



# Publishing to ArcGIS for Server

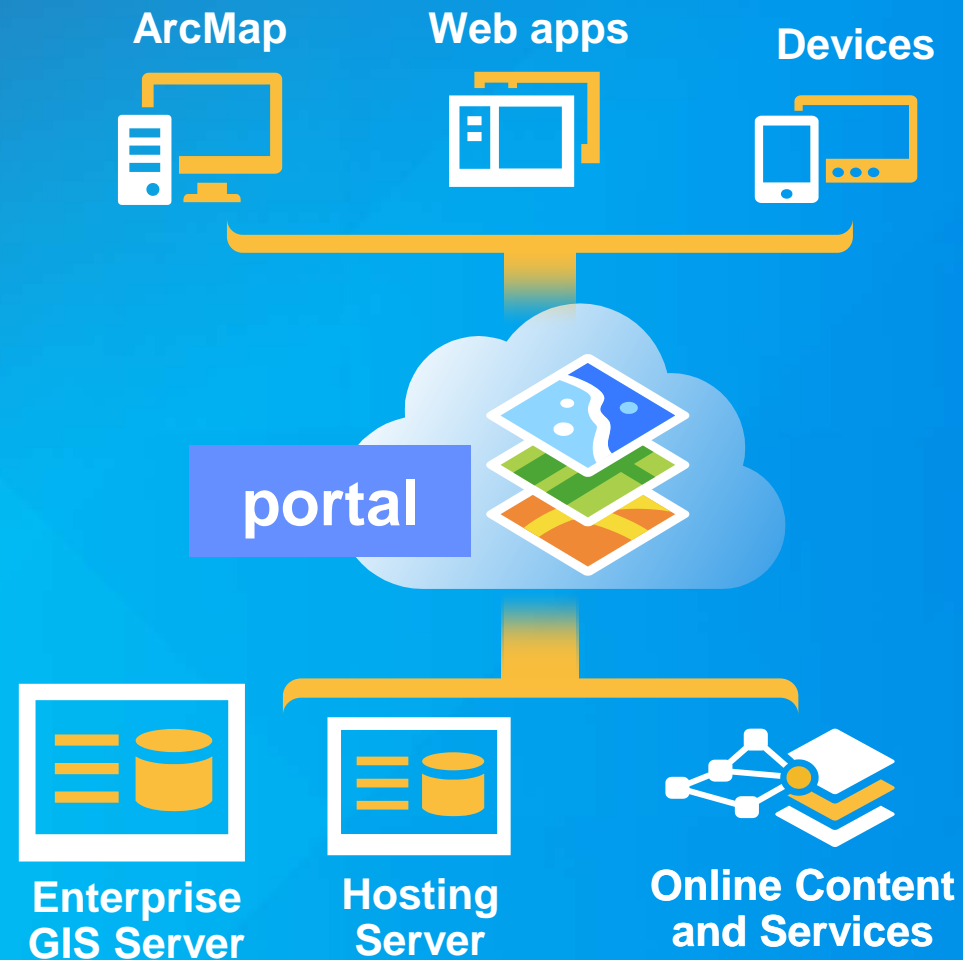
Atma Mani, Tom Shippee, Tushar Jadhav

# Session Agenda

What we will cover...

- **Web GIS and the publishing architecture**
- **Registering data locations**
- **Automate publishing with Python scripts**

# Publishing and Web GIS



# Benefits of sharing published GIS services

Why should I care about publishing GIS services?

- Share GIS resources on the web
- Make GIS available, instantly, across multiple devices and platforms
- Perform simultaneous editing irrespective of physical location
- Work on projects collaboratively using a single set of data
- Publish GIS resources from a variety of application clients

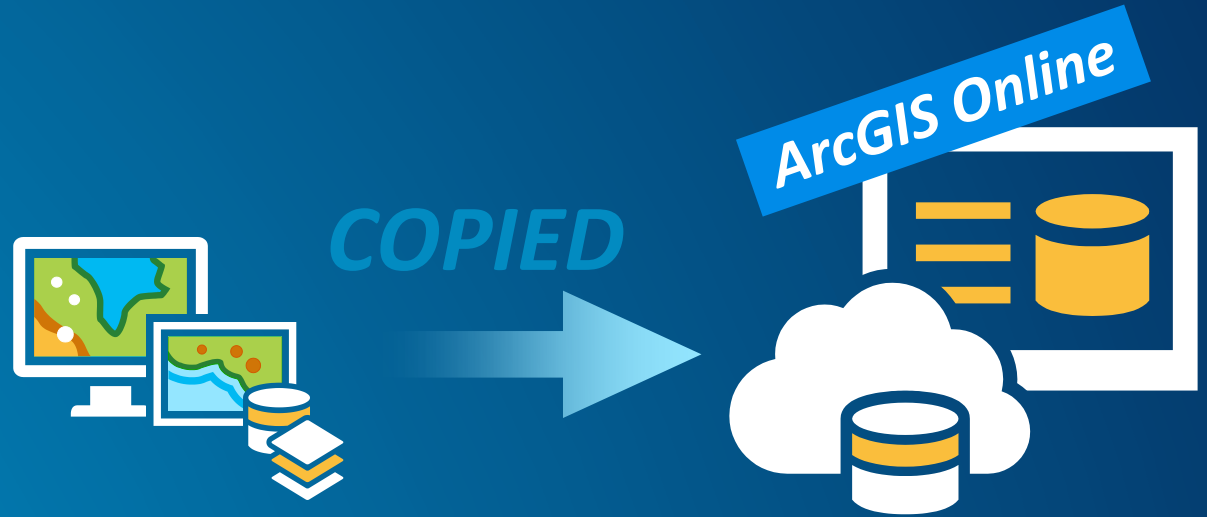


*Getting GIS information to the decision makers...*

# Demo-1: Sharing storm track data...

What do we need to do?

