

MOBILE INTENSIVE

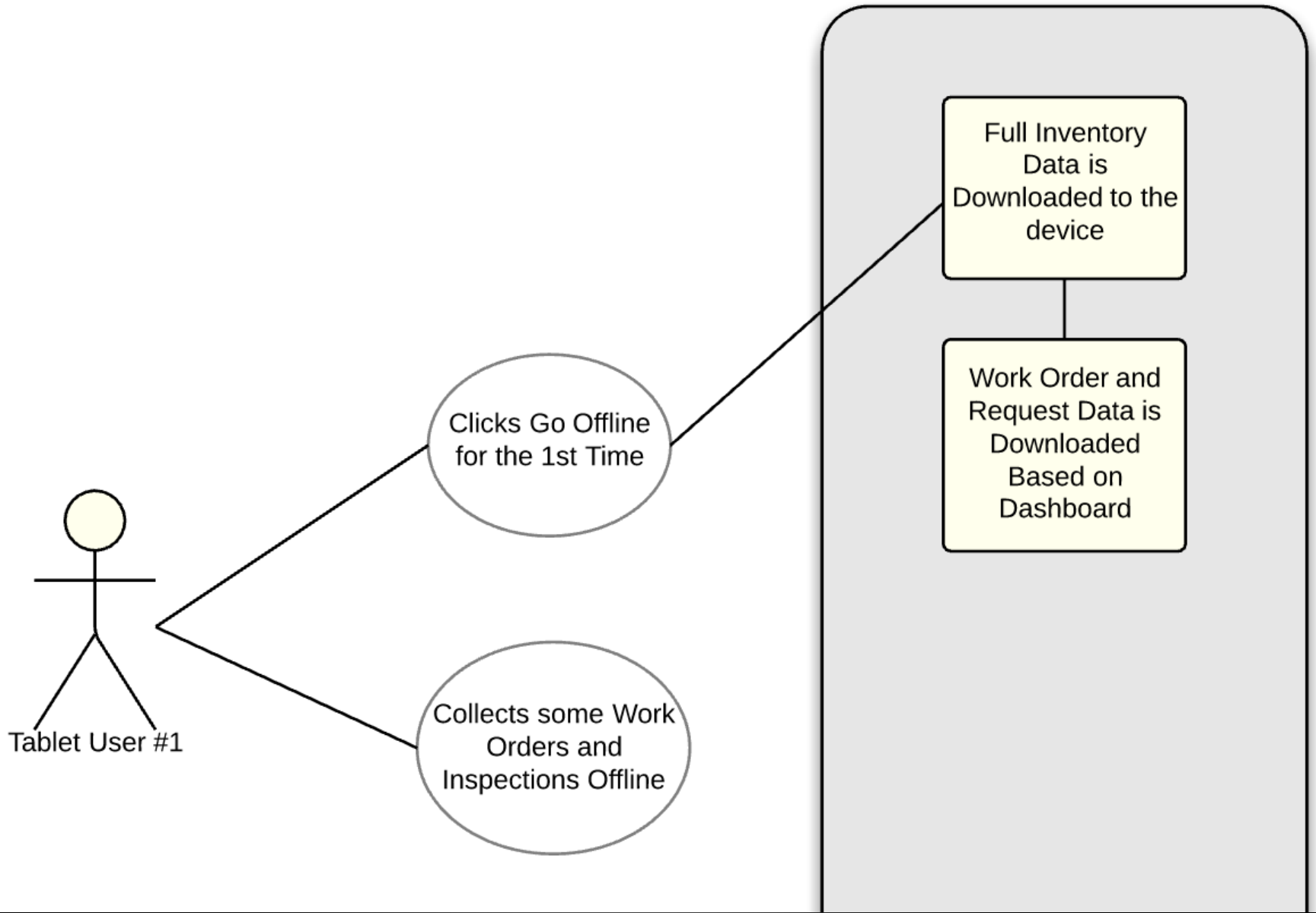
Offline Configuration (Inventory,
Work Orders, Inspection, GIS)

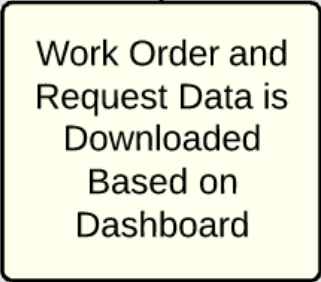
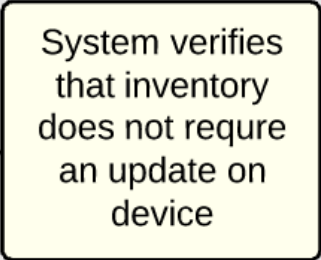
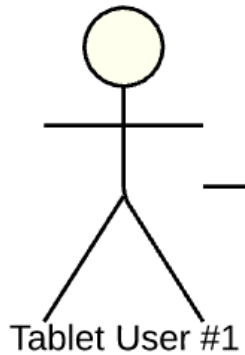
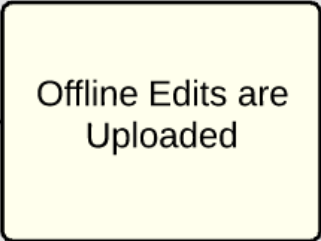
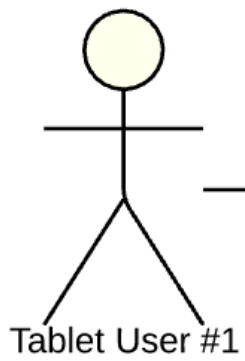
SHARPENyour**TOOLS**

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SAMPLE CASE #1 – FIELD WORKER WHO DOES NOT NEED UP TO DATE INVENTORY DATA

