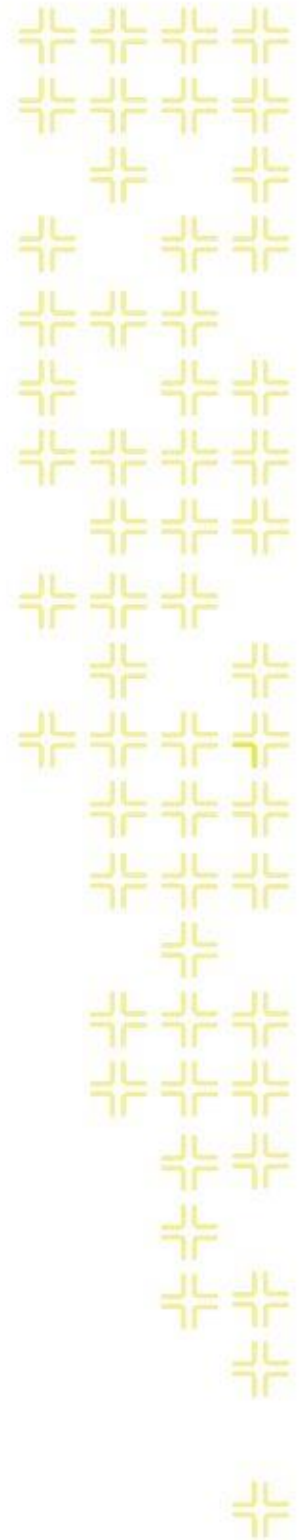TRAINING GUIDE

Advanced Lucity GIS- Working with Feature Services

Advanced Lucity GIS- Working with Feature Services

In this session, we'll cover the Lucity GIS integration components that utilize feature services.

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What is a Feature Service?

Esri's definition of a feature service:

Feature services allow you to serve features over the Internet and provide the symbology to use when displaying the features. Clients can execute queries to get features and perform edits that can be applied to the server. Feature services provide templates that can be used for an enhanced editing experience on the client. Data from relationship classes and nonspatial tables can also be queried and edited using feature services.

In short, a feature service is simply an editable map service. It is a way to distribute your operational data over the internet where it can be edited in multiple environments by multiple users.

Lucity tools that use Feature Services

- Lucity to GIS edits
- GIS Scheduled Tasks
- Lucity Web Map redlining/editing
- Lucity Spatial (map services could also be used)
- Work Maintenance and Alternate Zones (map services could also be used)

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Creating Feature Services

Feature Services are created from an ArcMap document. There are many factors and requirements that apply when creating feature services based upon the underlying data and your specific GIS environment. The following steps will walk through creating a feature service for a typical Lucity client; however, detailed instructions for authoring feature services based upon your specific configuration can be found on Esri's online documentation at:
http://server.arcgis.com/en/server/latest/publish-services/windows/author-feature-services.htm

Requirements

- A valid spatial reference must be defined.

  - Most likely your feature classes have already been associated to a valid spatial reference, if not, you must specify a spatial reference for the map document.

- Only include data in the map document that you want to edit.

  - Publish data such as basemap layers in a different service

- The database connection used to add the data in the map must have editing permission on the data.

  - If you loaded the data in the map using a database connection that was read-only then the data will not be editable in the feature service

  - If you loaded the data in the map using Operating System Authentication, then you must make sure the ArcGIS Server account was granted editing permission to the data. Lucity recommends using Database Authentication connection NOT Operating System Authentication to avoid this factor when troubleshooting issues.

  - If working with versioned data, the version in the map document is the one that will be exposed through the feature service when published.

- Layers based on views are not supported

  - Publish this data in a different service

- Do not duplicate layers in the map

  - A feature class should only be added once in the map. Don't have multiple instances of the same feature class in the map.

- You must define a default z-value for layers that are z-aware.

