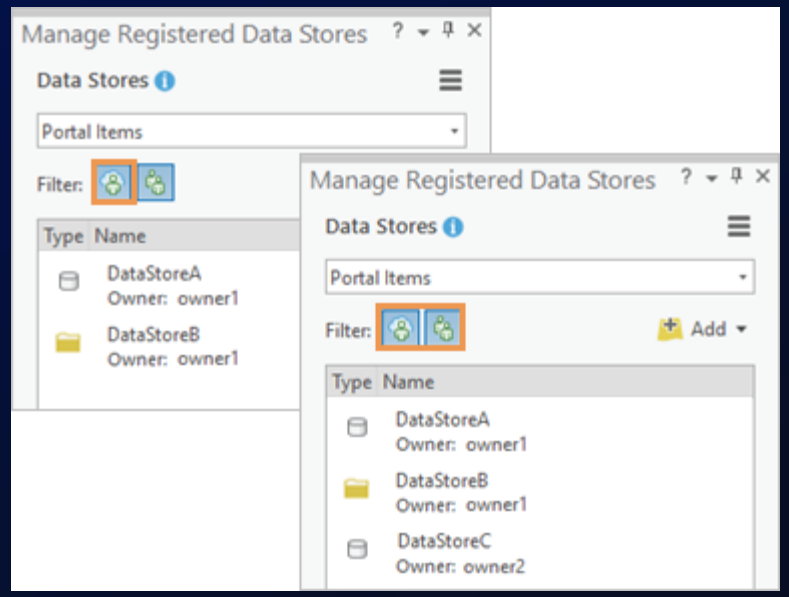
- Valid data source locations accessible by the servers
  1. Databases
  2. Folders

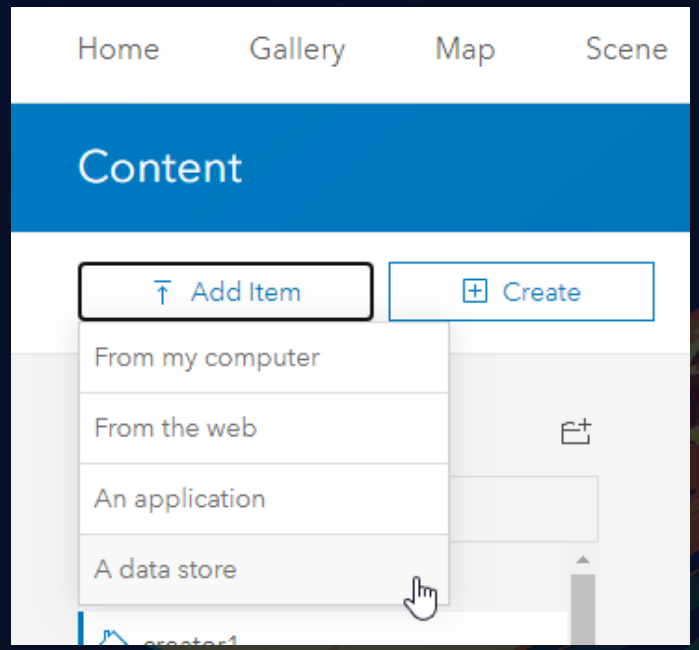
- With ArcGIS Enterprise 10.7.1 and higher the registered data store are represented by *data store items* in the Enterprise portal.
  - Data stores registered by ArcGIS Pro 2.5 and higher always use this model when available (older model available through other workflows)

- For ArcGIS Enterprise 10.7 and prior the data stores are always registered directly with each individual server site