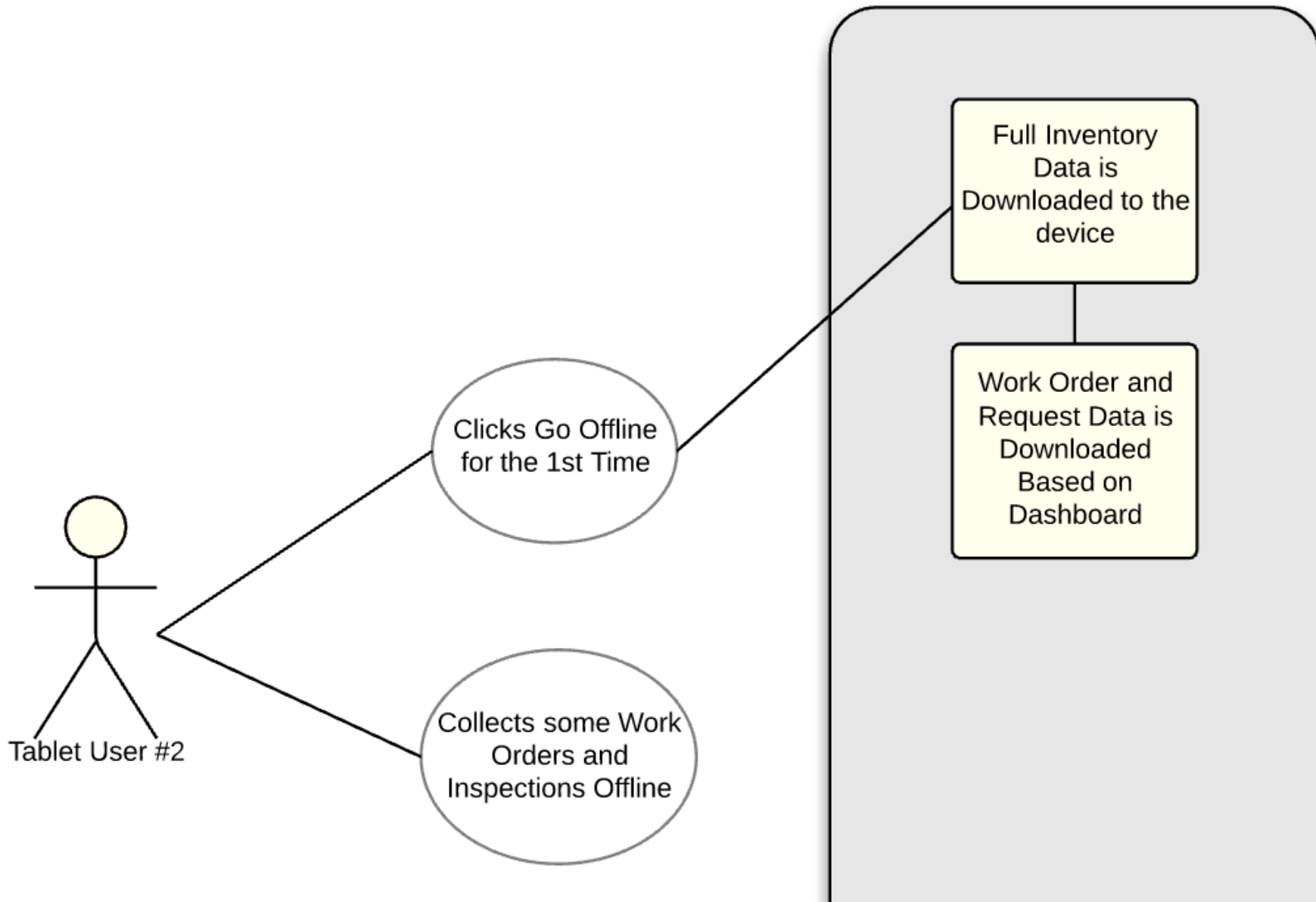
- Tablet User #1 does not need current inventory data. The data will download the first time and may not download again for a month or 3 months or even a year. The system knows this based on his login. It will check each time he goes offline but if he does not need an update, it will not download an update to the inventory data.