- Additional limitations apply to layers that are m-aware

- All layers must be from the same geodatabase

- Additional limitations apply to layers that participate in a geometric network

  - The data must be in the same projection and coordinate reference system used by the editing client application.

- The following data types are NOT supported in feature services:

  - Annotations, Dimensions, Group layers, Layers and tables based on views, Query layers that contain virtual columns or where clauses and joins, Rasters, Terrains

Configure Map Document

1. Define symbology for each layer

    a. Feature services support simple, unique value, class break, and cartographic representation renderers. However, proportional symbols or unique value renderers based on multiple fields are not supported.

    b. Symbol types may be downgraded if not supported. The following symbols are supported:

        i. Line layers- simple line symbols

        ii. Polygon layers- simple fill and picture fill symbols

        iii. Point layers- simple marker and picture marker symbols

2. Define feature templates

    a. Each layer must have a feature template defined

    b. The easiest way to define a feature template is to simply start an edit session. ArcMap will automatically create a default template for each layer that doesn't already have one defined.

3. Set a scale range (optional)

    a. By default, feature services only display 1,000 features.

    b. To improve performance and prevent the layer from displaying at a scale in which more than the maximum number of features would appear you should set a scale range

    c. Typically, you would only want features to become visible if zoomed in within a certain extent

4. Set field properties (optional)

    a. Field aliases, field visibility, field read-only properties

5. Set the desired field to display by default. This is important if using this service with Lucity mobile, as it is the default field value shown when identifying a feature. Most likely, you would want this to be the asset FaciltyID/CommonID field.
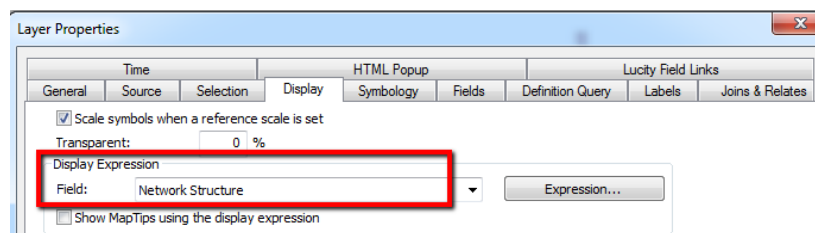
    a.

6. Joined Data

    a. If a feature class has an attribute join to another table, the other table's fields will not be available in the feature service. Keep this in mind when publishing feature services for layers with joins.

Publish Feature Service

Once you have added and configured all the layers in the map, you are ready to publish the feature service.

1. Run the Lucity Alias Import tool. This is an important step as it will ensure that all your feature classes in the map are properly configured with Lucity. This step, although isn't required is strongly recommended. Not only does it make sure that Lucity is aware of the alias names, it also checks that each feature class has other required fields such as the OID, Shape, and FacilityID.

   a. To run the Lucity Alias Import tool, click the **Alias Import** button on the Lucity editor toolbar in ArcMap. If not already logged in, you may be prompted to select a client and log into Lucity using your user credentials.

   b. The following prompt will be displayed, click Yes.
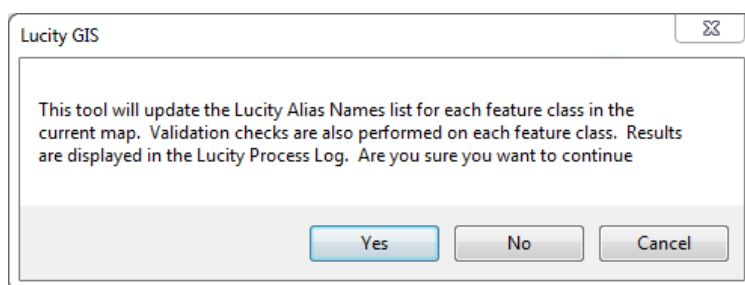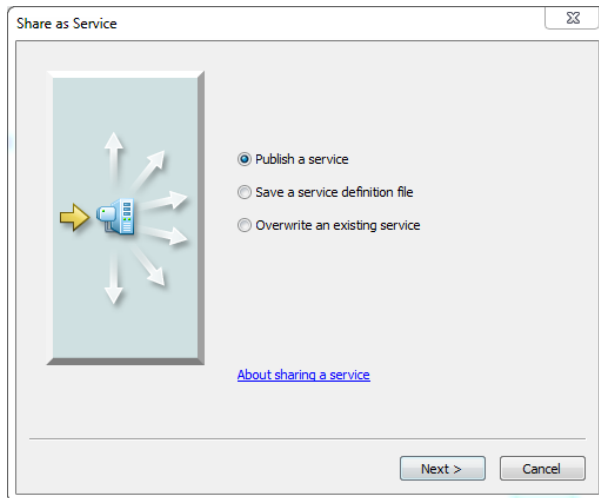