Data stores

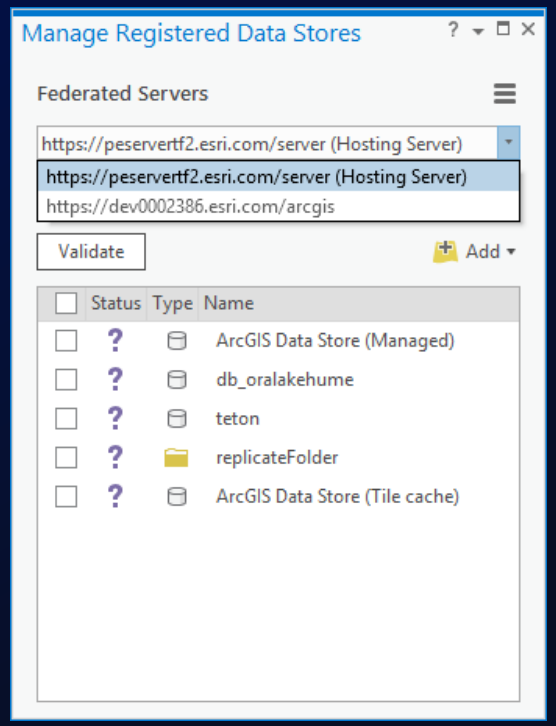
- Two ways to define when working with 10.7.1 and higher:
  1. Ahead of time:
     - In ArcGIS Pro via “Manage Registered Data Stores” pane
     - Via the Enterprise portal “Add Item” option
  2. While sharing: resolve analyzers