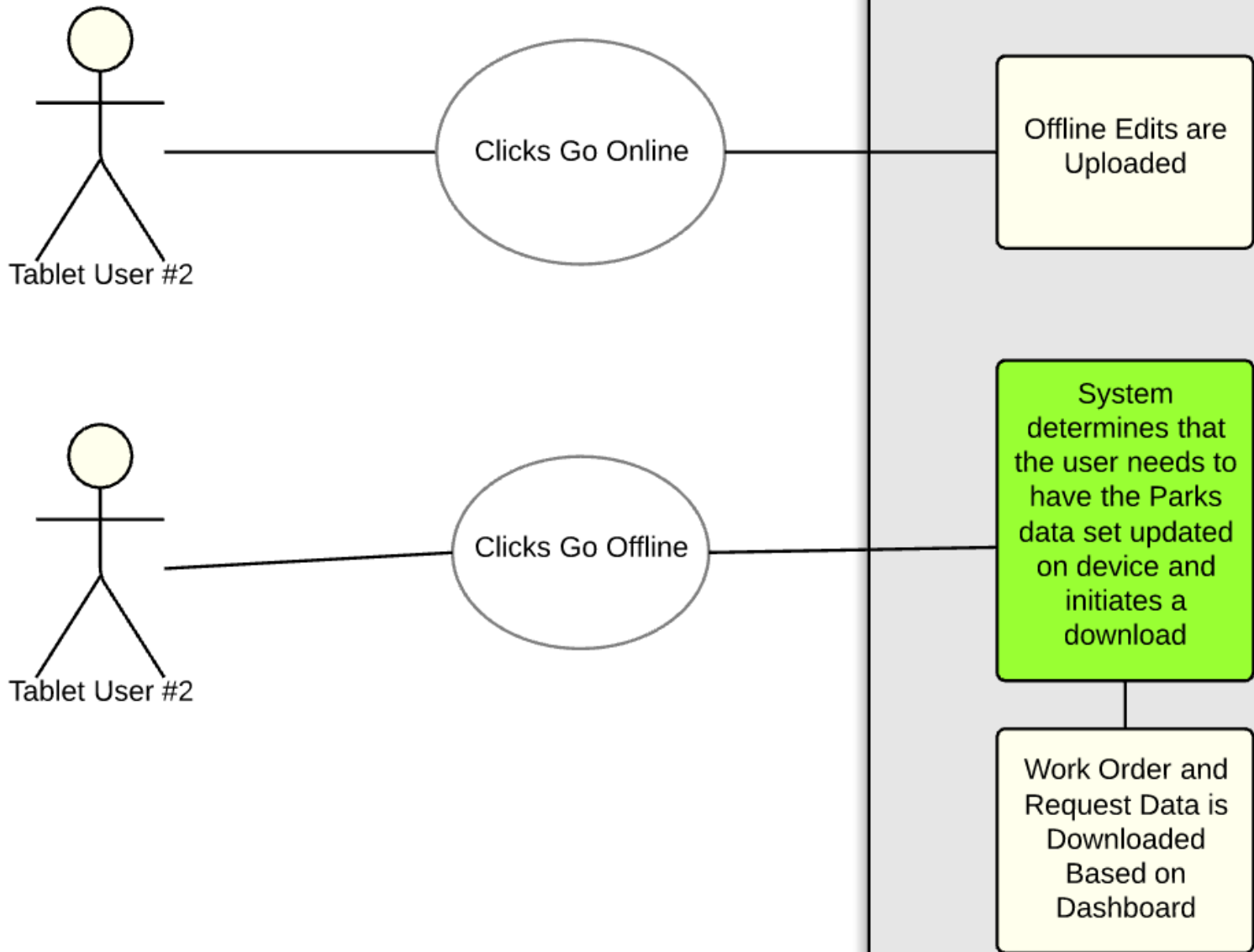




SAMPLE CASE #2 – FIELD WORKER WHO IS WORKING AN ACTIVE PROJECT REQUIRING UP TO DATE INVENTORY DATA

- Tablet User #2 is working on a project where he needs weekly updates to the Parks dataset on his tablet. All data will download the first time. The system will check each time he goes offline to see if the Parks dataset is older than 1 week. If it is, it will download it when he goes offline.





INVENTORY DATA CACHE

- Inventory data and non module child data is cached nightly
 - Example: Sewer Pipes, Sewer Laterals, comment grids, tracking grids, status grids
 - Example of data not cached: flow testing data, tv inspections, construction records, work projects
- No inspection data is cached
- Nightly cache happens at 2:00 am by default (immediately following the default 1:45 am nightly recycle)
- Nightly cache will require 20 minutes to 6+ hours to complete depending on web server, database server, amount of data, and how much of that data is configured for caching

VIEWS, FORMS, GRIDS ARE CACHED NIGHTLY

- Including views, forms, and grids for inspections, test data, daily inspections, work orders, requests, etc
- Only limited based on your desire for offline availability (based on the offline mobile flag)
- Includes picklists for forms tied to views configured for offline
- Picklists can be large, so forms and views should not included unless they are needed by some of your offline users
- Be aware of dashboard frames marked for offline
 - If all views for a module are marked as offline = false, but at least one user has a data drill in a frame marked as offline = true, the system will cache the view (and potentially the corresponding data)

ANDROID AND APPLE ARE SEPARATE CACHES

- We produce cache files with a file extension .json for Android
 - These are json formatted text files
 - Pre gzipped to json.gz file
 - The json.gz file is streamed to the client
 - Android post processes the data into a local SQLite database
- We produce cache files with a file extension .db for Apple devices
 - These are SQLite database files
 - Pre gzipped to a db.gz file
 - The db.gz file is streamed to the client

CONFIGURE THE CACHE



Admin Portal ⊗ +

Mobile ▾

Setting Description	Setting Value	Setting Category
Log device latitude and longitude	TRUE	Mobile
Max Columns Returned	20	Mobile
Maximum number of days to store device location history	30	Mobile
Maximum records to return per request for mobile	100	Mobile
Update the offline Android cache nightly	TRUE	Mobile
Update the offline iOS cache nightly	TRUE	Mobile
Url for the Lucity Mobile Server Virtual Directory	https://demo.lucity.net/LucityMobileDev	Mobile

CURATE YOUR OFFLINE DATA

- There is extra processing required to do each cache (Android/Apple)
 - However, the majority of the processing is not writing to files
 - The majority of time is spent querying from the database
- Do not send all inventory data offline
 - Do you need service taps AND meters?
 - Do you need sewer service laterals?
- Plan for what data your users need and limit to only that data

CURATE YOUR OFFLINE DATA

- Do not send all inspection forms offline, only send what you need
 - If you send 6 work request views offline, it writes 6 distinct views
 - Don't send out an inventory or inspection view unless a user will be using it
- Do not configure frames for offline use that are not needed offline
- Do not configure data drills for offline use that are not needed offline, if they are in an offline frame, move them to another frame if not needed.

CURATE YOUR OFFLINE DATA

- Mark views which should go offline
- If the view is inventory data, this means the data also will be cached offline
- If the view is not an inventory item, the view, form, picklists will go offline only

The screenshot shows the 'View Builder' window for a view named 'Sewer Node'. The interface is divided into several sections:

- View Name:** Sewer Node
- Alternate View Name:** (empty)
- Step 1: Select a Grid Type:** A tree view with the following items:
 - Sewer Nodes
 - Sewer Node Field Ties
 - Work Orders
 - Work Requests
 - PM/Work Templates
 - Sewer Comment Grid
 - Sewer Construction Assets

- Step 2: Select a Grid:** A dropdown menu showing 'Sewer Node' with 'New Grid' and 'Edit Grid' buttons.
- Step 3: Select a Form for Grid (optional):** A dropdown menu showing 'Sewer Node Form' with 'New Form', 'Edit Form', and 'Preview' buttons.
- Help:** A text area with the instruction: 'Mouse over a control to see its description.'
- Offline Mobile:** (An orange arrow points to this checkbox from the left.)
- This is the default view for the Sewer Nodes:**
- Buttons:** 'Save' and 'Cancel' buttons are located at the bottom right.

CURATE YOUR OFFLINE DATA

- Control your offline data at a grid level as well

The screenshot shows the 'Grid Builder' application window. At the top, the title bar reads 'Grid Builder'. Below the title bar, there are several input fields: 'Grid Name' (Sewer Node Field Ties), 'Grid Type' (Sewer Node Field Ties), 'Caption' (Sewer Node Field Ties), and 'Page Size' (10). A 'Description' text area is located below these fields. The main area is divided into three sections: 'Available Columns' (listing 'Created By', 'Creation Date Time', 'Field Tie Rec #', 'Last Modified By', 'Last Modified Date', and 'Last Modified Time'), 'Selected Columns' (listing 'Sequence number' and 'Field tie text'), and 'Properties' (showing 'Display' and 'Field' properties). At the bottom left, there is a 'Help' section with the text 'Mouse over a control to see its description.' and a 'Manage Buttons' button. A yellow arrow points to the 'Offline Mobile' checkbox, which is checked.