   c. The results of the process will be displayed in the Lucity Process Log. An example is shown below.
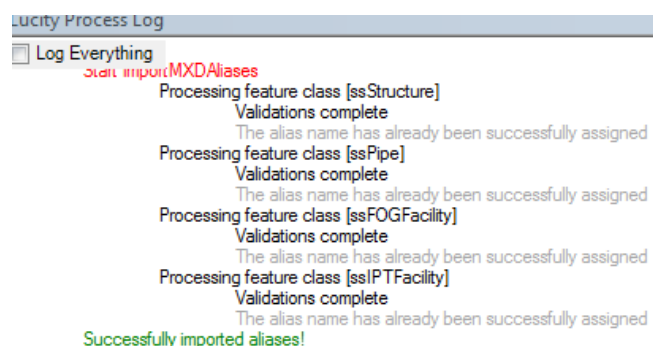

2. Start the publish service process. Go to File>>Share As>>Service...
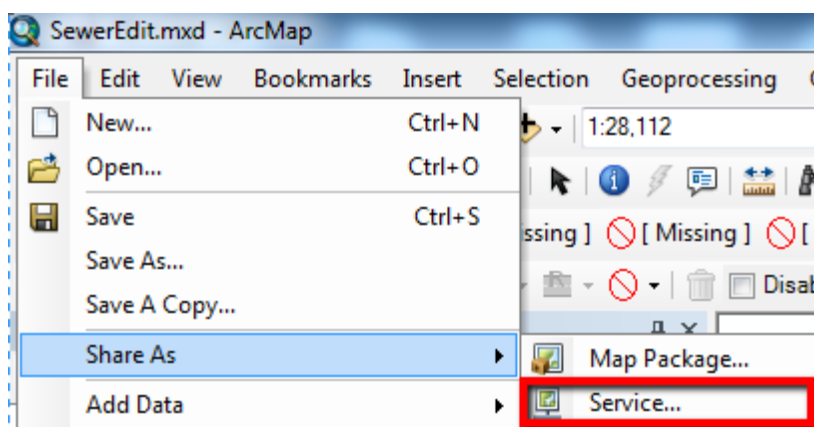
3. The following prompt will display. Select the corrisponding option based on if you are creating a new service or re-publishing an existing service.

4. Next, you'll need to choose a connection to your ArcGIS Server and a name for the service.

   a. If you haven't already created a connection, you'll need to click the button to the right of the dropdown to create a new connection.

   b. The service name can be whatever you would like as long as it is unique for the service directory. Note: The map document name is used as the default service name.
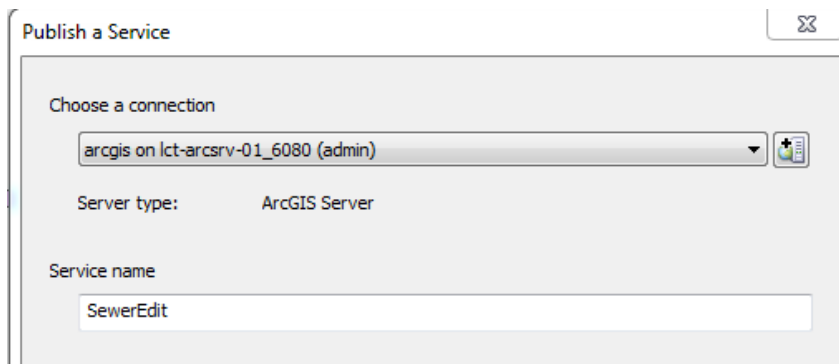
5. Determine where you want the service to reside.

