

Enhancing Web Map Performance in ArcGIS Online

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Points to consider before creating the web map



Who will be using this web map?



What functionality do the users need?



What information is important?



How will the map or application be accessed?



What type of experience am I trying to convey?

Case Study



Residents of the City of Charlotte will use the map



Finding Greenways, Parks, and Bike Lanes is the function of the map



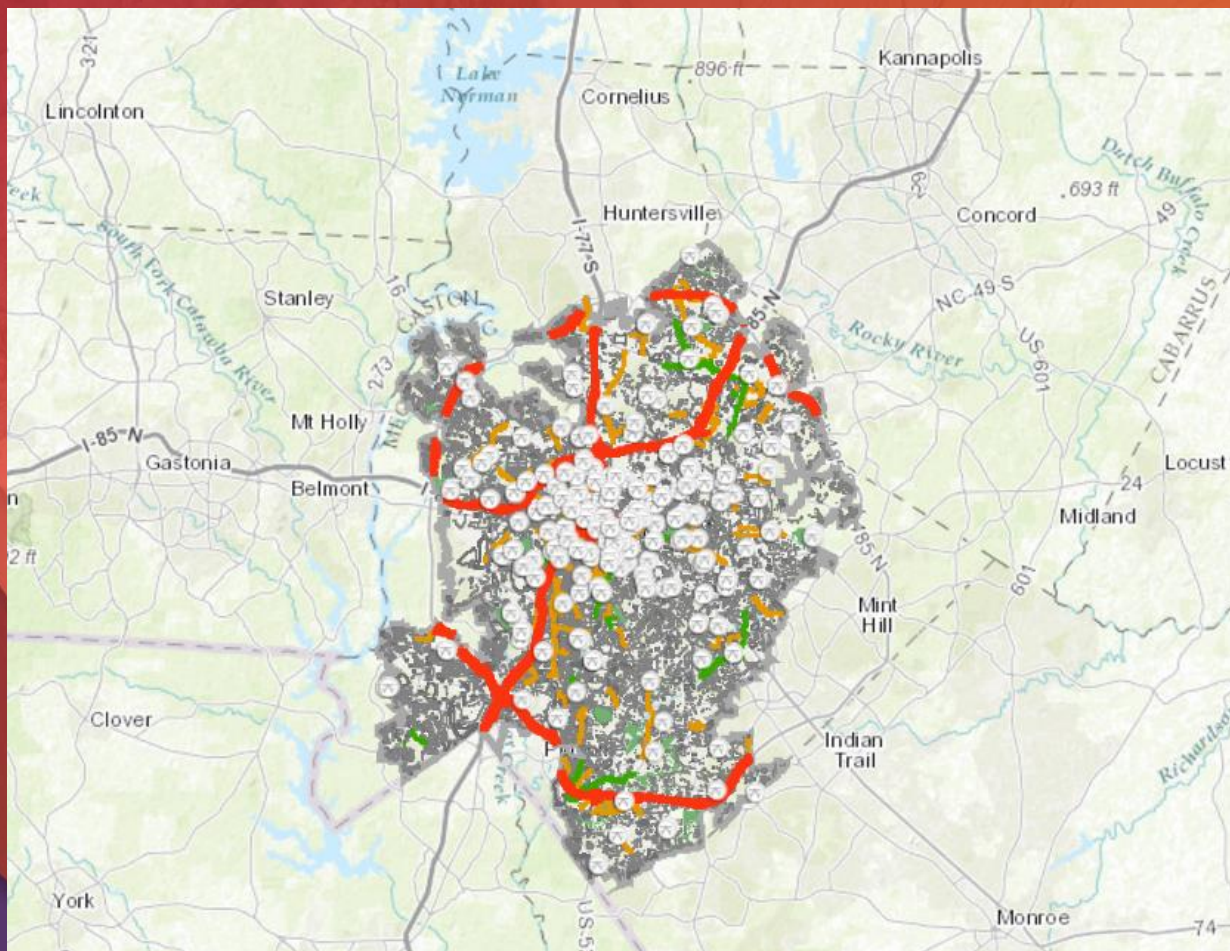
Locating properties, Greenways, Parks, and Bike Lanes is most important



