Optimizing Enterprise Geodatabase Data to Create High-Performing Feature Services

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Optimizing Data for High-Performing Feature Services

- Target Audience
  - Source data in enterprise geodatabases
  - Publisher or user of feature services
  - Editing data through web applications
Optimizing Data for High-Performing Feature Services

• Agenda
  - Sample Case Study
  - Tips, Tricks, and Best Practices
  - Questions at the end
ArcGIS Service Performance

- Why do we need to consider ArcGIS Service performance?
  - Performance can define the user experience
  - Web experiences are expected to be fast and easy
  - Avoid user frustration and confusion
Creating High-Performing Feature Services

- How to?
  - Data Design
    - As the amount of data increases, the performance of the service may decrease
  - Map Authoring
    - Layer Properties
  - Data Management
    - Database Maintenance
Demo 1:

Case Study: Traffic Accident Reporting

- Product: Web/mobile application
- Users: Car accident witnesses
- Purpose: Report traffic accident in SF
Prepare data with the intended user in mind

• Points to consider

  - Who will be using this feature service/web map?
  - What functionality do the users need?
  - What information is important?
  - How will the feature service or map be accessed?
Data Design:

- Feature Dataset—Don't use to thematically store data
- Are all of the columns in each layer necessary?
- Are all of the records necessary?
- What are the data field types and could they be affecting performance?
Map Authoring

- Optimize Layers
  - Use simplified layers
  - Use scale-dependency
  - Simplify layer symbology
  - Annotation vs. Labels
  - Avoid using nonalphanumeric characters in layer names (layer properties)
Data Management

• Permissions
  - What access is needed for each layer?
  - Service capabilities and user privileges

• Maintenance
  - Geodatabase maintenance tasks are key, especially for versioned data
    - Reconcile and Post versions regularly
    - Update database statistics
    - Compress geodatabase
    - Rebuild Indexes on system tables in geodatabases that use traditional versioning

• Clear geoprocessing history ¹

¹ https://support.esri.com/en/technical-article/000011751
Working with joined and related data

- Use data from same database rather than cross-database joins
- Create attribute indexes on join fields
- Avoid creating relationship classes between two Feature Classes residing in separate feature datasets
Working with Database Views and feature services

• Register the view with geodatabase

• Create attribute indexes
  - Cannot add attribute indexes directly on a view
  - Should add an attribute index to the fields used to join the tables.

• Publish a database view as a Feature Service
  - Cannot publish with editing capabilities.
  - Can add feature access after publishing, but only query capabilities. Your view will then be read-only.
Demo 2:

Case Study: Traffic Accident Web App

This demo represents a second-attempt to pull together the data while taking into account performance considerations at the data source.
Author a Map → Publish a Feature Service → Create a web map using REST service

Launch app → Create a web application → Create a web application
Demo 2: Performance Improvements

A number of performance improvements have been applied to our Traffic Accident reporting web app. These include:

- Simplified data structure
- Reduced number of feature layers
- Refined the feature attribute information
- Used definition query
- Modified unnecessary NVARCHAR(MAX) field
- Used scale-dependency to set visible scale range
- Simplified feature geometry
- Simplified layer symbology
- Optimized query of database view using Attribute Indexes
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Questions?