- **Service Requirements:**
  - Data from local file geodatabase
  - Publicly on the Internet
  - With update editing enabled
  - Create a basic editing client

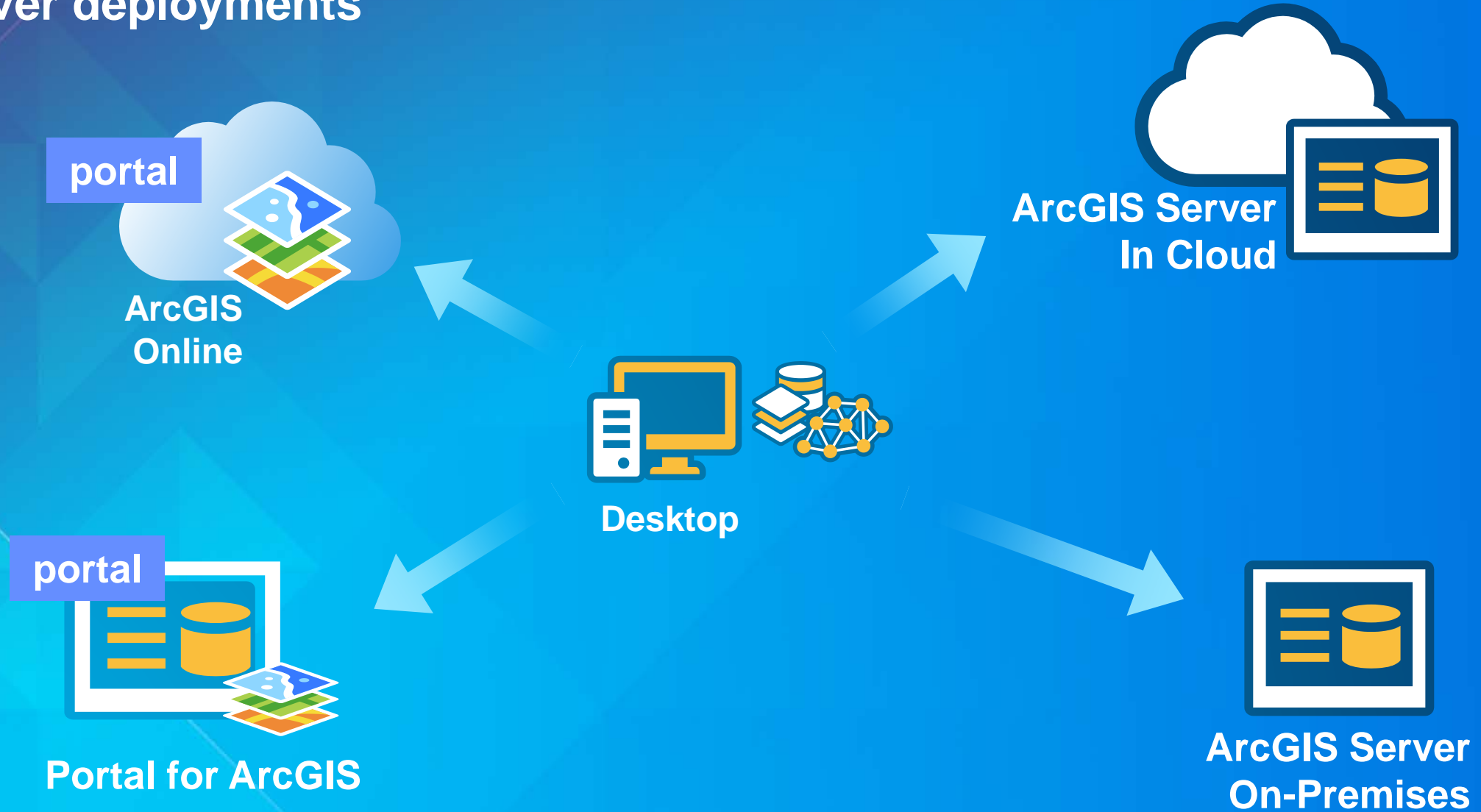




# Publishing Architecture

Foundational concepts...