Residents will be able to access the map through a web application



Map should be simple, clear, and easy to use for non-GIS experts



Demo 1

Pre-Publishing Considerations

Selecting Layers

Generalizing Features

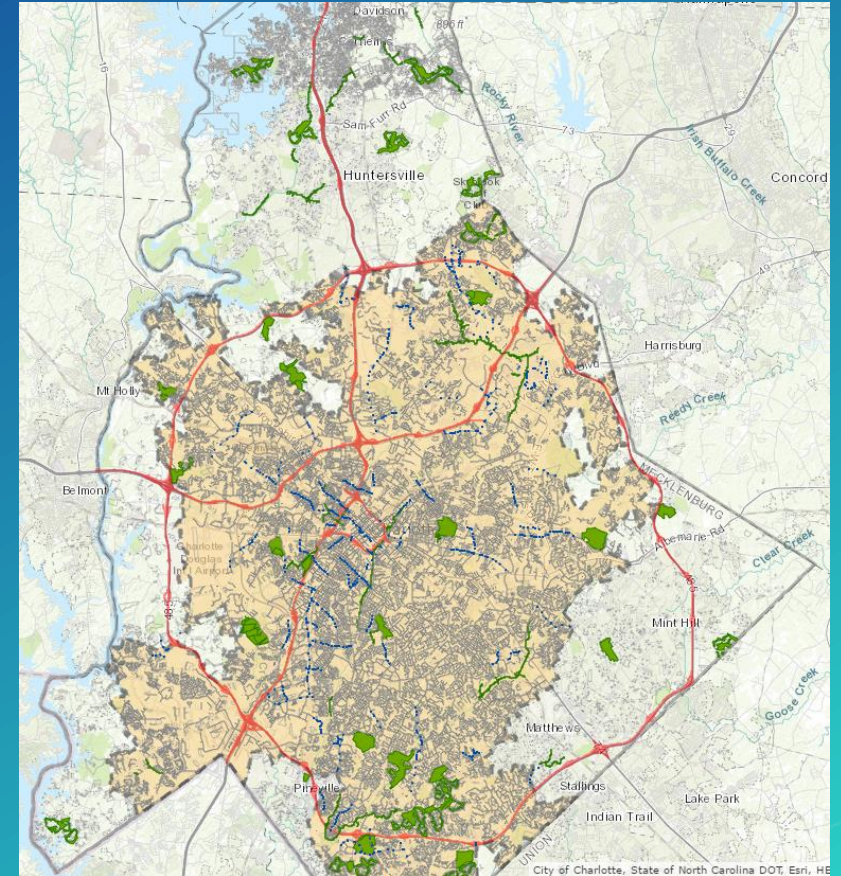
Choosing Tile or Feature Service



Selecting which Layers to use

Is each layer necessary for the purpose of the map?

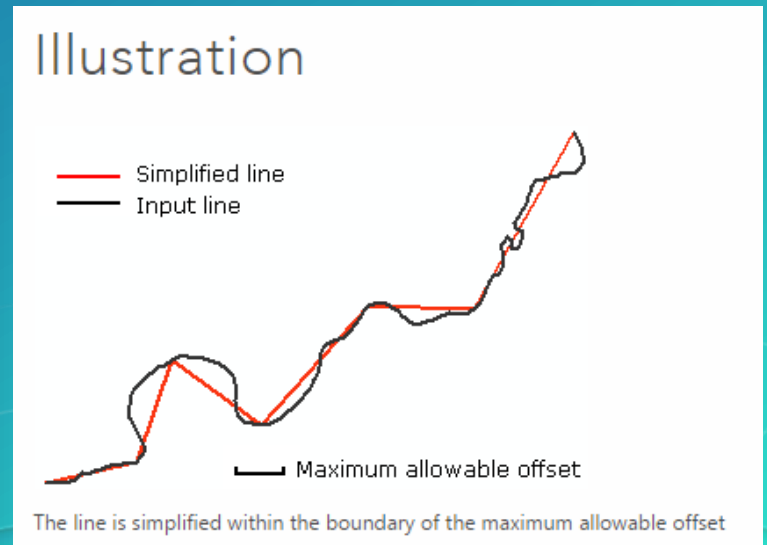
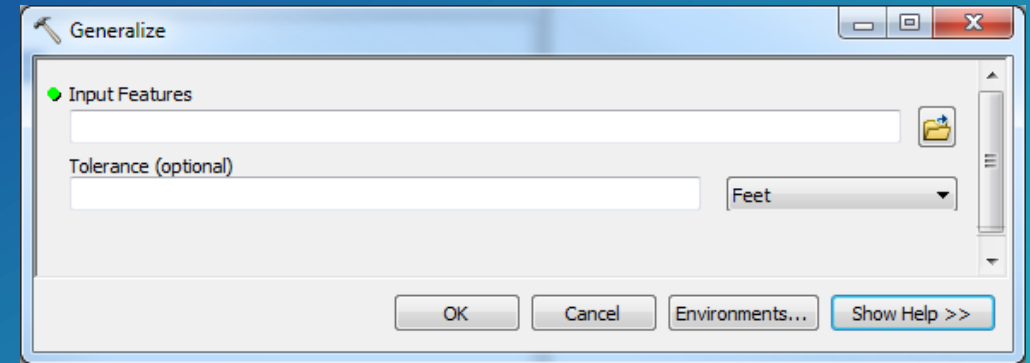
Is the purpose of the map clear given the symbology and the data?



Generalizing Layers with dense Vertices

Are the feature geometries too detailed for the scale of the map?

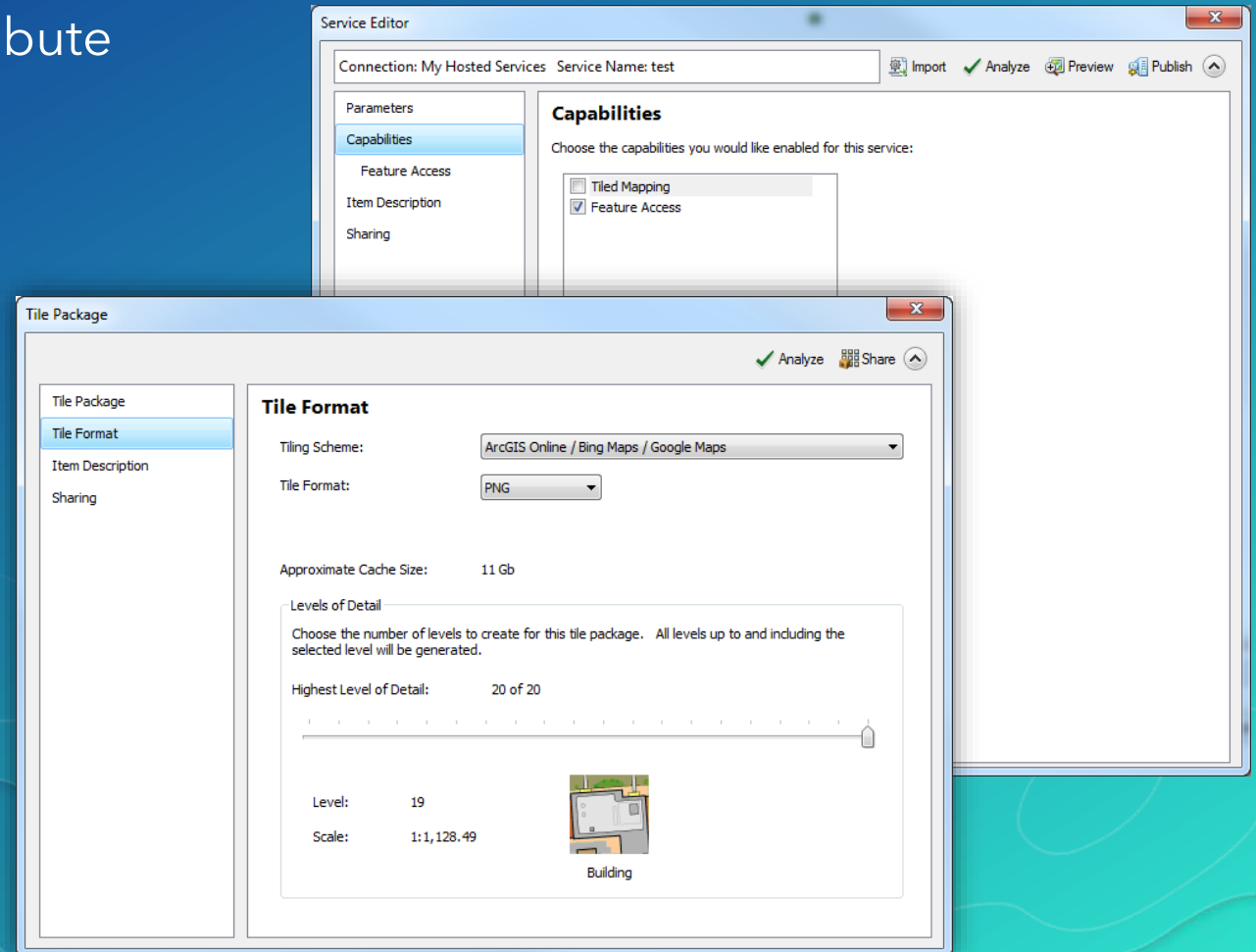
Can the geometries be simplified without losing necessary information?