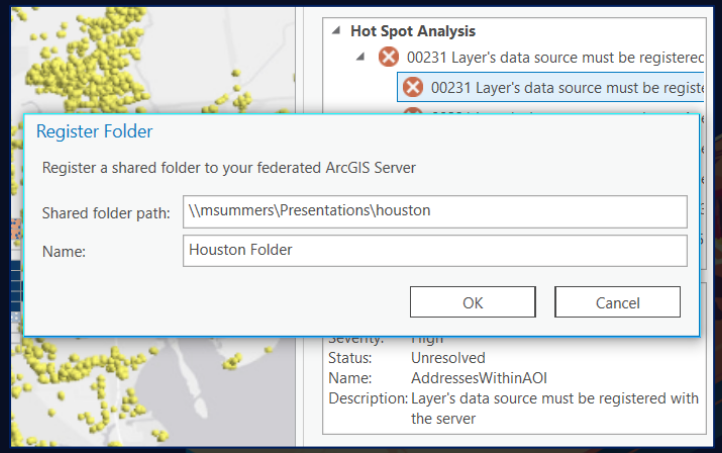




Data stores

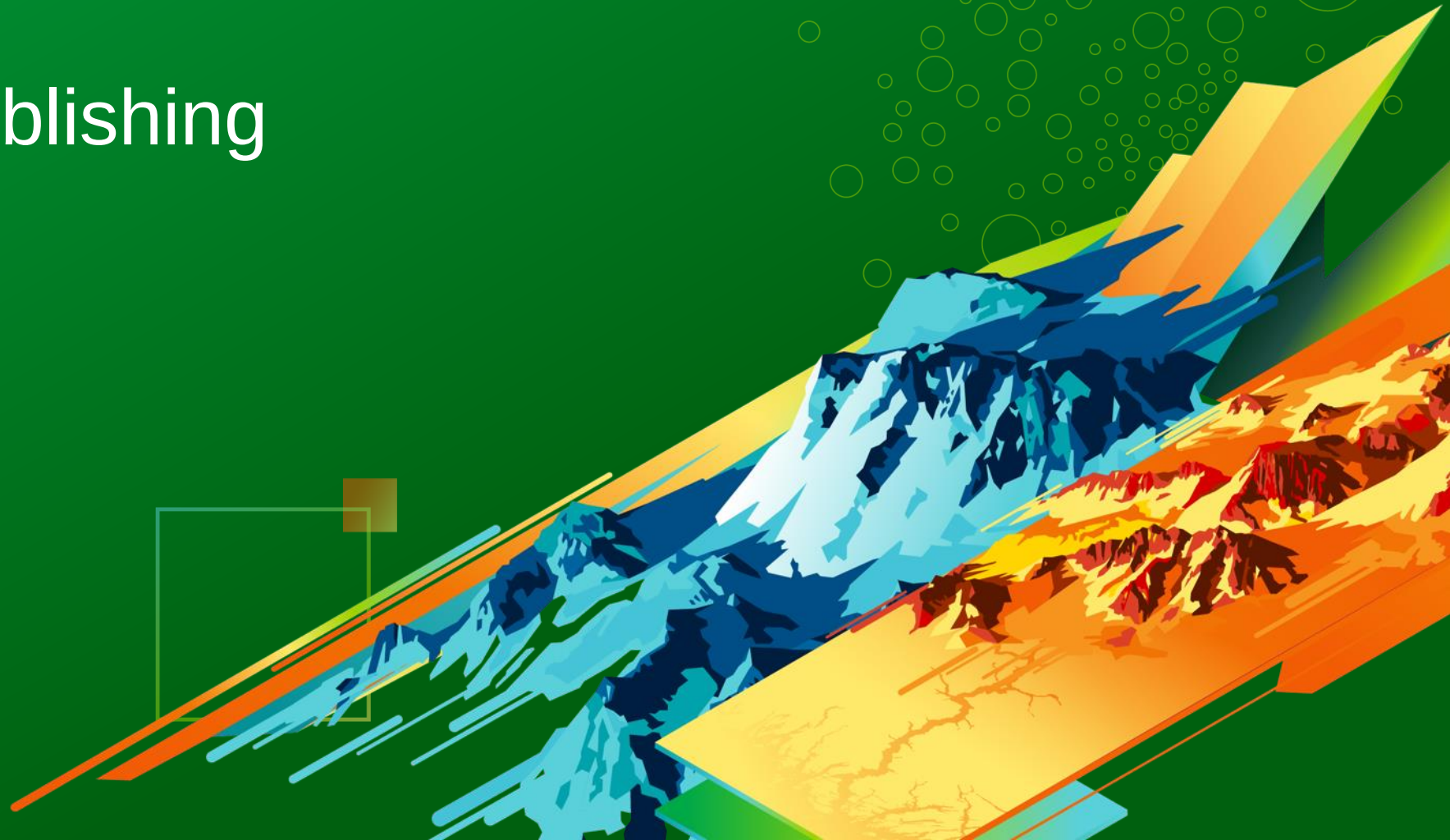
- Two ways to define when working with 10.7 or prior:
  1. Ahead of time:
     - In ArcGIS Pro via “Manage Registered Data Stores” pane
     - Via ArcGIS Server Manager
  2. While sharing: resolve analyzers





Scripting publishing workflows

arcpy.sharing, arcpy.mp



arcpy.sharing workflow

1. Create a map object using `arcpy.mp`

2. Create a draft of the map or specific layers using the `getWebLayerSharingDraft` function
   - FeatureSharingDraft
   - TileSharingDraft
   - MapImageSharingDraft

   Depends on the service_type parameter

   For standalone ArcGIS Server: use `arcpy.sharing.CreateSharingDraft` function instead

3. Export the draft as a service definition draft using the `exportToSDDraft` function

4. Stage using `arcpy.server.StageService`

5. Upload using `arcpy.server.UploadServiceDefinition`

Scripting Publishing

```
Reference map to publish
rx = arcpy.mp.ArcGISProject(r"C:\Project\World.aprx")
= aprx.listMaps('World')[0]

Create MapImageSharingDraft and set metadata, portal folder, and server folder properties
rver_type = "FEDERATED_SERVER"
derated_server_url = "https://MyFederatedServer.esri.com/server"
draft = m.getWebLayerSharingDraft(server_type, "MAP_IMAGE", service_name)
draft.federatedServerUrl = federated_server_url
draft.summary = "This is summary"
draft.tags = "tag1, tag2"
draft.portalFolder = "my folder name"
draft.serverFolder = "MyServerFolder"

Create Service Definition Draft file
draft.exportToSDDraft(sddraft_output_filename)

Stage Service
int("Start Staging")
cpy.StageService_server(sddraft_output_filename, sd_output_filename)

Share to portal
int("Start Uploading")
cpy.UploadServiceDefinition_server(sd_output_filename, federated_server_url)

int("Finish Publishing")
```

Other layer and service types

Vector tile layers, scene layers, and more – and new ways to publish!