# Server deployments



# GIS Servers

Map



Image



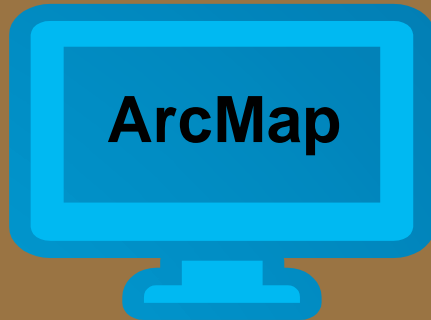
GP



Geocode



Geodata



ArcMap

# Hosting Servers

Feature layers



Tiled map layers



3D Scenes



Esri Maps  
for Office



or

Upload file  
CSV, GDB,  
Shape



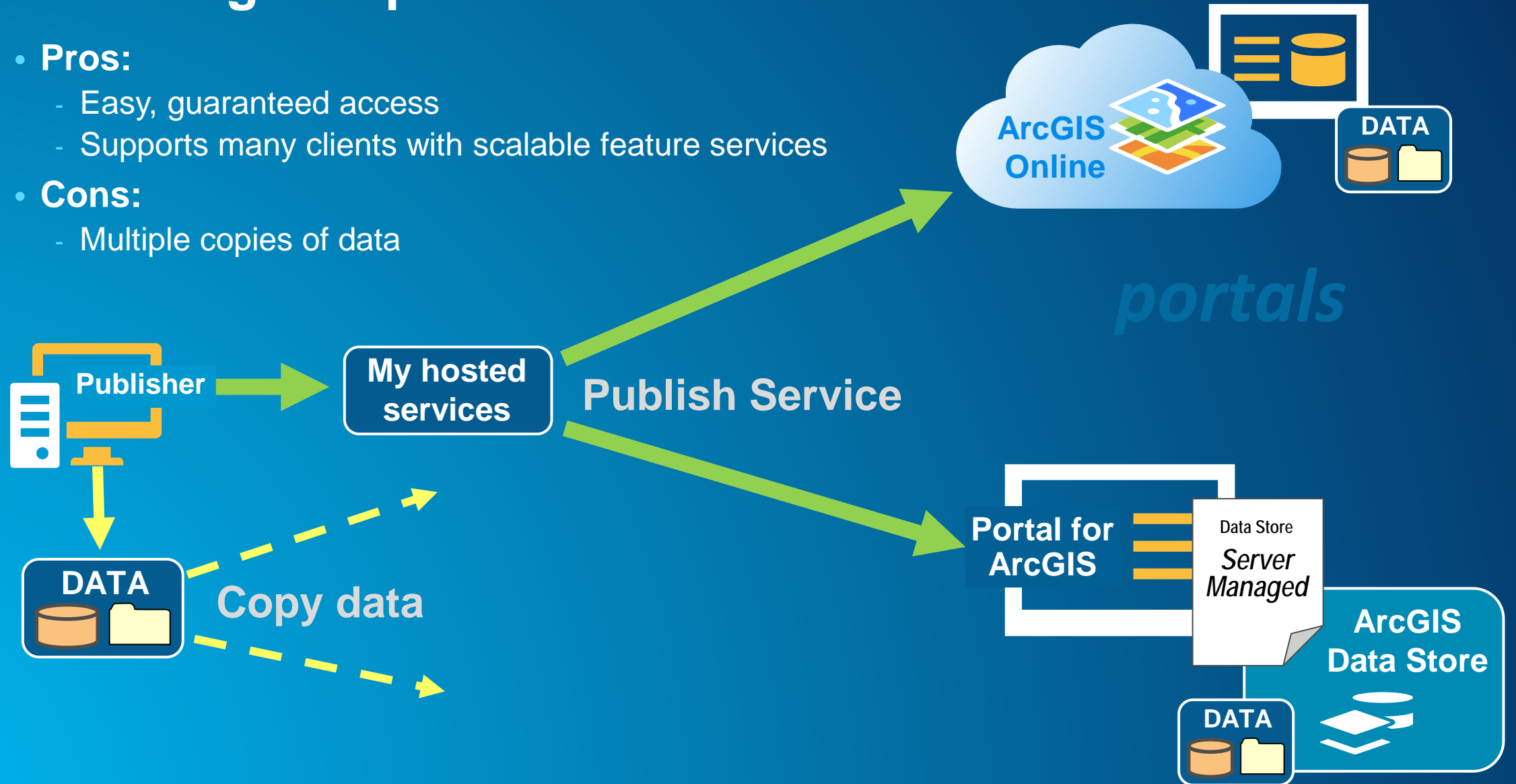
ArcGIS Pro

PUBLISHING CLIENTS



# Publishing to a portal

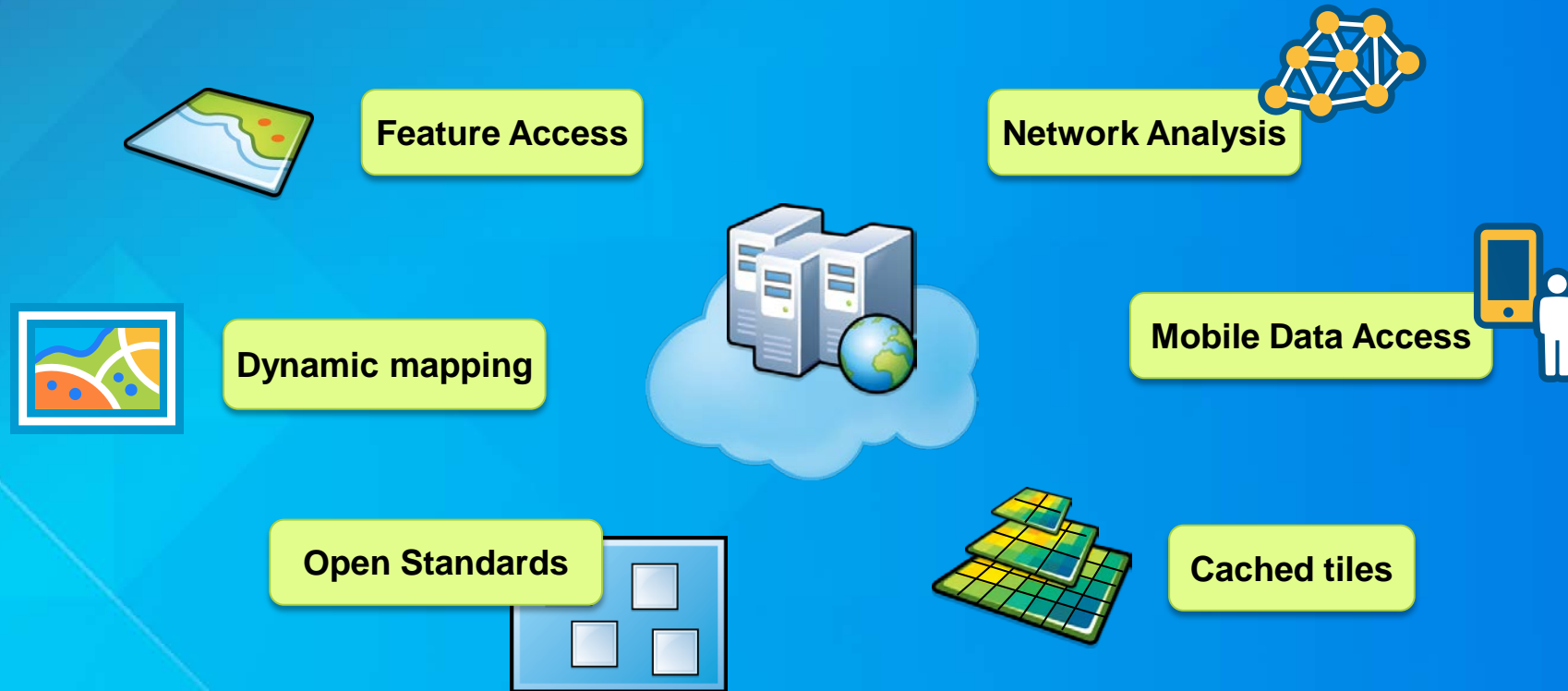
- **Pros:**
  - Easy, guaranteed access
  - Supports many clients with scalable feature services
- **Cons:**
  - Multiple copies of data