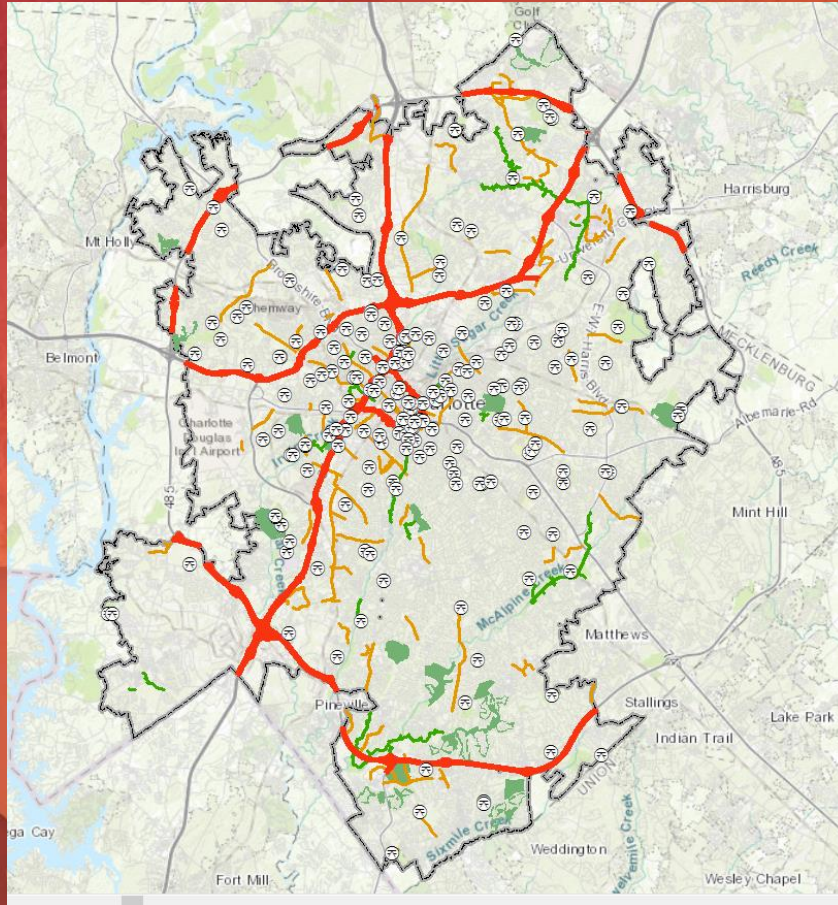


Choosing which Layers need Feature Access

Which layers require access to the attribute information?

Which layers are used for background reference only?