IMPROVE OFFLINE PERFORMANCE

- Review the state of your offline cache
 - `..inetpub\wwwroot\LucityMobileServer\DataCache`
 - Look for very large files
 - Look for large gaps (hours) in Date Modified
 - This shows a cache that is taking a long time to create, review the cache following the gap to see if you can streamline
 - Look for caches not updated that should have been
- Ensure dynamic content compression is enabled

DYNAMIC CONTENT COMPRESSION

The screenshot shows the 'Add Roles and Features Wizard' window for a destination server named 'WIN-S8SDTT0NMDM'. The 'Select server roles' step is active, with a sidebar on the left containing navigation options: 'Before You Begin', 'Installation Type', 'Server Selection', 'Server Roles' (highlighted), 'Features', 'Confirmation', and 'Results'. The main area displays a list of roles to be installed on the selected server. The roles are organized into a tree structure. The 'Web Server (IIS) (Installed)' role is expanded, showing its sub-features: 'Web Server (Installed)', 'Common HTTP Features (Installed)', 'Health and Diagnostics (Installed)', 'Performance (Installed)', 'Security (Installed)', and 'Application Development (Installed)'. The 'Performance (Installed)' role is further expanded, showing 'Static Content Compression (Installed)' and 'Dynamic Content Compression (Installed)'. The 'Dynamic Content Compression (Installed)' checkbox is highlighted with a blue box. To the right of the roles list, a 'Description' section provides information about Dynamic Content Compression: 'Dynamic Content Compression provides infrastructure to configure HTTP compression of dynamic content. Enabling dynamic compression always gives you more efficient utilization of bandwidth, but if your server's processor utilization is already very high, the CPU load imposed by dynamic compression might make your site perform more slowly.' At the bottom of the wizard, there are navigation buttons: '< Previous', 'Next >', 'Install', and 'Cancel'.

DESTINATION SERVER
WIN-S8SDTT0NMDM

Select one or more roles to install on the selected server.

Roles

- Remote Access
- Remote Desktop Services
- Volume Activation Services
- Web Server (IIS) (Installed)
 - Web Server (Installed)
 - Common HTTP Features (Installed)
 - Health and Diagnostics (Installed)
 - Performance (Installed)
 - Static Content Compression (Installed)
 - Dynamic Content Compression (Installed)
 - Security (Installed)
 - Application Development (Installed)
 - FTP Server
 - IIS Hostable Web Core

Description

Dynamic Content Compression provides infrastructure to configure HTTP compression of dynamic content. Enabling dynamic compression always gives you more efficient utilization of bandwidth, but if your server's processor utilization is already very high, the CPU load imposed by dynamic compression might make your site perform more slowly.

< Previous Next > Install Cancel

OPTIMIZE DOWNLOAD FREQUENCY

The screenshot displays the Lucity Mobile Offline Caching Setup interface. At the top, there is a navigation bar with a home icon and a tab labeled "Mobile Offline Caching Setup". Below this, the main content area is titled "Mobile Offline Caching Setup" and contains a table of Cache Records. The table has columns for "Cache Rec #", "Name", and "Interval Text".

Cache Rec #	Name	Interval Text
1	Equipment	Monthly
2	Street	Monthly
3	Park	Monthly
4	Water	Monthly
5	Work	Weekly
6	Common	Monthly
7	Sewer	Monthly
8	Storm	Monthly
9	Electric	Monthly

Below the main table, there is a section titled "Mobile Cache Setup Detail (1)" which provides a detailed view of the selected record. This section has columns for "Type Text", "Name", and "Interval Text".

Type Text	Name	Interval Text
Group	ParkMaintenance	Weekly

Two callout boxes with arrows point to specific rows in the tables:

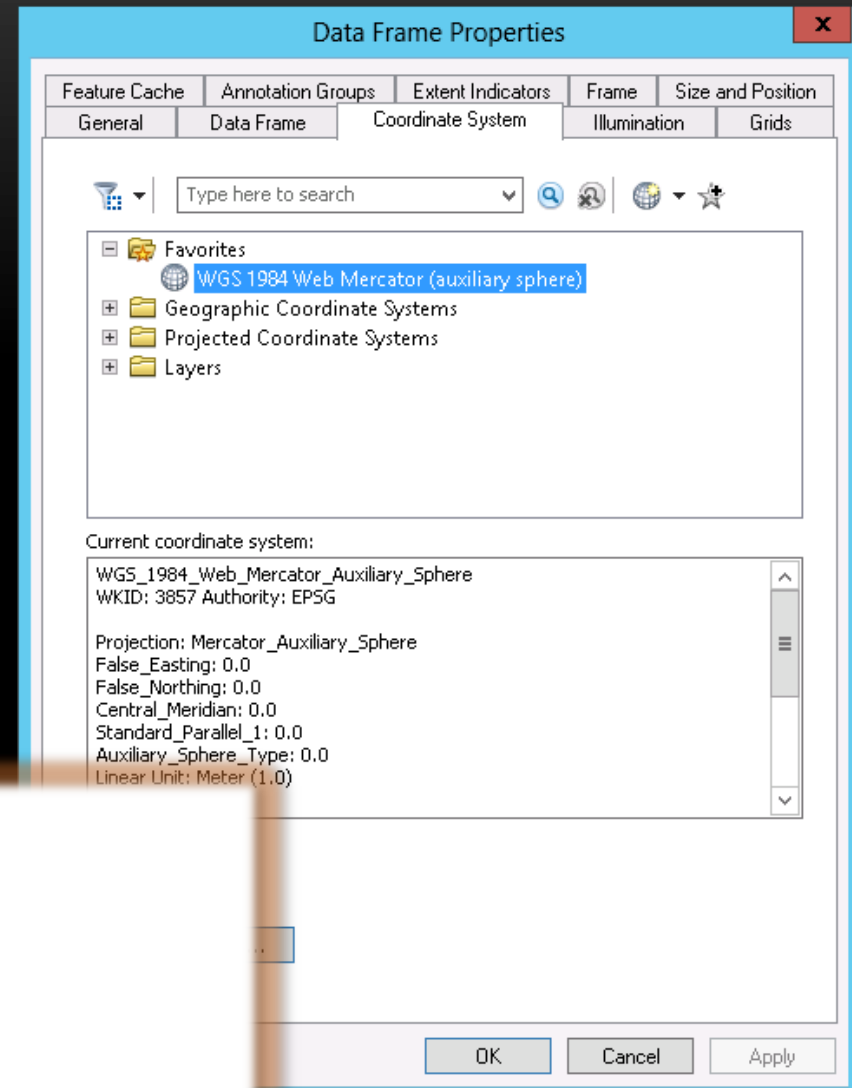
- The first callout box points to the "Equipment" row in the main table, stating: "All other users get updates to the equipment data monthly".
- The second callout box points to the "ParkMaintenance" row in the detail table, stating: "Users assigned to the ParkMaintenance rules group get updates to equipment data weekly".