# Exploring GIS Server capabilities

Extending a *Map* service...

- Opens access to multiple clients through different URL endpoints...
- Some capabilities require special extension licensing



# Pre-publication analysis

Like having a group of Esri experts looking over your shoulder...

- **Help to...**

- Identify critical errors
- Create optimized map services
- Utilize service “*Best Practices*”



- **Three reporting levels:**

- ✖ *Errors:* Must-fix showstoppers
- ⚠ *Warnings:* Performance and access issues
- i *Information Messages:* Service refinements

# Service definition files

Acts like a *service package* file...



## Demo-2: Sharing storm track data revised...

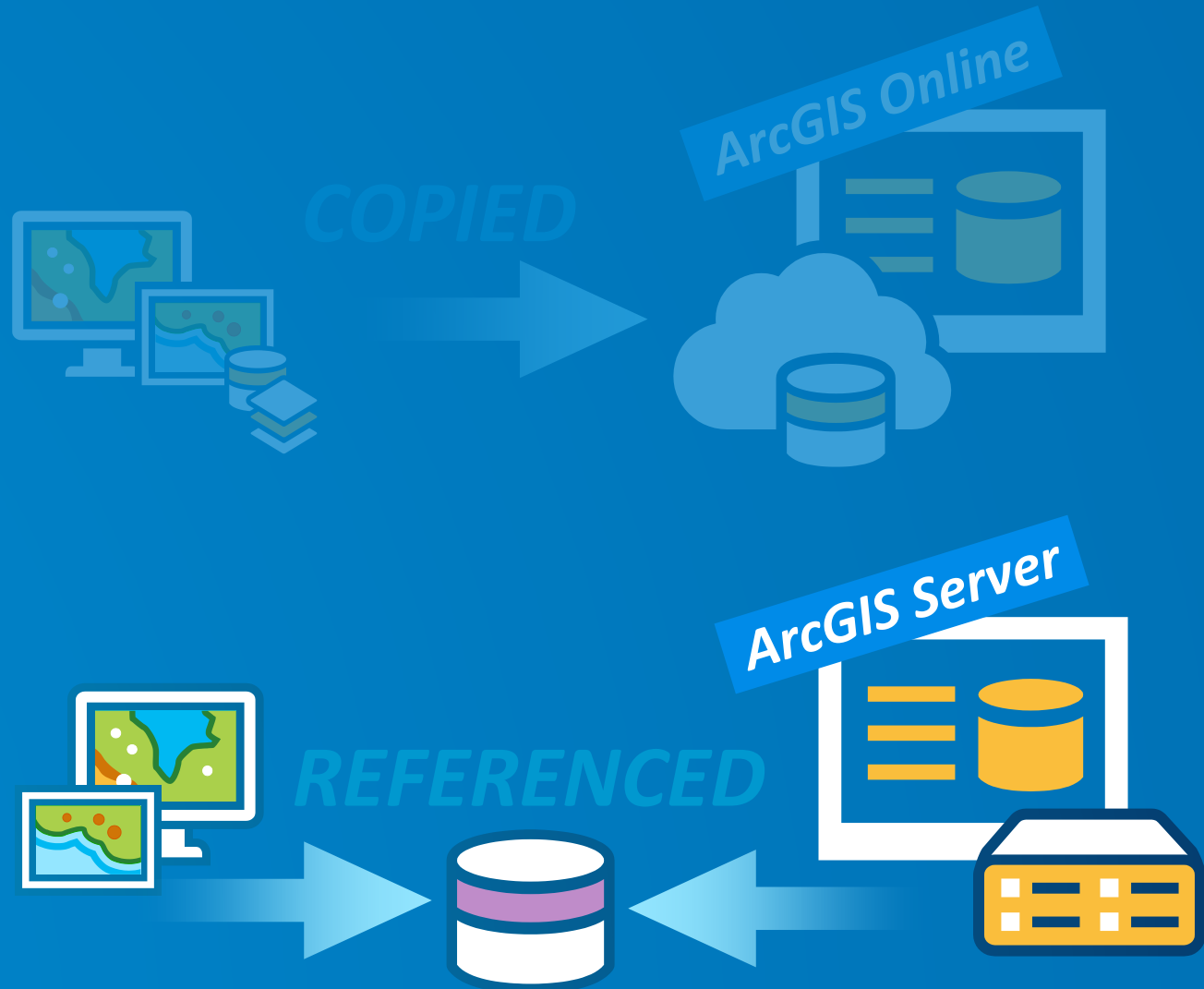
What do we need to do?