Demo 2

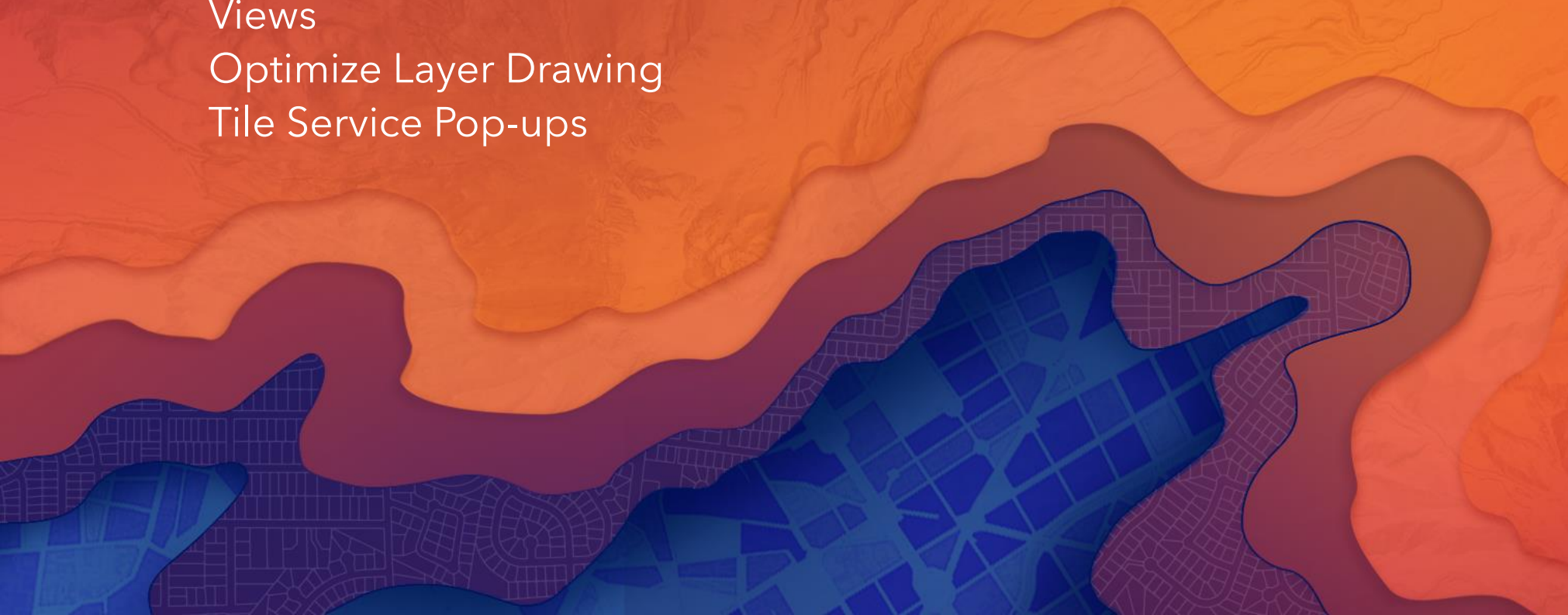
Web Map Configuration

Visible Scale Ranges, Filters

Views

Optimize Layer Drawing

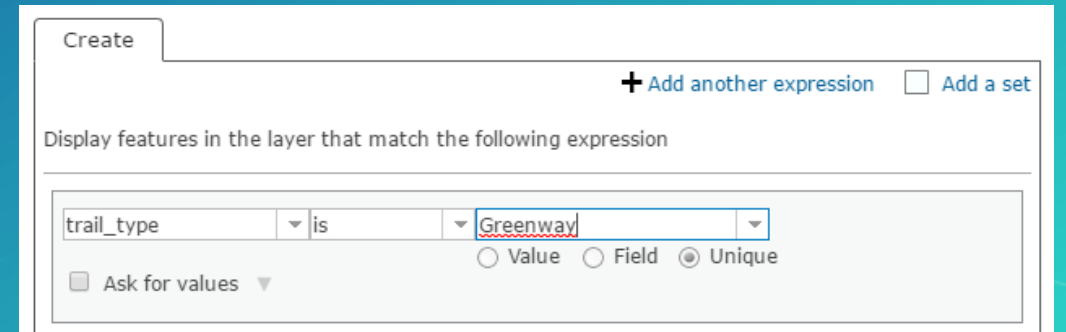
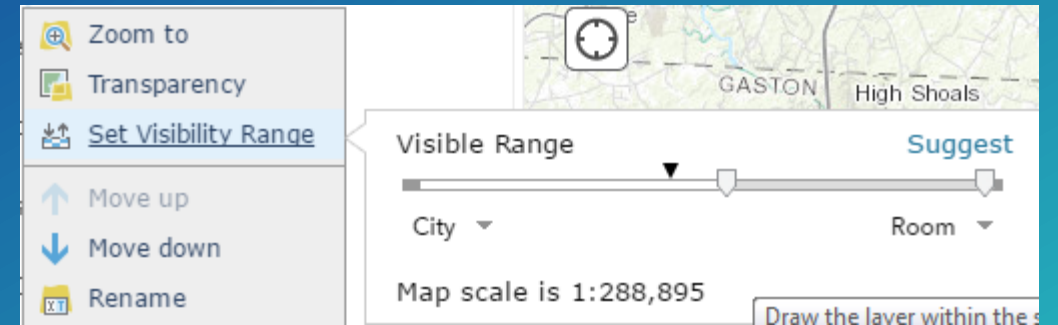
Tile Service Pop-ups



Setting Visible Scale Ranges and Filters

Are some layers necessary only at specific scale ranges?

Should dense data be filter to only show the necessary features?



Using Views

Can a View be used to avoid adding editable layers to a public map?

Are all the fields and features in the service necessary for this map?

Parks_View				
Overview	Data	Visualization	Usage	Settings
Double click a value in the table to change it				
Park_Locations (265 features, 0 selected)				
prkname	prkaddr	zip	prktype	<input type="checkbox"/> OBJECTID
ABBOTT NEIGHBORHOOD PARK	1300 SPRUCE ST	28203	NEIGHBORHOOD PARK	<input type="checkbox"/> prkid
ALBEMARLE ROAD CENTER	5027 N IDLEWILD RD	28227	RECREATION CENTER	<input checked="" type="checkbox"/> prkname
ALBEMARLE ROAD COMMUNITY PARK	9120 E W T HARRIS BV	28227	COMMUNITY PARK	<input checked="" type="checkbox"/> prkaddr
ADMINISTRATIVE OFFICE BUILDING	5841 BROOKSHIRE BV	28216	ADMINISTRATION	<input type="checkbox"/> streetno
ALEXANDER NEIGHBORHOOD PARK	739 E 12TH ST	28206	NEIGHBORHOOD PARK	<input type="checkbox"/> streetdir
ALLEN HILLS NEIGHBORHOOD PARK	4701 CHEVIOT RD	28269	NEIGHBORHOOD PARK	<input type="checkbox"/> streetnm
ALEXANDRIANA HISTORIC SITE	9921 OLD STATESVILLE RD	28269	SPECIAL FACILITY	<input type="checkbox"/> streettype
AMAY JAMES CENTER	2425 LESTER ST	28208	RECREATION CENTER	<input type="checkbox"/> streetsuff

Create View



Create a new view of this feature layer that references the same data, yet allows you to independently set how it's shared with others, how it's drawn, what features are displayed (filtering) and whether it can be edited.

Filter: Parks_View



Create

[+ Add another expression](#) ☐ [Add a set](#)

Display features in the layer that match the following expression

prktype is NEIGHBORHOOD PARK

☐ Value ☐ Field ☒ Unique

☐ Ask for values

APPLY FILTER

APPLY FILTER AND ZOOM TO

CLOSE

Enabling Optimize Layer Drawing

Can layers with detailed geometries be optimized at small scales?