   a. The default location would be your ArcGIS Server root directory, but you can choose an existing subfolder or create a new folder.
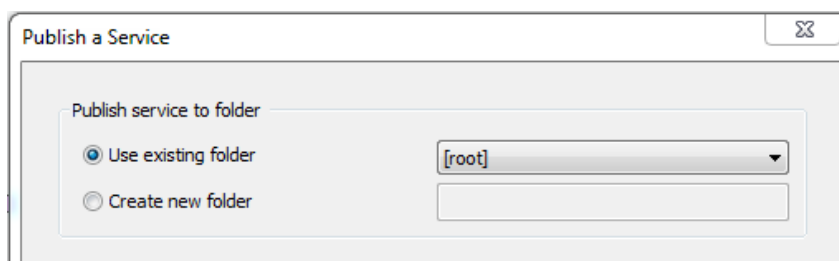
6. The Service Editor dialog will appear. There are many options and settings on this form. Please refer to Esri's help documentation for full details on each item. The following are just a few settings that should be reviewed as they relate to Lucity:

a. Maximum number of records returned by the server. The default is 1000 records, depending on your data, environment, and server you may want to adjust that amount.

b. **Enable Feature Access**. That is the critical component that creates the associated feature service with your map service. When you enable Feature Access you will notice a new submenu will appear under Capabilities for Feature Access.

c. Modify the Feature Access capabilities. In the left pane of the Service Editor, click Feature Access.

i. **Create**- Allows users to add features to the feature service. This is enabled by default. This is **not required** by Lucity UNLESS you are using a GIS Scheduled Task (Lucity to GIS) for inspections.

ii. **Delete**- Allows users to delete features in the feature service. This is enabled by default. This is **not required** by Lucity UNLESS you are using a GIS Scheduled Task (Lucity to GIS) for inspections and have the option set to only maintain the latest inspection data.

iii. **Extract**- Allows users to extract copies of the data using custom applications. This is disabled by default. This is **not required** by Lucity.

iv. **Query**- Allows users to query and view the data. This is enabled by default. This **IS required** by Lucity.

v. **Sync**- Allows users to edit data while offline. This is disabled by default. This is **not required** by Lucity UNLESS you plan to access this service offline on Lucity mobile.

vi. **Update**- Allows users to update features. This is enabled by default. This **IS required** by Lucity if this feature service is the one configured to receive Lucity to GIS updates.

1. Note: If the service is to be edited from ArcMap you must have the Create, Delete, and Update options enabled.

vii. **Allow geometry updates:** Allows users to edit the geometry of a feature. This is enabled by default. This is **not required** by Lucity UNLESS you are using a GIS Scheduled Task (Lucity to GIS) for inspections.

viii. **Allow update of true curves:** Allows users to replace the true curve geometry. This is disabled by default. This is **not required** by Lucity.

ix. **Apply default z-value:** Allows you to specify a default z-value that will be applied when no z-value is provided. This is recommended if you have z-aware feature classes in the service.

x. **Enable ownership-based access control on features:** Allows for advanced restrictions so users can only access/modify features they own.

d. After you have finished setting all the options and settings, you should Analyze the configuration before publishing. On the upper right corner of the Service Editor window click the Analyze button.
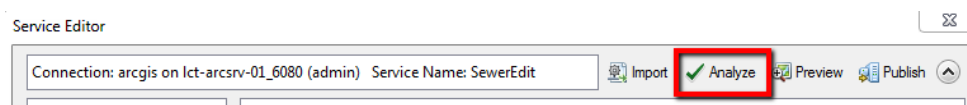
e. Review the results from the Analyze operation. These will appear in Prepare window below. Any errors must be addressed before you publish the service, warnings and messages should be reviewed and optionally resolved on a case-by-case basis.