- **Service Requirements:**

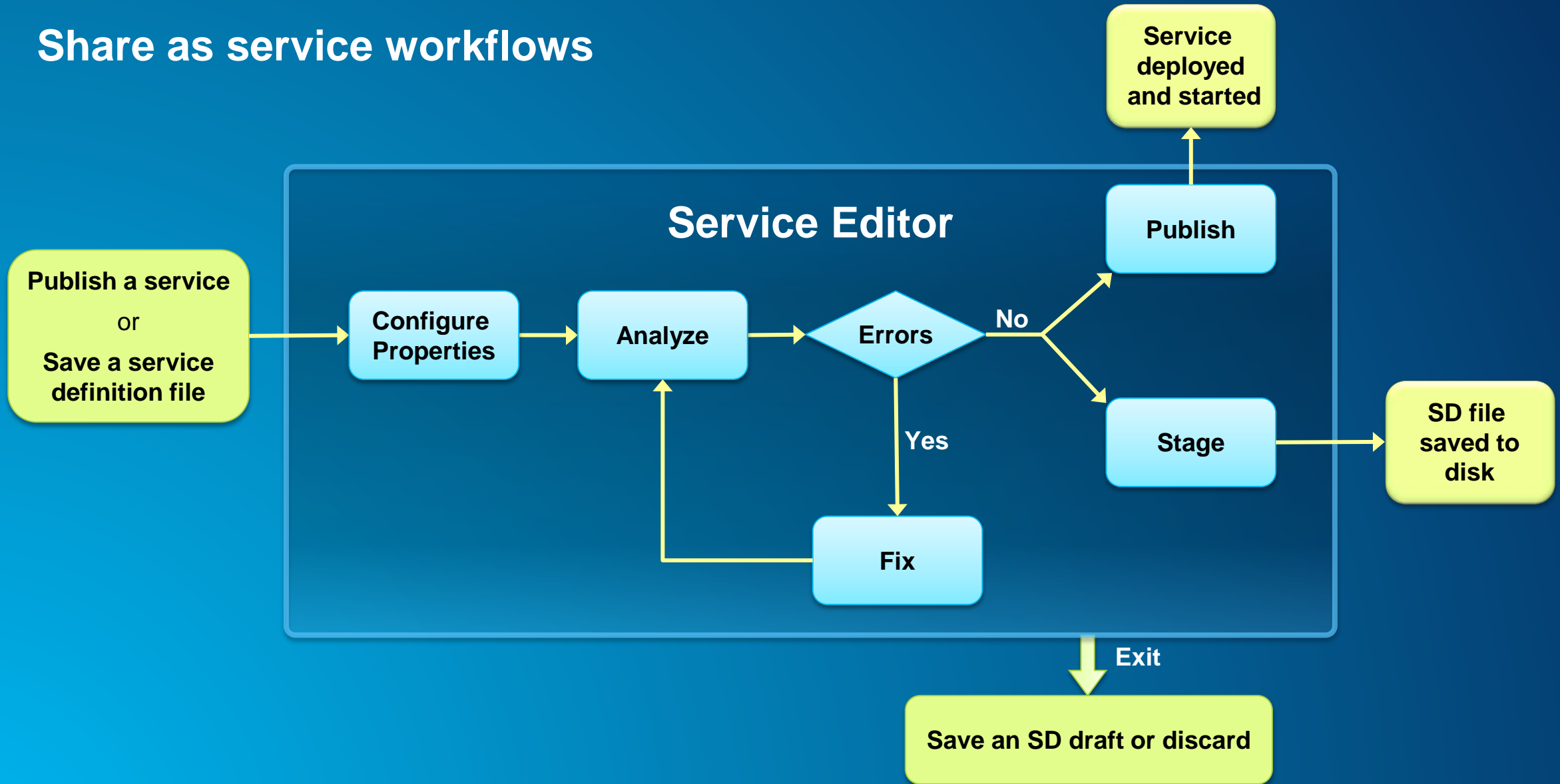
- Data from local file geodatabase
- Publically on the Internet
- With update editing enabled
- Create an editing client

- **NEW Service Requirements:**

- Data from enterprise geodatabase
- Shared within Naperville Portal **ONLY**
- Web editing of the enterprise data
- Provide WMS & KML client access
- Create an editing client



# Share as service workflows



# Registering data locations using Data Stores

Tushar Jadhav [tjadhav@esri.com](mailto:tjadhav@esri.com)