MAPS OFFLINE

- Basemaps
 - Create TPKs (use same Spatial Reference as online basemaps)
 - Side load (copy) to the devices
 - Configure in GIS Map Services
 - Highly recommended – makes it easier to troubleshoot map services if you can see where you are offline even if the map service does not show up as expected.
- Dynamic Map Services in Maps
 - Create feature services with Sync enabled (Edit generally needs to be disabled)
 - Configure max feature download count as needed (defaults to 1000)
 - Configure in GIS Map Services

BASEMAPS – CREATE TPK

- Open ArcMap Project that contains layers you want in cache
- Make sure you already have an online basemap with this data
- Verify the spatial reference of the data frame matches your online basemap:



Layers:

- [Parcels](#) (0)

Description:

Copyright Text: Lucity Inc.

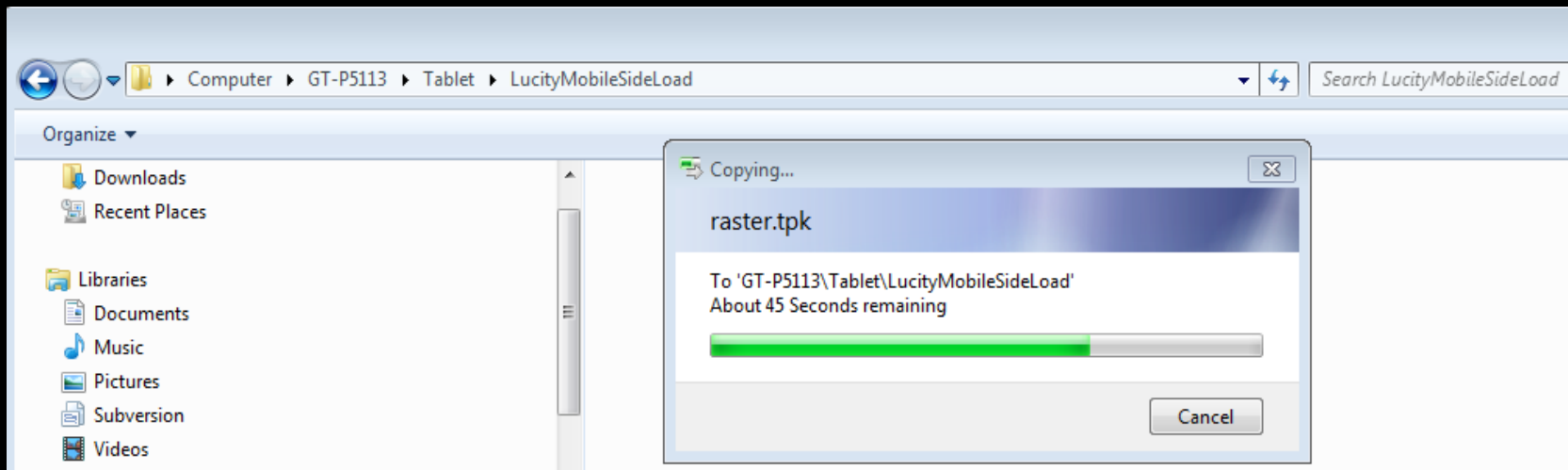
Spatial Reference: 102100 (3857)

BASEMAPS – CREATE TPK

- <http://desktop.arcgis.com/en/arcmap/latest/map/working-with-arcmap/how-to-create-a-tile-package.htm>
- Customize>>ArcMap Options (Packaging Section). Check Enable ArcGIS Runtime tools
- File>>Share As>>Tile Package

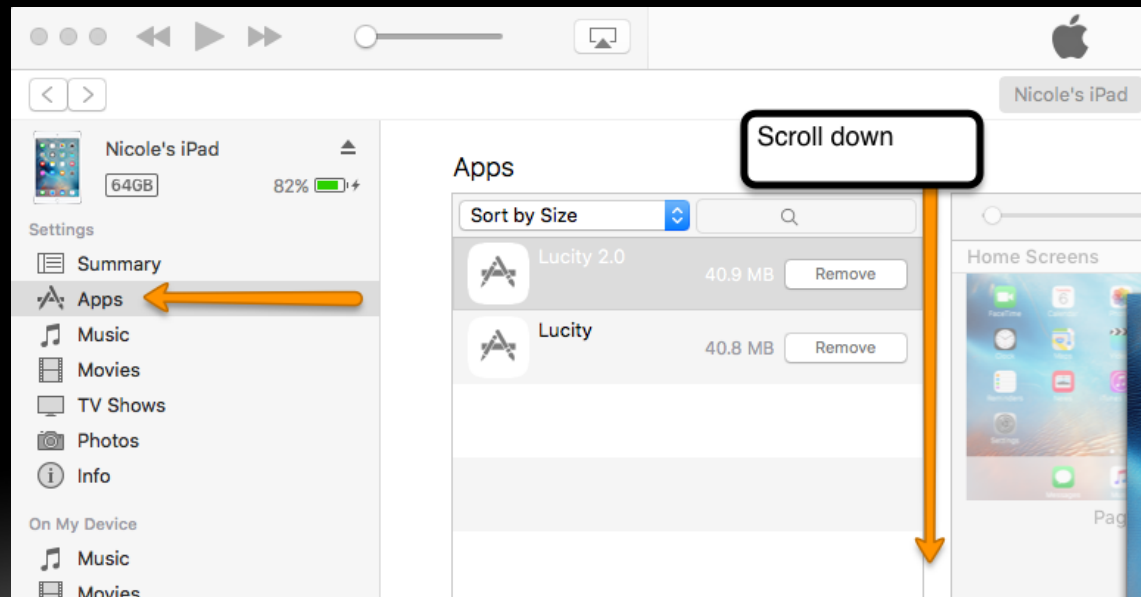
SIDE LOAD ANDROID

- Connect the device to a PC or Mac
- Copy the file to the external storage for the device. Putting it in a sub folder is acceptable and encouraged.
- Note: If your device has multiple users, each user has their own isolated shared storage.