Note: One error you may encounter if this is the first time you have attempted to publish data using the connection properties with the map data is *Layer's data source is not registered with the server and data will be copied to the server*. There is more than one way in which you can resolve this error, but one way would be to right-click and select *Register Data Source with Server*
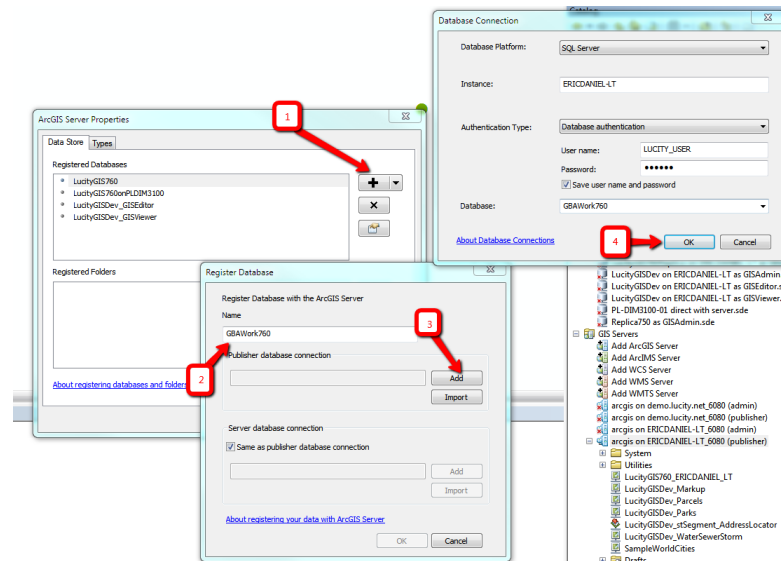
f. After all issues have been resolved, you can publish the service. On the upper right corner of the Service Editor window click the Publish button.
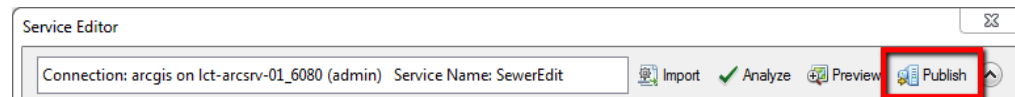
g. This will kick-off the packaging process and you will receive a prompt once the service has successfully been published.
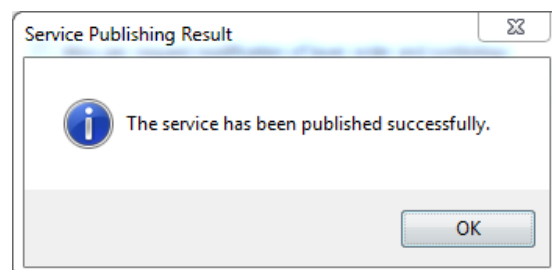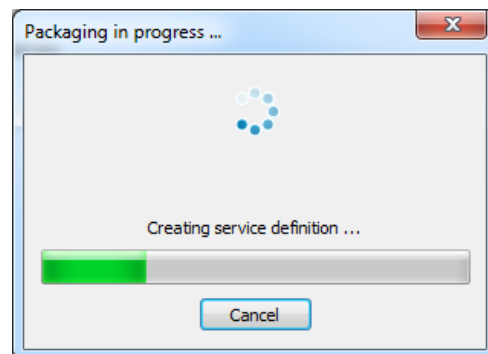
Defining Feature Services in Lucity

After your feature service(s) have been created, you'll need to provide Lucity with some information pertaining to those services so before the Lucity GIS tools can work with them.