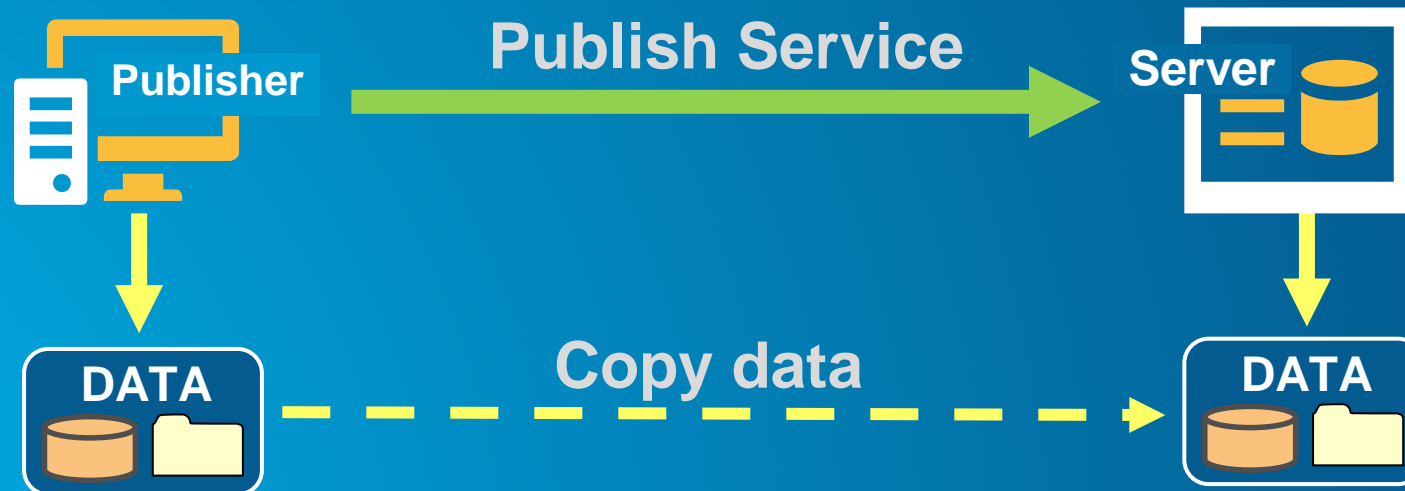
# Copy to server...

- **Pros:**

- Easy, guaranteed access
- Primary option for cloud-based servers

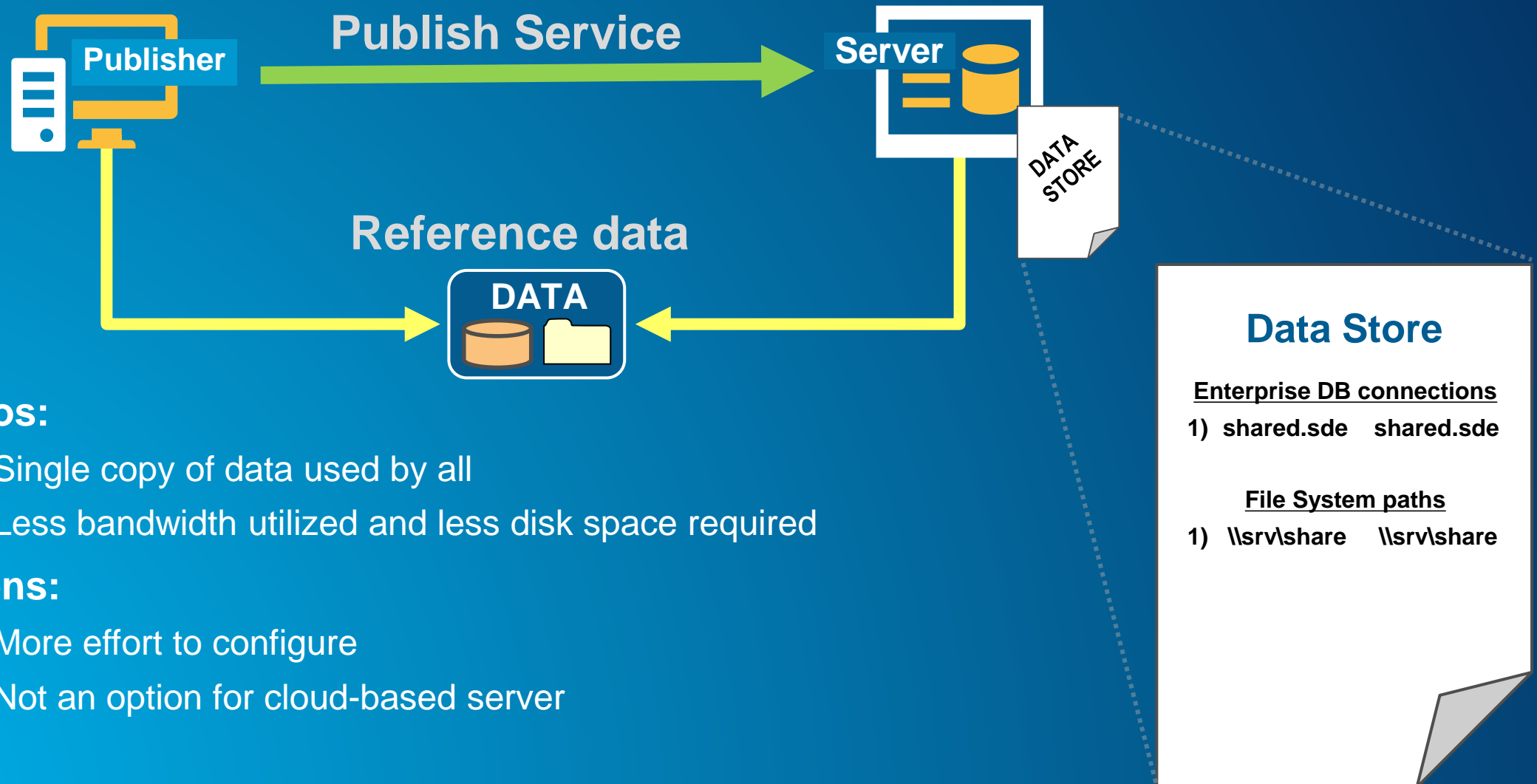
- **Cons:**

- Multiple copies, limits collaboration
- Uses more disk space on server
- More bandwidth is utilized. Could be a problem for limited internet connection