Web Layer and Web Service Terminology

ArcGIS Enterprise portal

ArcGIS Server

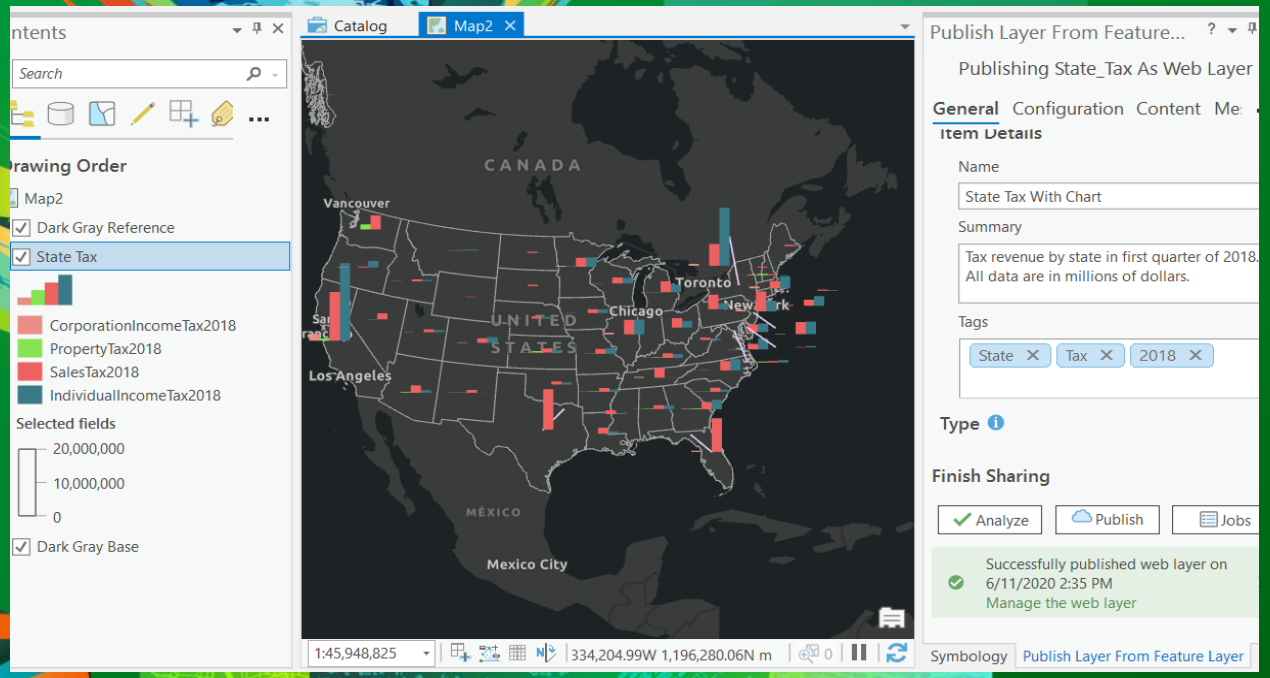
Web Layer	Web Service
Map Image Layer	Map service
Feature Layer	Feature service
Tile Layer	Cached map service (hosted)
Vector Tile Layer	Vector tile service
Scene Layer	Scene service
Web Tool	Geoprocessing service
Locator	Geocoding service

New ways of publishing content: bulk publishing

- ArcGIS Enterprise 10.7.1 introduces *bulk publishing* of feature classes from an enterprise geodatabase via the Enterprise portal
- Designed to help quickly expose GIS datasets (feature classes) as layers that can be used by the entire organization (and not just those with ArcGIS Pro and direct access to the geodatabase).
- Uses new *shared instances* model: no memory impact on your server!