Is storage size a concern?

Optimize Layer Drawing

This setting increases the drawing speed of line and polygon layers with detailed geometry (e.g., many vertices) but also uses additional storage space to do so.

Select the layers to optimize:

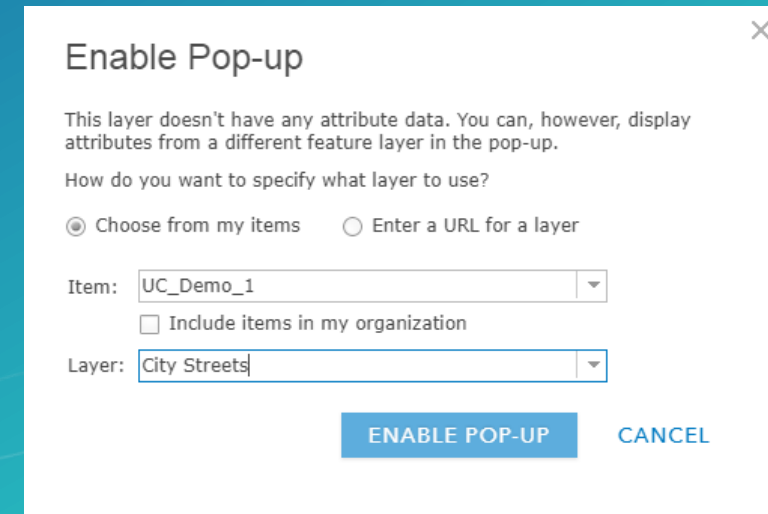
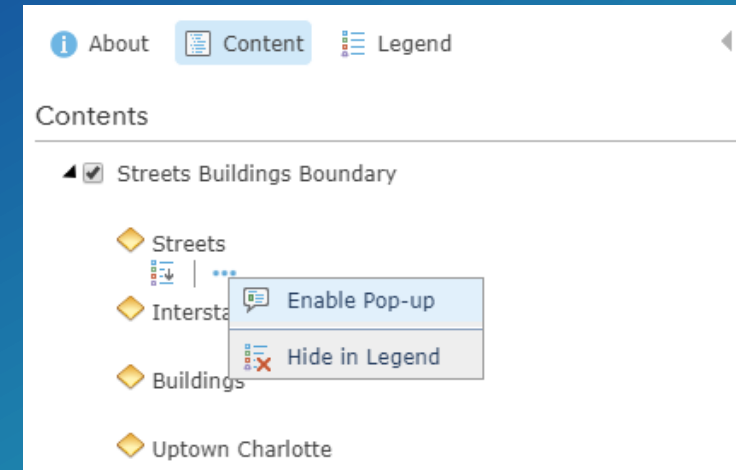
- ☐ Greenways_Generalized
- ☐ Interstate_Meck_Generalized
- ☐ City_Maintained_Streets_Generalized
- ☐ BikeLanes_Generalized
- ☐ Parcel_NoData_Generalized
- ☐ MecklenburgCounty_Boundary_Generalized
- ☐ Golf_Courses_Generalized
- ☐ Buildings_Generalized
- ☐ Charlotte_Boundary_Generalized

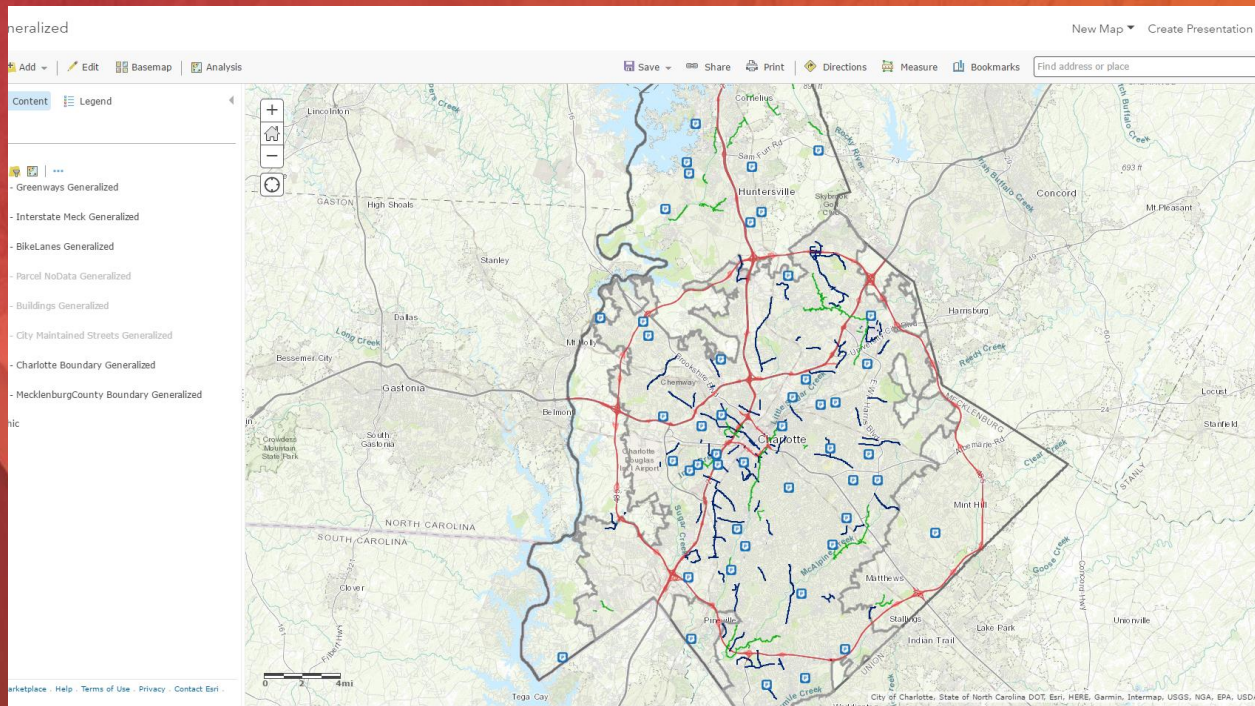
Note: Layer optimization takes a few minutes to complete. Editing will be temporarily disabled on layers undergoing optimization.