# Reference data...



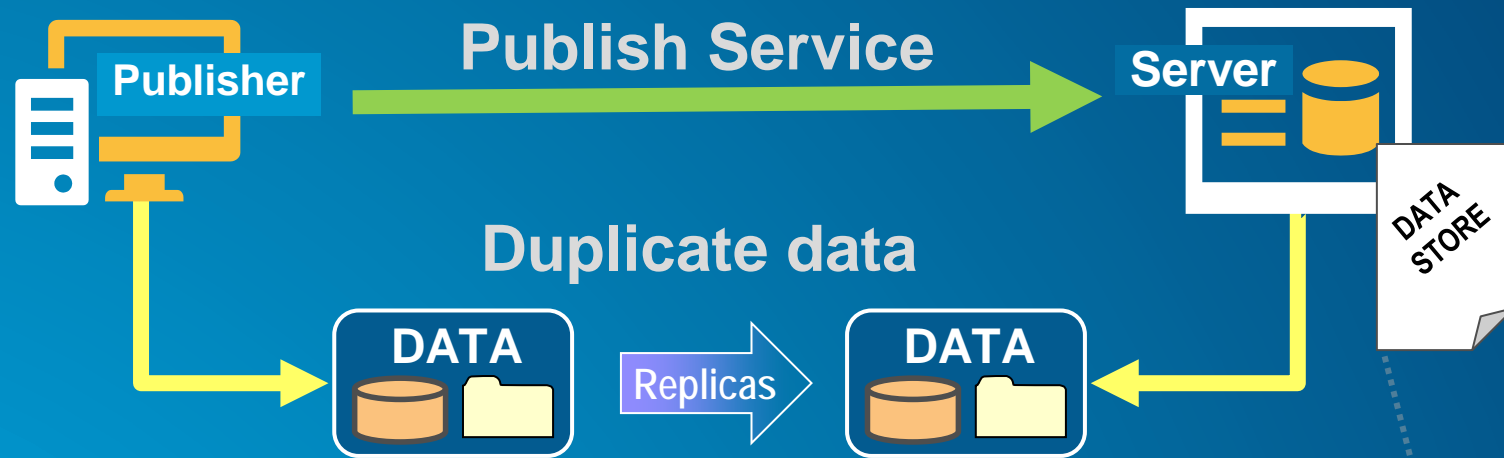
- **Pros:**
  - Single copy of data used by all
  - Less bandwidth utilized and less disk space required
- **Cons:**
  - More effort to configure
  - Not an option for cloud-based server

# Demo-3

Registering data with an  
ArcGIS Server site



# Replace data...



- **Pros:**
  - Supports cloud configurations
  - Allows Windows publishers on Linux servers
- **Cons:**
  - More effort to configure
  - Responsible for data replication

## Data Store

### Enterprise DB connections

- 1) shared.sde      shared.sde
- 2) client.sde      server.sde

### File System paths

- 1) \\srv\share      \\srv\share
- 2) \\srv\share      C:\srv\data

## Summary: How a GIS server accesses data

- **Copy to server**
  - **Pros:** Easy, guaranteed access, primary option for cloud-based servers
  - **Cons:** Multiple copies, limits collaboration, disk space on server
- **Reference (single path)**
  - **Pros:** Single copy used by all, supports common workflows
  - **Cons:** More effort to configure, not an option for cloud-based servers
- **Replace (dual path)**
  - **Pros:** Supports cloud configurations, Linux/Windows paths, local FGDB data on server
  - **Cons:** More effort to configure, responsible for data replication

# Registered data tips and tricks

Beyond the basics...

- **Take care when registering folders as its subfolders are automatically assumed to be registered**
- **Make sure that the ArcGIS Server account has access to the data**
- **Make sure that the database client libraries are installed on the server machine before registering a database**
- **In the replaced scenario, it is users responsibility to replicate the data across both the publisher and server connection**
- **You can use the analyzer solution to automatically register a data store path**

The background is a solid blue color. On the left side, there are several overlapping geometric shapes in shades of purple, teal, and yellow. One of these shapes is a yellow map fragment showing a grid of land parcels.

# Automate publishing with Python scripts

Atma Mani    [amani@esri.com](mailto:amani@esri.com)

# Automating service publication in ArcMap 10.3.1 with Python

- 1) CreateMapSDDraft()
- 2) StageService\_server()
- 3) UploadServiceDefinition\_server()

Set up the variables

```
import arcpy

#Setting the variables
mxd = arcpy.mapping.MapDocument(r'c:\temp\MapDemo.mxd')
con = r'c:\temp\myserver.ags'
sddraft = r'c:\temp\service1.sddraft'
sd = r'c:\temp\service1.sd'
service = 'service1'
```

Configure the service

Stage into an SD file

Publish as service

# Demo-4

Automated service publishing  
Using ArcPy





# Additional ArcPy commands

## Connecting to ArcGIS Server

1. `CreateGISServerConnectionFile()`

## Connecting to Database Server

1. `CreateDatabaseConnection_management()`

## Data Store manipulation

1. `ListDataStoreItems()`
2. `RemoveDataStoreItem()`
3. `AddDataStoreItem()`
4. `ValidateDataStoreItem()`