You will need to provide Lucity with the url to the map service and in some cases the corresponding feature service. When you create an ArcGIS Server feature service, two services are actually created: a map service (url ending in \MapServer) and a feature service (url ending in \FeatureServer). Some capabilities are only available in a map service and some only in a feature service. If the service is to be used with the Lucity webmap or a Lucity mobile map (iOS or Android) then you should provide Lucity with the url to the MapServer.

Map Server Url
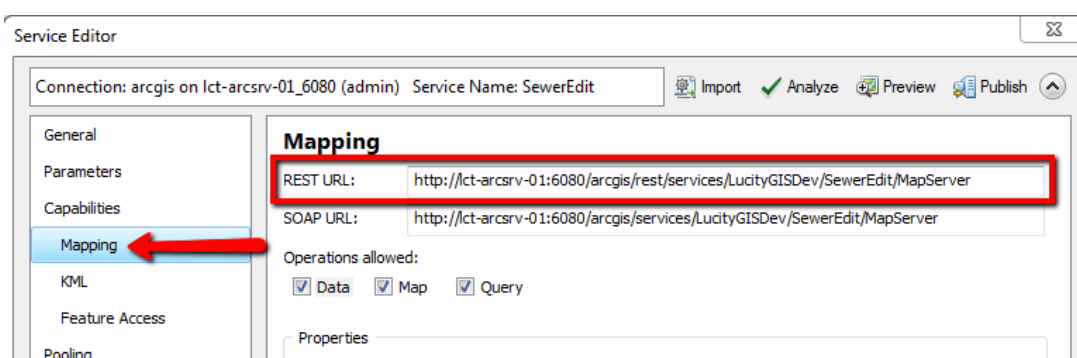
Feature Server Url

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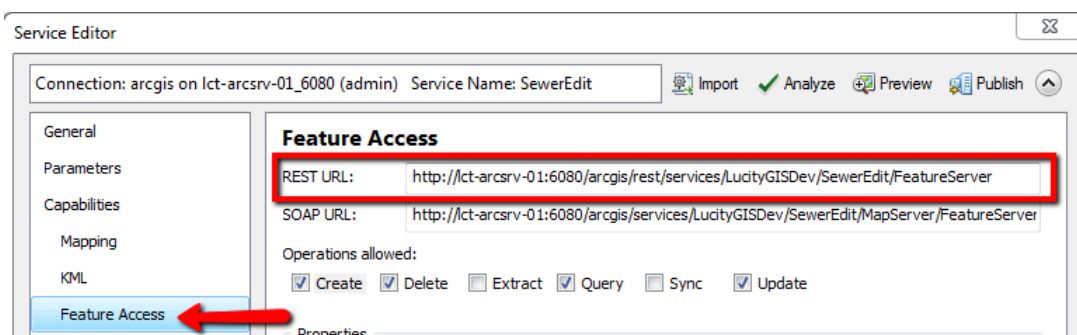
Lucity Administration Tool: GIS Services