Tiled Map Service Pop-ups

Is the data best presented as a tiled map service?

Do tiled layers require pop-ups?





Demo 3

Other Considerations

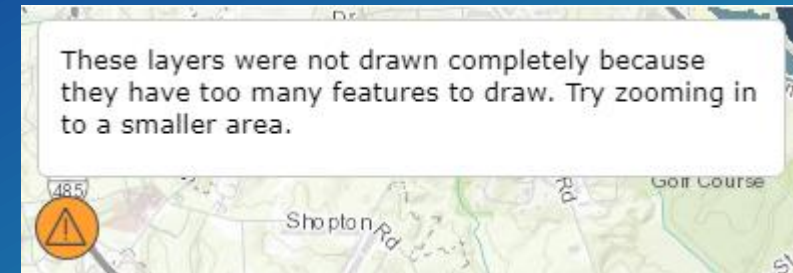
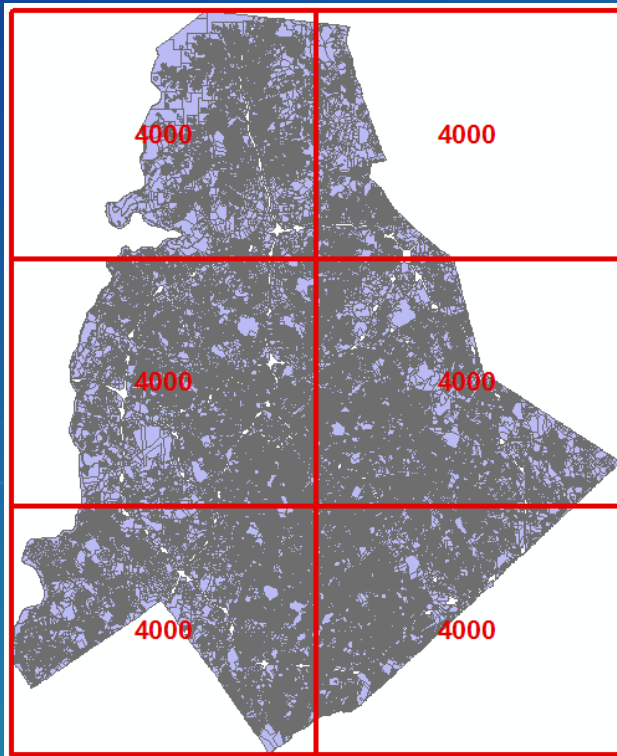
Setting the Max Record Count Factor

Debugging with Fiddler and Dev Tools

Considering Premium Feature Data Store

Max Record Count Factor

How to increase or decrease the number of features that display on the map?