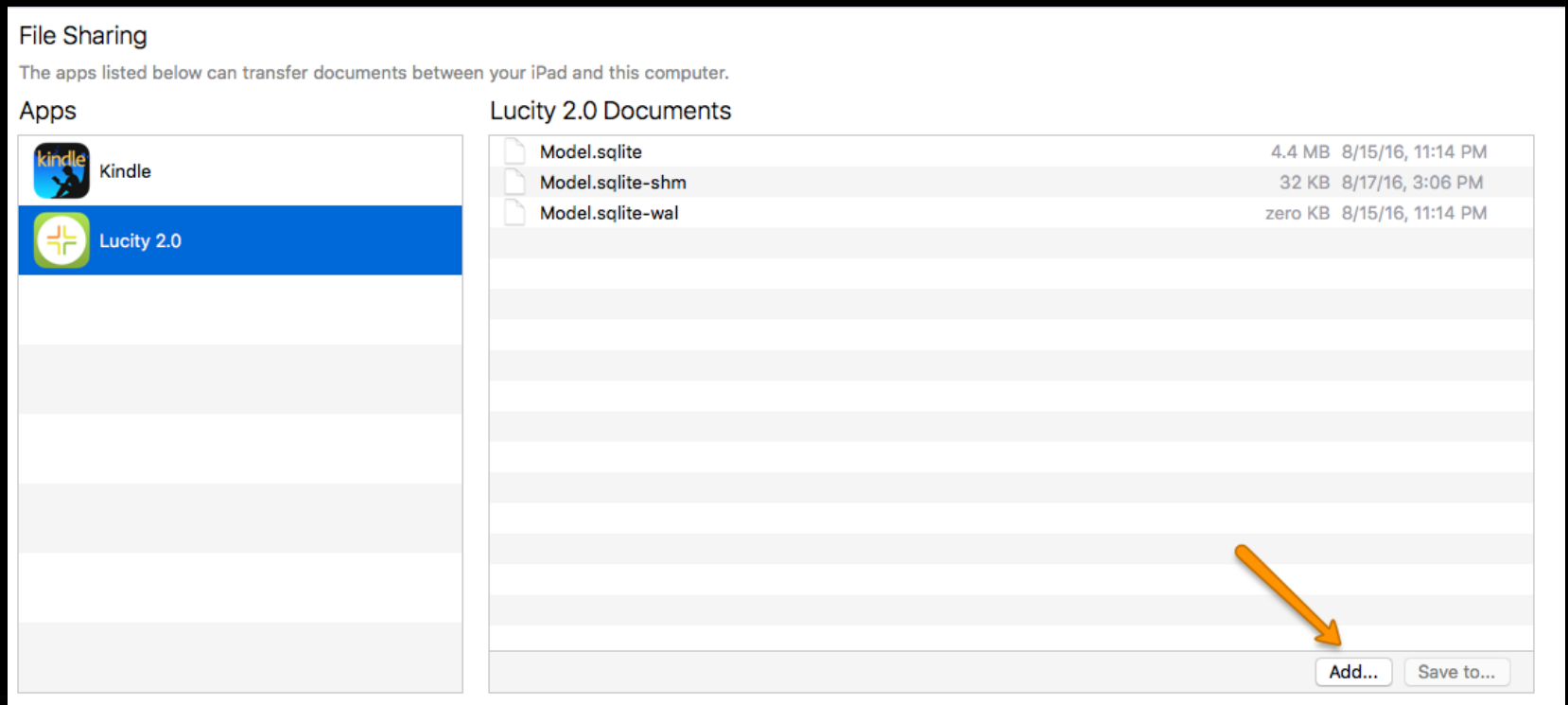
SIDE LOAD APPLE

- Connect the device to a PC or Mac and open iTunes
- Click Apps
- Scroll down to the bottom of the page for “File Sharing”. *Note File Sharing section is not visible until you scroll down*



SIDE LOAD APPLE

- Click Add and select the TPKs you want to have available. No folder can be created, it will be stored alongside the Lucy application in a dedicated folder.



SIDE LOAD APPLE

- You must Sync after adding the TPK

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BASEMAP - MAP SERVICE CONFIG

GIS Services

Map Services | Utility Services | Work Zone Services

Name	Url	Order	Opacity	Base Map for Web?	Base Map for Mobile?	Has Feature Service?	User Auth	Require Logon?	Offline Mobile Feature Service Url	Pro
Esri_WorldStreet	https://services.arcgisonline.com/arcgis/rest/services/W...	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
Esri_WorldTopo	https://services.arcgisonline.com/arcgis/rest/services/W...	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
Sewer	https://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...	2		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	https://demo.lucity.net/arcgis/rest/services/Lucity2016/LucityGIS...	
Matt Park	http://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...	4		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	https://demo.lucity.net/arcgis/rest/services/Lucity2016/LucityGIS...	
Matt Storm	https://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...	5		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	https://demo.lucity.net/arcgis/rest/services/Lucity2016/LucityGIS...	
Matt Water	https://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...	3		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	https://demo.lucity.net/arcgis/rest/services/Lucity2016/LucityGIS...	
Matt Sign Editable	https://demo.lucity.net/arcgis/rest/services/Lucity2016/S...	6		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
Matt AGO 1	https://services.arcgis.com/53PW7Esq9rERkspc/arcgis/...	2		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	https://services.arcgis.com/53PW7Esq9rERkspc/arcgis/rest/servi...	
Matt AGO 2	https://services.arcgis.com/53PW7Esq9rERkspc/arcgis/...	4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	https://services.arcgis.com/53PW7Esq9rERkspc/arcgis/rest/servi...	
Matt Park Editable	https://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...	4		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
Matt Sewer Editable	https://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...	2		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
Matt Traffic Secured	https://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...	3		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	https://demo.lucity.net/arcgis/rest/services/Lucity2016/LucityGIS...	
Matt Raster	https://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	%root%/LucityMobileSideLoad/Raster2016CityBlock.tpk	
Matt Redlining	https://services.arcgis.com/53PW7Esq9rERkspc/arcgis/...			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
Parcels	http://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	%root%/LucityMobileSideLoad/LucityGIS_Parcels.tpk	