New ways of publishing content: hosted map image layers

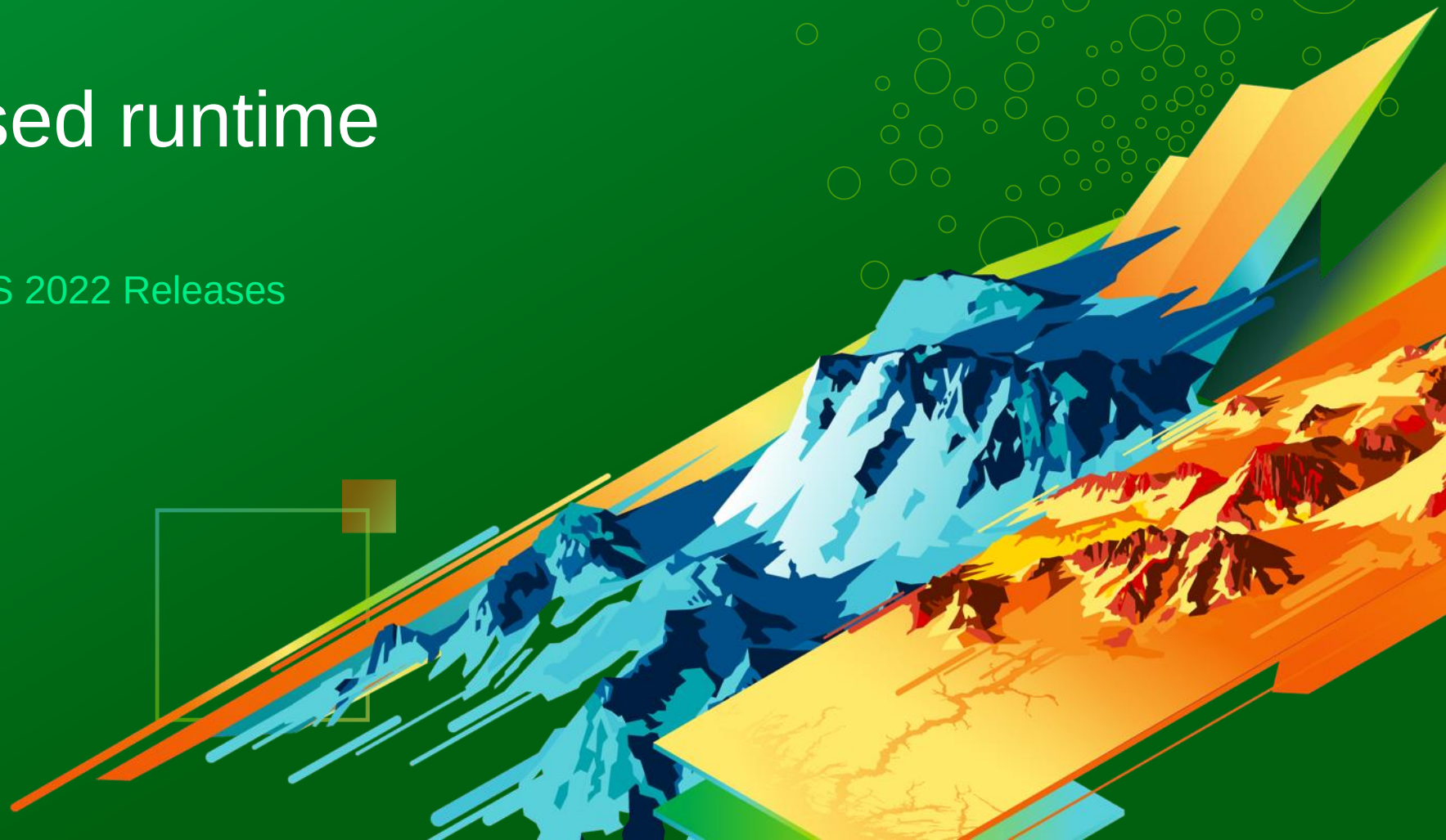
- Introduced with ArcGIS Pro 2.5 and ArcGIS Enterprise 10.8
  - New option for server-side rendering of hosted data coming from the relational and spatiotemporal big data stores
- Enables server-side rendering and the rich symbology possible with ArcGIS Pro



Hosted map image layer

ArcMap-based runtime removal

Preparing for the ArcGIS 2022 Releases



ArcGIS Enterprise contains two internal runtimes.

One runtime for services to be published from ArcMap.

One runtime for services to be published from ArcGIS Pro.

Starting next year, the runtime that allows for services to be published from ArcMap will be removed from ArcGIS Enterprise.

ArcGIS 2020

10.8.x

2020

Contains both
ArcMap and
ArcGIS Pro runtimes.