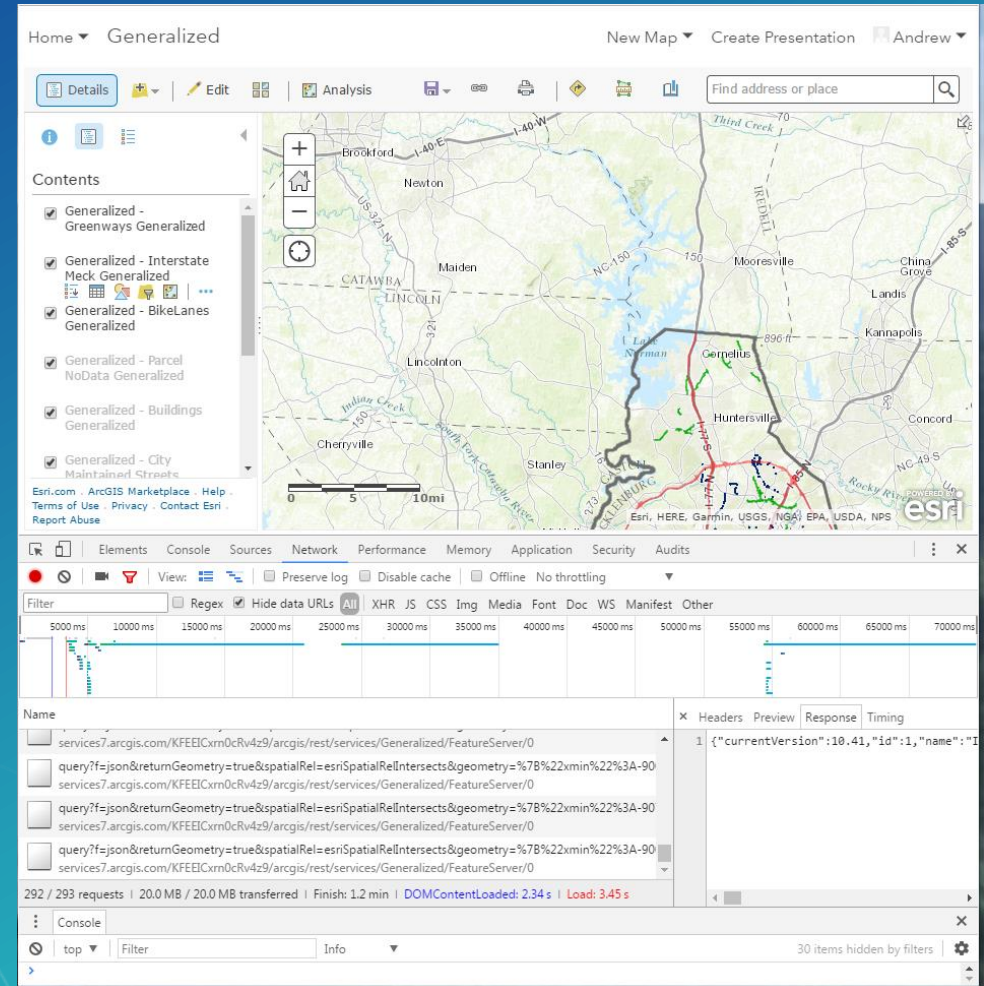
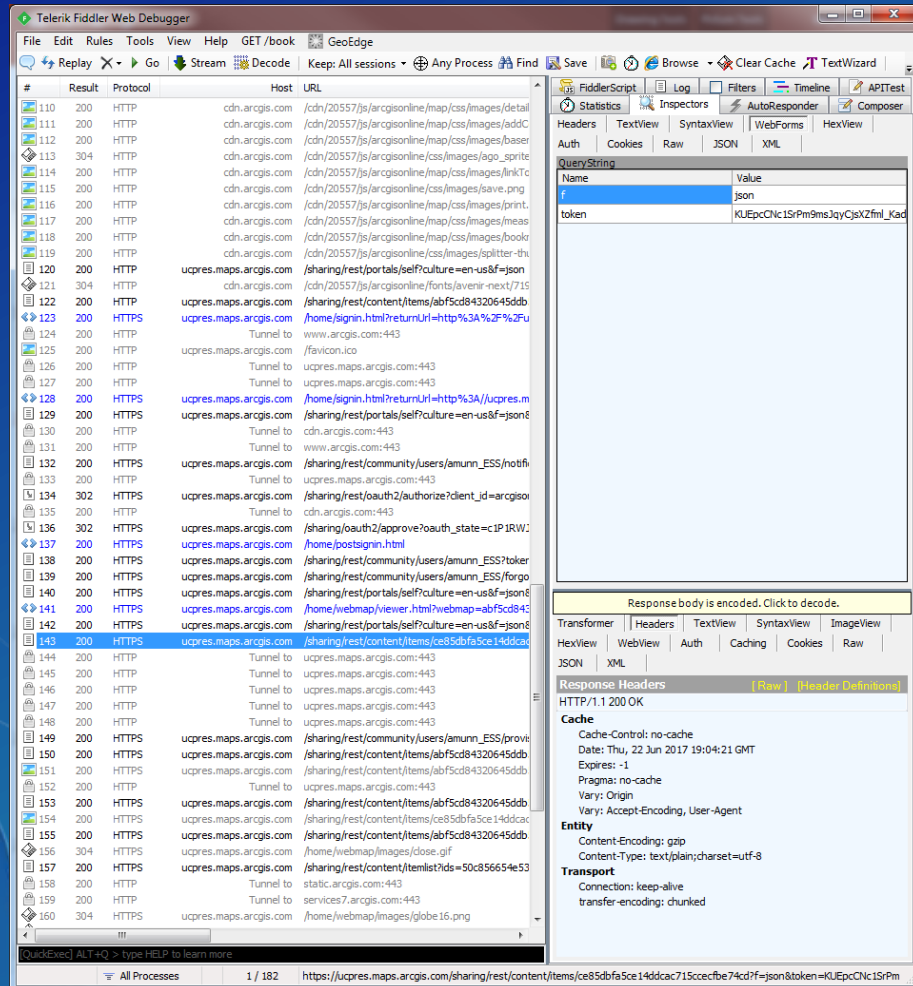
Update Layer Definition:

```
{
  "types": [],
  "templates": [
    {
      "name": "Charlotte_Boundary",
      "description": "",
      "drawingTool": "esriFeatureEditToolPolygon",
      "prototype": {
        "attributes": {
          "munic_name": null
        }
      }
    }
  ],
  "supportedQueryFormats": "JSON, geoJSON",
  "hasStaticData": false,
  "maxRecordCount": 1000,
  "standardMaxRecordCount": 4000,
  "tileMaxRecordCount": 4000,
  "maxRecordCountFactor": 1,
  "capabilities":
    "Create,Delete,Query,Update,Editing,Sync",
  "exceedsLimitFactor": 1
}
```

ASync: ☐ True ☒ False

Format:

Debugging with Fiddler and Dev Tools



Considering Premium Feature Data Store

Does the layer require heavy querying and editing workloads?

Will sharing data copies with ArcGIS Enterprise portals be required?

Three levels of performance:

M1 (improved performance),

M2 (higher performance), and

M3 (highest performance).



ArcGIS REST Administrator Directory | [Services Home](#)

[Home](#) > [services](#) > [MyMapService1 \(FeatureServer\)](#)

[JSON](#)

MyMapService1 (FeatureServer)

Service Description: asdf

Service ItemId: a72ff798da3542a3b50f7d0efacbd00

Has Versioned Data: false

Max Record Count: 1000

Supported query Formats: JSON

Supports applyEdits with GlobalIds: True

Layers:

- [BikeLanes](#) (0)
- [City_Maintained_Streets](#) (1)
- [Greenways](#) (2)
- [Interstate_Meck](#) (3)
- [Buildings](#) (4)
- [Charlotte_Boundary](#) (5)
- [Golf_Courses](#) (6)
- [MecklenburgCounty_Boundary](#) (7)
- [Parcel_NoData](#) (8)

Demo 4

Summary

- Remove unnecessary layers that clutter the map
- Generalize the geometry of layers that don't need detail
- Published tiled map services of background reference data
- Use Filters and visible scale ranges when appropriate
- Create views of layers to avoid editable layers
- Enable optimized drawing for layers with complex geometries
- Enable pop-ups on tiled layers
- Set the max record count factor from REST
- Use Fiddler or Dev Tools to debug problematic layers
- Consider using Premium Feature Data Store

Links and docs

Generalize

<http://desktop.arcgis.com/en/arcmap/latest/tools/editing-toolbox/generalize.htm>

About hosted layers

<http://doc.arcgis.com/en/arcgis-online/share-maps/hosted-web-layers.htm>

Publish hosted feature layers

<http://doc.arcgis.com/en/arcgis-online/share-maps/publish-features.htm>

Publish hosted tile layers

<http://doc.arcgis.com/en/arcgis-online/share-maps/publish-tiles.htm>

Apply filters

<http://doc.arcgis.com/en/arcgis-online/create-maps/apply-filters.htm>

Set visible range

<http://doc.arcgis.com/en/arcgis-online/create-maps/set-visibility.htm>

Create hosted feature layer views

<http://doc.arcgis.com/en/arcgis-online/share-maps/create-hosted-views.htm>

Optimize drawing of complex lines and polygons

http://doc.arcgis.com/en/arcgis-online/share-maps/manage-hosted-feature-layers.htm#ESRI_SECTION1_736A1F3329BB46069CF1B62393705C4C