Default Base Map for Web:
 Default Base Map for Mobile:

BASEMAP - MAP SERVICE CONFIG

- Android will look in the Shared external storage directory in the sub folder indicated
- iOS will search the application files directory using the file name only (it ignores folder names)

MAP SERVICES – PREP DATA

- Global Ids were added to the datasets
- Data archiving was enabled on the datasets
- Symbology was simplified in the project
- Joins were removed
- Some changes were made to ensure that all layers in the map service were in a consistent state (either all versioned or all un-versioned; in the above example they are all versioned).
- The ArcMap project database connection was switched to a user with edit permissions to the geodatabase

MAP SERVICES – SYNC ENABLED

- Feature Services are used for Offline
- Check supported operations for “Create Replica/Synchronize Replica”

Supported Operations: [Query](#) [Apply Edits](#) [Create Replica](#) [Synchronize Replica](#) [Unregister Replica](#)

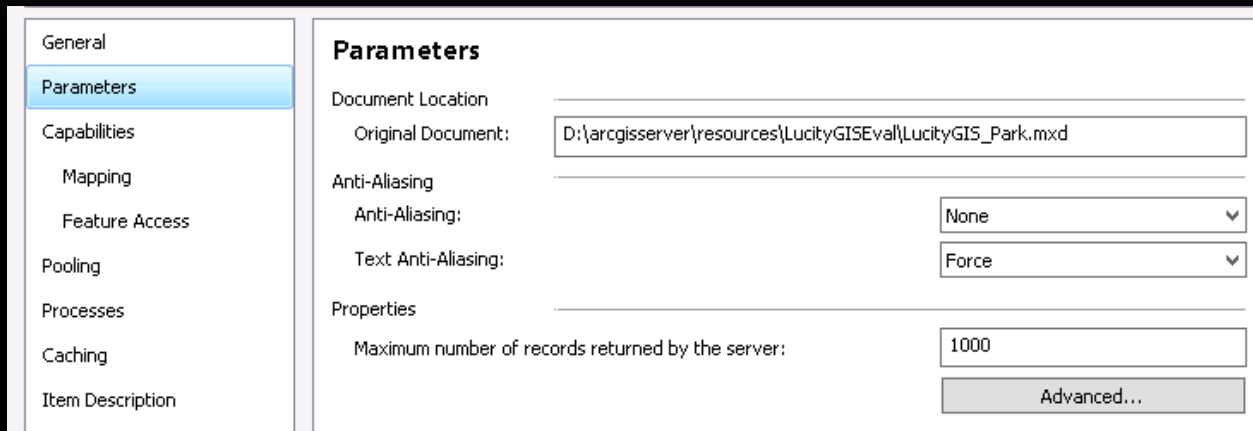
- Or review Service Properties in ArcMap/ArcCatalog for “Sync”

The screenshot shows the 'Feature Access' tab of the Service Properties dialog box. The left sidebar contains a list of tabs: General, Parameters, Capabilities, Mapping, and Feature Access (which is selected and highlighted in blue). The main area is titled 'Feature Access' and contains the following information:

- REST URL:
- SOAP URL:
- Operations allowed:
 - Create
 - Delete
 - Query
 - Sync
 - Update

MAP SERVICES – MAX RETURN

- Understand the Maximum number of records returned by the server



The screenshot shows the 'Parameters' tab of a dialog box. On the left is a navigation pane with the following items: General, Parameters (selected), Capabilities, Mapping, Feature Access, Pooling, Processes, Caching, and Item Description. The main area is titled 'Parameters' and contains the following fields:

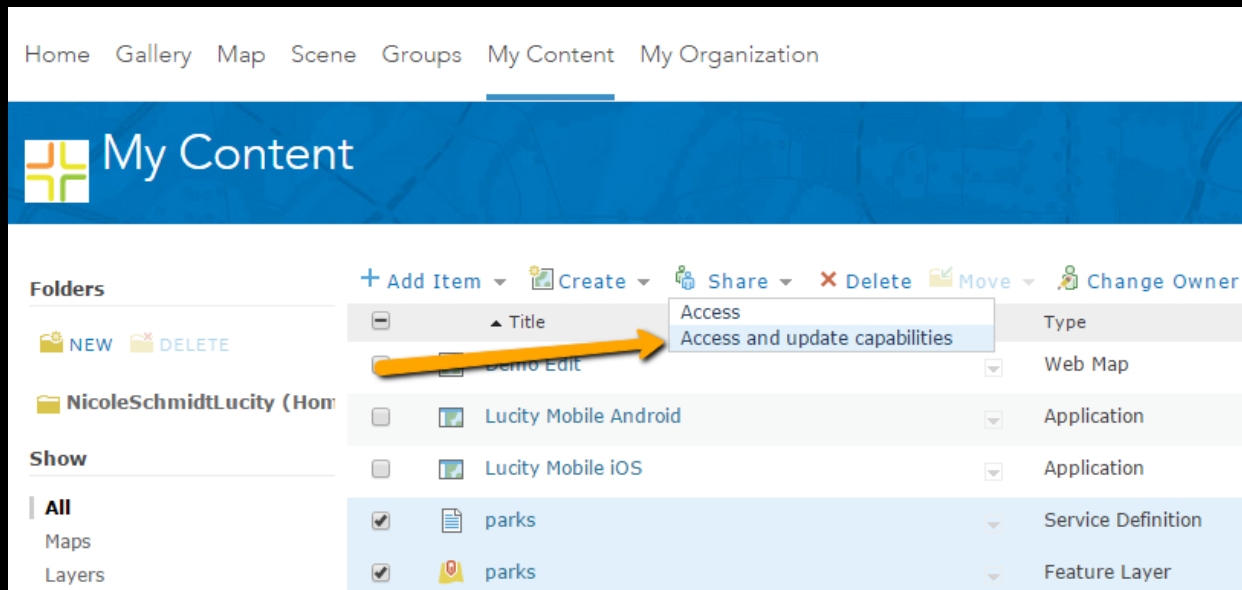
- Document Location: Original Document: D:\arcgisserver\resources\LucityGISEval\LucityGIS_Park.mxd
- Anti-Aliasing: Anti-Aliasing: None (dropdown)
- Text Anti-Aliasing: Force (dropdown)
- Properties: Maximum number of records returned by the server: 1000

An 'Advanced...' button is located at the bottom right of the main area.