ArcGIS 2021

10.9.x

2021

Will contain both
ArcMap and
ArcGIS Pro runtimes
+ migration tooling.

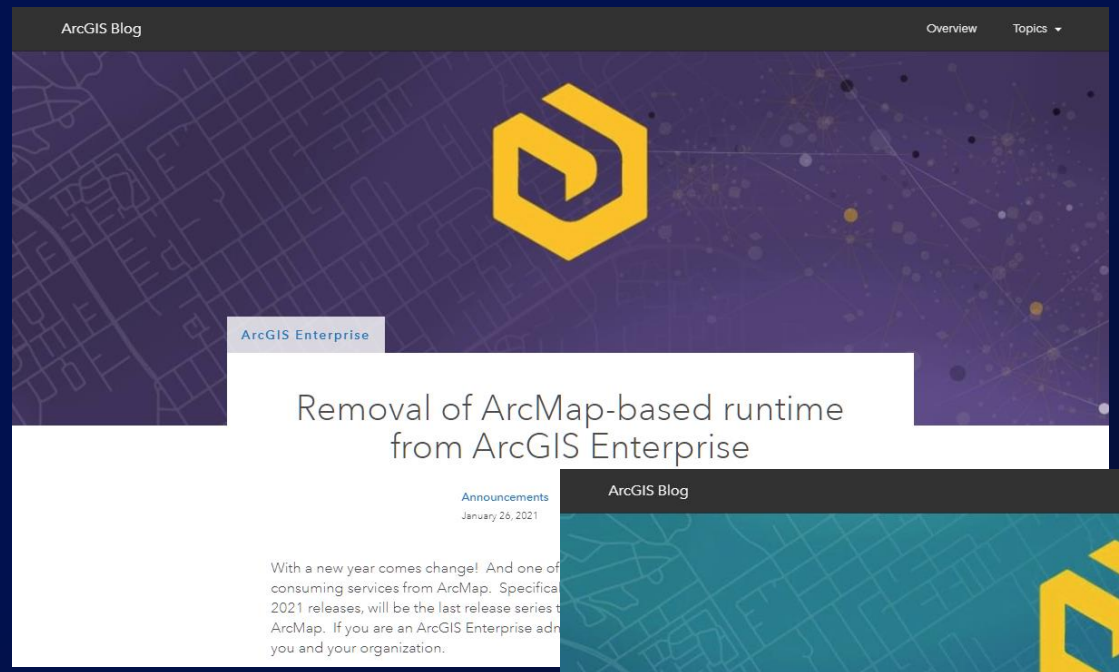
At 10.9.1: option to not install ArcMap-based runtime and Python 2.7.