Enable pop-ups on hosted tile layers without feature data

http://doc.arcgis.com/en/arcgis-online/create-maps/configure-pop-ups.htm#ESRI_SECTION2_6C6CD0DE9F9444D79AD4E097AE687DE1

Feature layers can generalize geometries on the fly

[https://blogs.esri.com/esri/arcgis/2011/06/13/feature-layers-can-generalize-](https://blogs.esri.com/esri/arcgis/2011/06/13/feature-layers-can-generalize-geometries-on-the-fly/)

[geometries-on-the-fly/](https://blogs.esri.com/esri/arcgis/2011/06/13/feature-layers-can-generalize-geometries-on-the-fly/)

How To: Update the maximum record count for feature services in ArcGIS Online

<http://support.esri.com/technical-article/000012383>

Error: Layer did not draw completely because there are too many features to display

<http://support.esri.com/Technical-Article/000014750>

All about ArcGIS Online layers

<http://blogs.esri.com/esri/arcgis/2012/09/24/arcgis-online-layers/>

Workflows for building and hosting cached map tiles in ArcGIS

<http://blogs.esri.com/esri/arcgis/2013/02/06/workflows-for-building-and-hosting-cached-map-tiles-in-arcgis/>

Dicing Godzillas (features with too many vertices)

<http://blogs.esri.com/esri/arcgis/2010/07/23/dicing-godzillas-features-with-too-many-vertices/>

FAQ: How do I optimize a web map for high demand?

<http://support.esri.com/en/knowledgebase/techarticles/detail/42840>

Download Fiddler

<http://www.telerik.com/download/fiddler>

When should my organization consider using a premium feature data store?

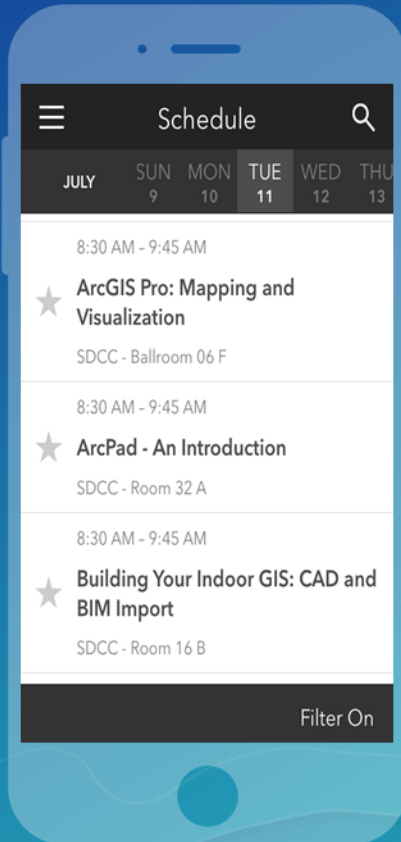
http://doc.arcgis.com/en/arcgis-online/reference/faq.htm#DATA_STORE

Please Take Our Survey on the **Esri Events App**!

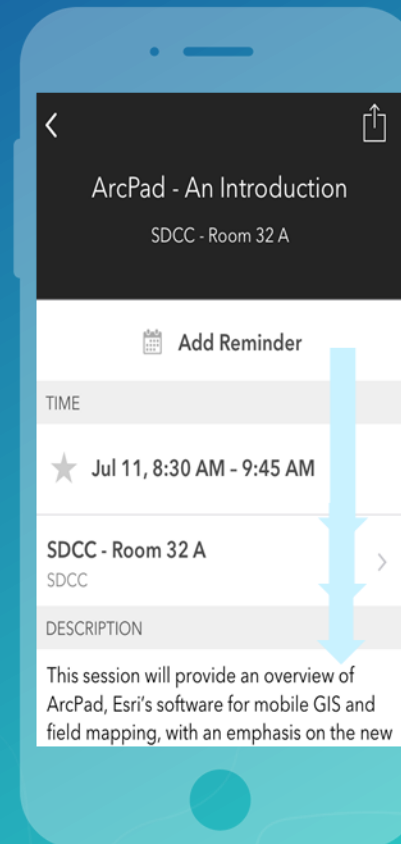
Download the Esri Events app and find your event



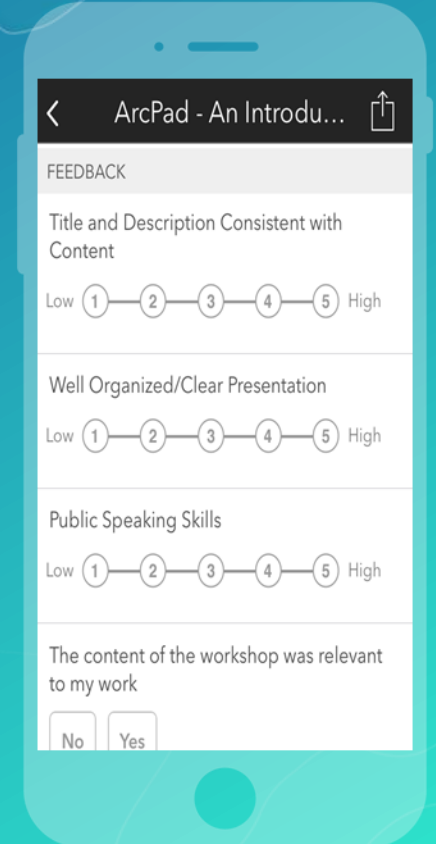
Select the session you attended



Scroll down to find the survey



Complete Answers and Select "Submit"



Questions

Andrew Munn

Danny Radich



esri

THE
SCIENCE
OF
WHERE