- This is for all features in all layers
- Limits the total # of features which will go offline
- Bumping this too high may have substantial negative performance impacts

AGO SERVICES – SYNC ENABLED

- You must be the owner or someone must have granted “Share Access and Update Capabilities” for the map service to a group you are a member of.

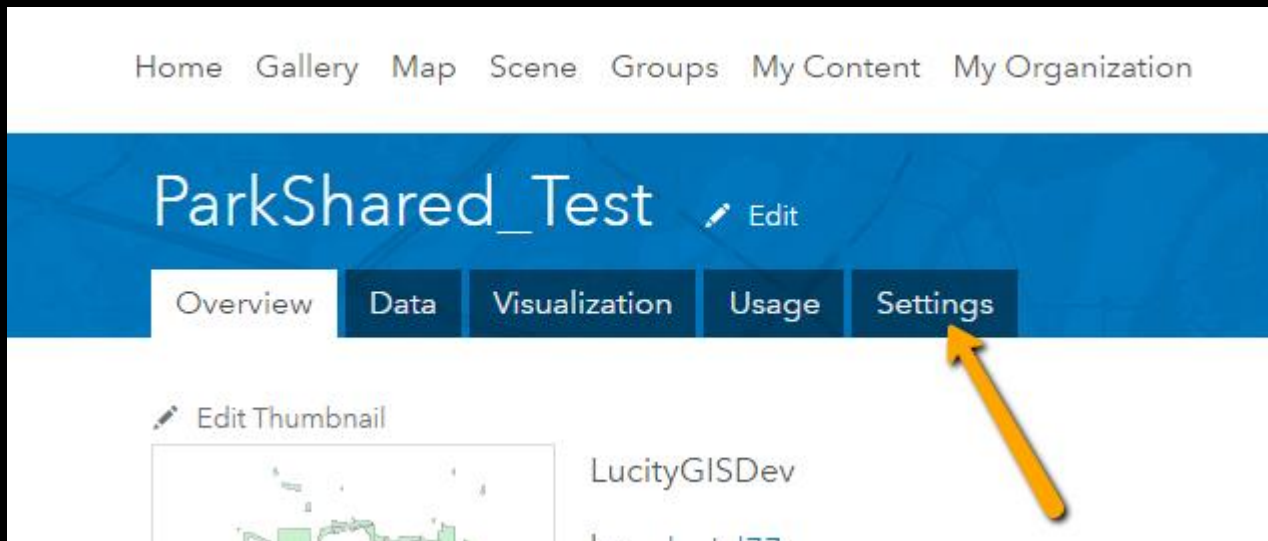


The screenshot displays the ArcGIS Online 'My Content' interface. At the top, navigation links include Home, Gallery, Map, Scene, Groups, My Content, and My Organization. The 'My Content' header is prominent. Below it, a toolbar contains '+ Add Item', 'Create', 'Share', 'Delete', 'Move', and 'Change Owner'. The 'Share' dropdown menu is open, showing 'Access' and 'Access and update capabilities'. An orange arrow points to the 'Access and update capabilities' option. The main content area lists items with columns for Title, Type, and a checkbox. The items listed are:

Title	Type	Checkbox
▲ Title		
Demo Edit	Web Map	<input type="checkbox"/>
Lucy Mobile Android	Application	<input type="checkbox"/>
Lucy Mobile iOS	Application	<input type="checkbox"/>
parks	Service Definition	<input checked="" type="checkbox"/>
parks	Feature Layer	<input checked="" type="checkbox"/>

AGO SERVICES – SYNC ENABLED

- From My Content, or if shared via group from Groups (click the group name), find the layer
- *Note: Selecting the layer from the gallery is generally not sufficient*
- Open the layer and you will see a “Settings” tab



AGO SERVICES – SYNC ENABLED

- Enable Sync is at the bottom of the settings page

Sync

Enable Sync (disconnected editing with synchronization).

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MAP SERVICES – LUCITY CONFIG

GIS Services

Utility Services Work Zone Services

Name	Url	Order	Opacity	Base Map for Web?	Base Map for Mobile?	Has Feature Service?	User Auth	Require Logon?	Offline Mobile Feature Service Url	Proxy
Esrj_WorldStreet	https://services.arcgisonline.com/arcgis/rest/services/W...	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
Esrj_WorldTopo	https://services.arcgisonline.com/arcgis/rest/services/W...	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
Sewer	https://demo.lucity.net/arcgis/rest/services/Lucity2016/L...	2		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	https://demo.lucity.net/arcgis/rest/services/Lucity2016/LucityGIS...	
Matt Park	http://demo.lucity.net/arcgis/rest/services/Lucity2016/Lu...	4		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	https://demo.lucity.net/arcgis/rest/services/Lucity2016/LucityGIS...	
Matt Storm	https://demo.lucity.net/arcgis/rest/services/Lucity2016/L...	5		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	https://demo.lucity.net/arcgis/rest/services/Lucity2016/LucityGIS...	
Matt Water	https://demo.lucity.net/arcgis/rest/services/Lucity2016/L...	3		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	https://demo.lucity.net/arcgis/rest/services/Lucity2016/LucityGIS...	
Matt Sign Editable	https://demo.lucity.net/arcgis/rest/services/Lucity2016/S...	6		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
Matt AGO 1	https://services.arcgis.com/53PW7Esq9rERkspc/arcgis/...	2		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	https://services.arcgis.com/53PW7Esq9rERkspc/arcgis/rest/servi...	
Matt AGO 2	https://services.arcgis.com/53PW7Esq9rERkspc/arcgis/...	4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	https://services.arcgis.com/53PW7Esq9rERkspc/arcgis/rest/servi...	
Matt Park Editable	https://demo.lucity.net/arcgis/rest/services/Lucity2016/L...	4		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		