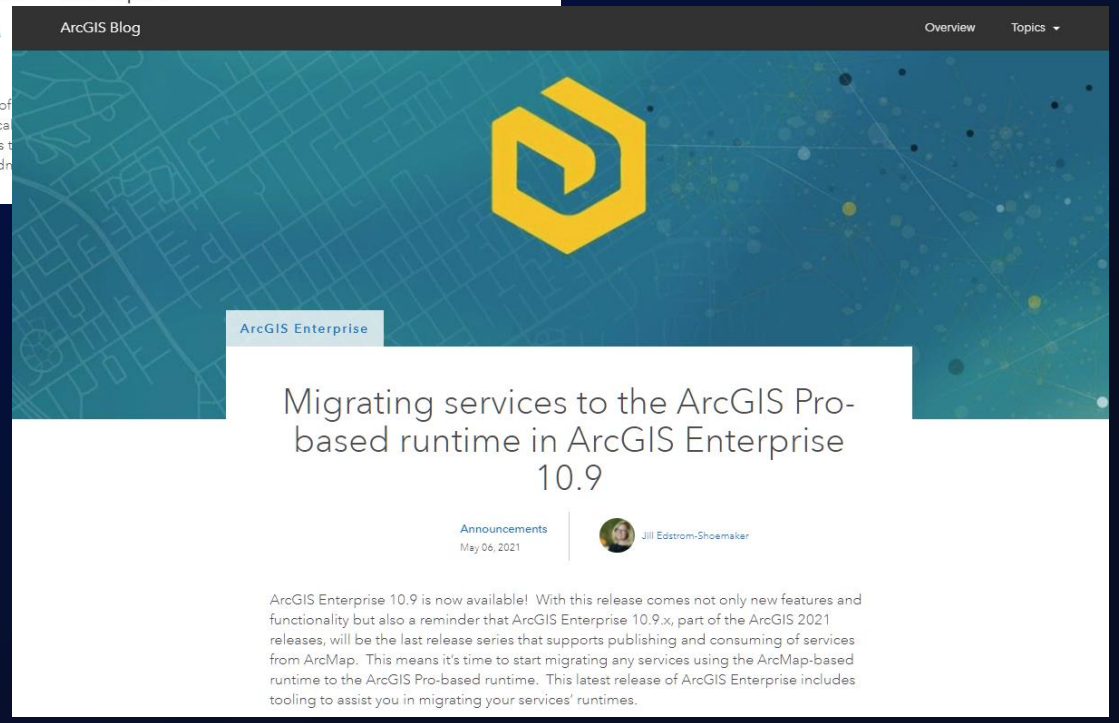
ArcGIS 2022

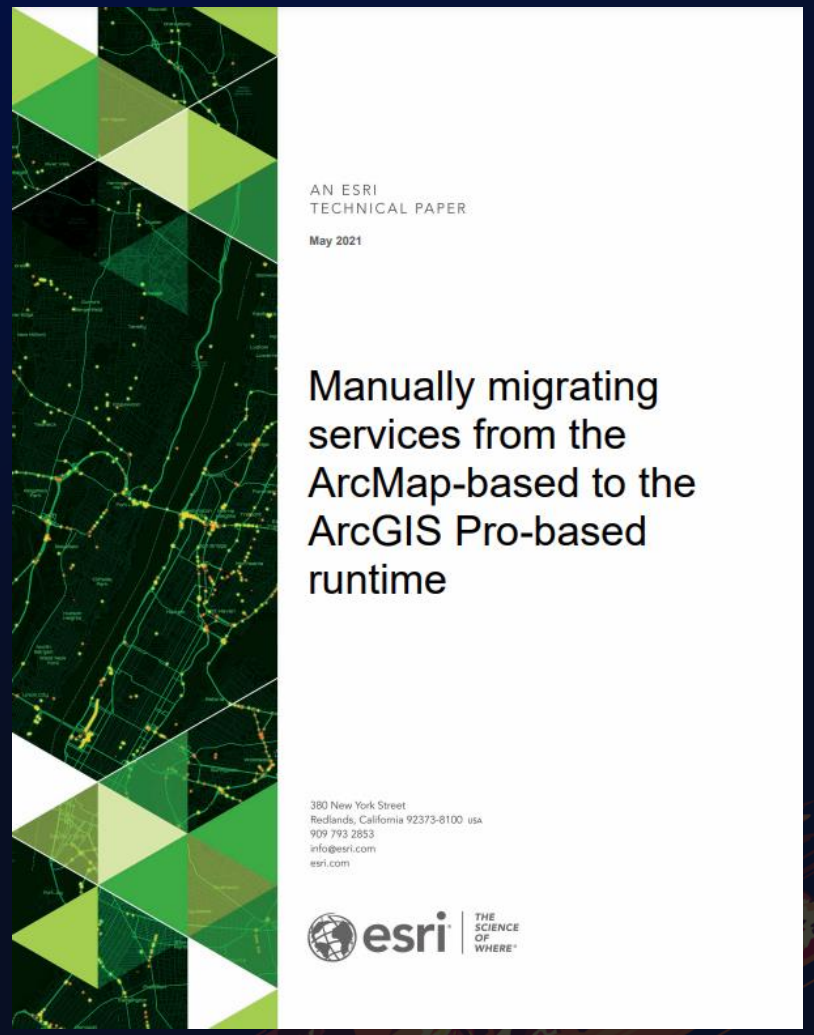
2022

Will only contain
ArcGIS Pro runtime.

Additional resources







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