## Start Caching for Map or Tile services

1. `ManageMapServerCacheTiles_server()`

## PortalPy, ArcREST on [github.com/Esri](https://github.com/Esri)

- Managing users, groups, folders
- Making REST calls

```
#Create .ags
arcpy.CreateGISServerConnectionFile (
    connection_type, out_folder_path,
    out_filename, server_url,
    {server_type}, {use_arcgis_desktop_staging_folder},
    {staging_folder_path},{username}, {password}
```

```
def UnregisterAllDS(serverCon):
    dsFolder = arcpy.ListDataStoreItems(serverCon, 'FOLDER')
    for dsi in dsFolder:
        arcpy.RemoveDataStoreItem(serverCon, 'FOLDER', dsi[0])
        print('$MSG: Data store folder removed : ' + dsi[0])

    dsDB = arcpy.ListDataStoreItems(serverCon, 'DATABASE')
    for dsi in dsDB:
        arcpy.RemoveDataStoreItem(serverCon, 'DATABASE', dsi[0])
        print('$MSG: Data store DB removed : ' + dsi[0])
```

```
#Register necessary datastore and validate it
```

```
arcpy.A #Generate cache
        arcpy.ManageMapServerCacheTiles_server(
            path,
            result input_service, scales, _name)
        update_mode,
        print(' {num_of_caching_service_instances},
        {area_of_interest}, {update_extent},
        {wait_for_job_completion})|
```

# Why automate publishing?

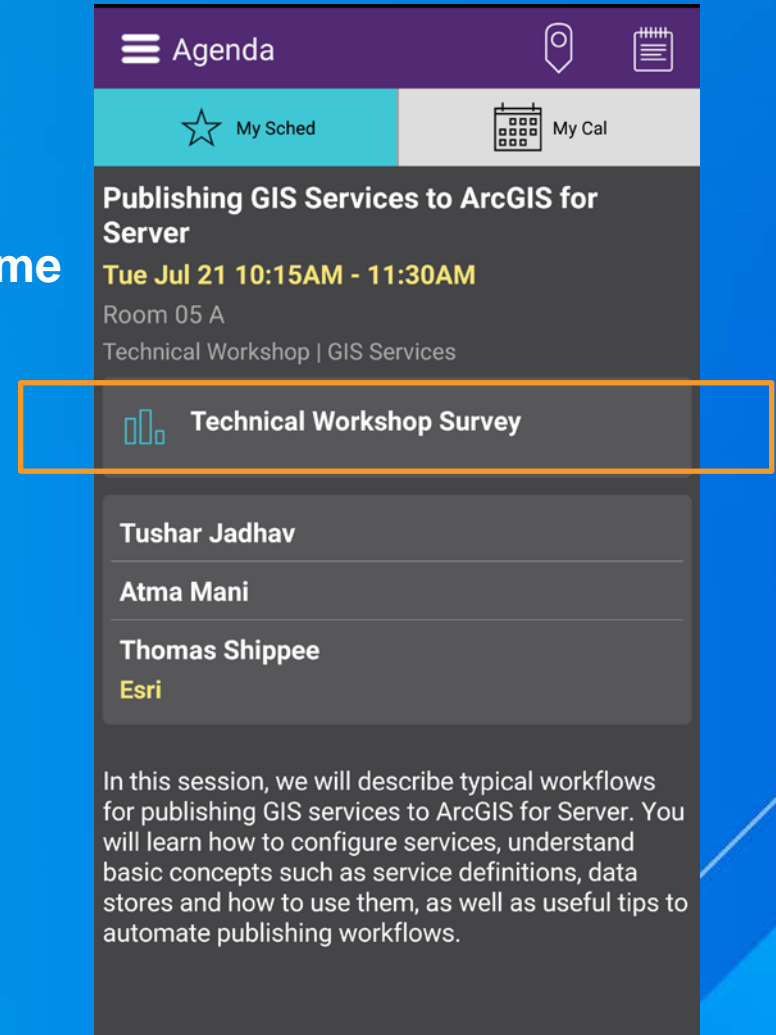
- ➔ • Integrate publishing into larger GIS workflow
- ➔ • Upgrading server version or mirroring services across servers
  - replicate services in QA to production environment
- ➔ • Update existing services – overwrite workflow
- ➔ • Re build cache for select LOD or spatial extent
- ➔ • Produce services as analysis output
  - GP service that will geocode all photos uploaded to server and publish as service with attachments

## Session recap

- **Publishing allows users:**
  - To share and use GIS resources via the web
- **Publishing use a standard workflow**
  - Configure the service
  - Analyze the service
  - Publish/Stage the service
- **Data store ensures data is accessible to the server**
- **Using ArcPy can automate the publishing workflow**

# Thank you...

- Please fill out the session survey in your mobile app
- Select Technical Workshop in the Mobile App
  - Use the Search Feature to quickly find this title or presenter name
- Click “Technical Workshop Survey”
- Answer a few short questions and enter any comments



## Other sessions to check out...

**ArcGIS for Server:  
Introduction**

**7/21: 8:30am – 9:45am.  
Ballroom 06E**

**7/22: 8:30am – 9:45am.  
Ballroom 06E**

**Working with Feature Services**

**7/22: 8:30am – 9:45am. Room  
05A**

**7/23: 10:15am – 11:30am.  
Room 31B**

**Portal for ArcGIS: An  
Introduction**

**7/21: 10:15am – 11:30am:  
Room 02**

**7/22: 10:15am – 11:30am.  
Room 04**

**Designing and Using cached  
map services**

**7/21: 1:30pm – 2:45pm: Room  
05A**

**7/23: 10:15am – 11:30am.  
Room 03**

**Sharing 3D content on the  
Web**

**7/22: 3:15pm – 4:30 pm: Room  
15A**

**ArcGIS Online: Sharing your  
content**

**7/21: 3:15 pm – 4:30pm:  
Ballroom 06A**

**Road Ahead: ArcGIS For  
Server**

**7/22: 10:15am – 11:30am:  
Room 07 A/B**

**Road Ahead: ArcGIS For  
Desktop**

**7/22: 10:15am – 11:30am:  
Ballroom 06B**

**7/23: 1:30pm – 2:45pm:  
Ballroom 06B**

**Q & A**