Starting with version 2016r2, all service information is now stored in a centralized location with the GIS Services module in the Lucity Administration Tool.
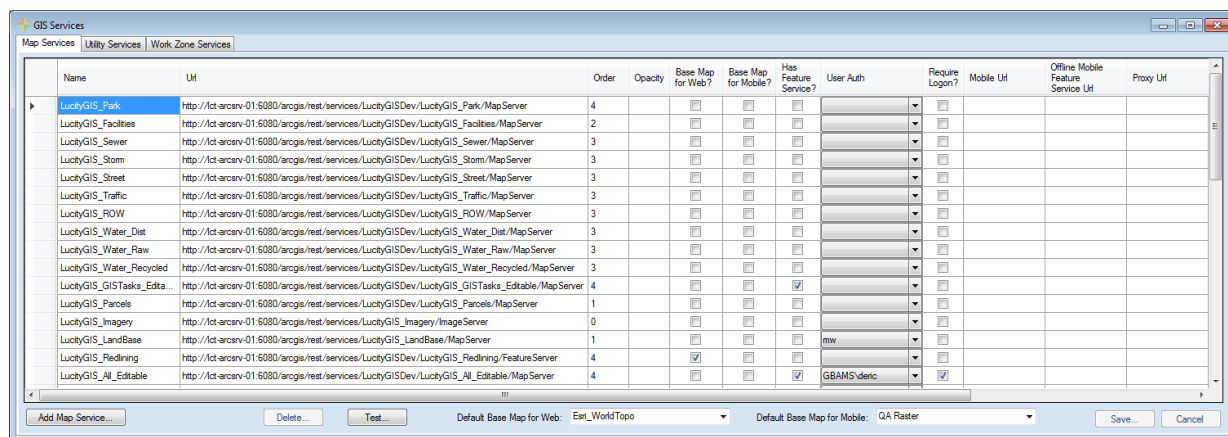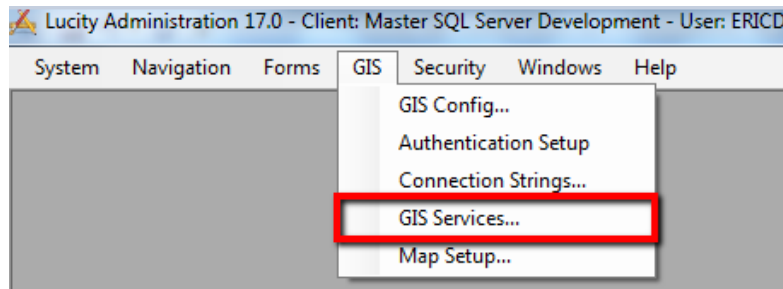
1. Click the *Add Map Service* button to create a new record.
2. At a minimum fill out the following:
   a. **Name**: Provide a unique name for the service. This is used to identify the service during setup.
   b. **URL**: The REST URL for the feature service.
      i. NOTE: If you want your feature service to be used in the Lucity webmap or mobile map then you will need to provide the URL to the map service component as described in the previous section and then check the Has Feature Service option described below.
   c. **Has Feature Service?**: This setting indicates if the service has a corresponding feature service.
      i. This option is only enabled if the URL specified in the previous step refers to a map service (ends in \MapServer). If the URL specified in the previous step ends in \FeatureServer then Lucity already knows
      ii. Basically for feature services you have two options:
         1. Provide the url to the feature service in the URL field, and DO NOT check the Has Feature Service option.
         2. Provide the url to the map service in the URL field, and DO check the Has Feature Service option.

d. **User Auth**: If the service is secure, select a user authentication that has permission to access it.

3. Once you have completed filling out the information, click the Save button on the bottom right of the GIS Service form. The service is now in the system and can be associated to the geodatabase(s), feature class(es), and map setups configured with Lucity.

Lucity Administration Tool: GIS Map Setup

If you wish to provide the ability to edit a feature service in a Lucity web or mobile map then you need to add that service to the map setup. This can be done in the Map Setup module in the Lucity Administration Tool.
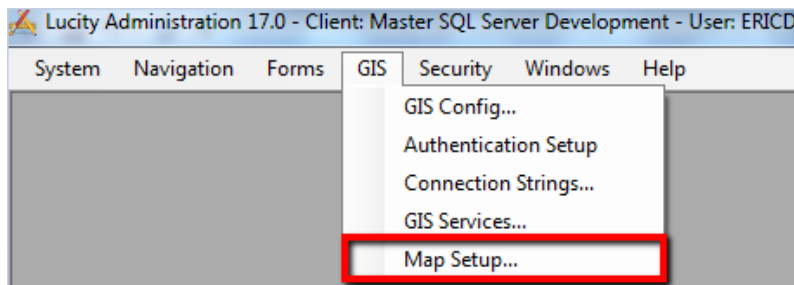
1. On the Map Setup form, select the desired map and click the *Edit Map Setup* button.
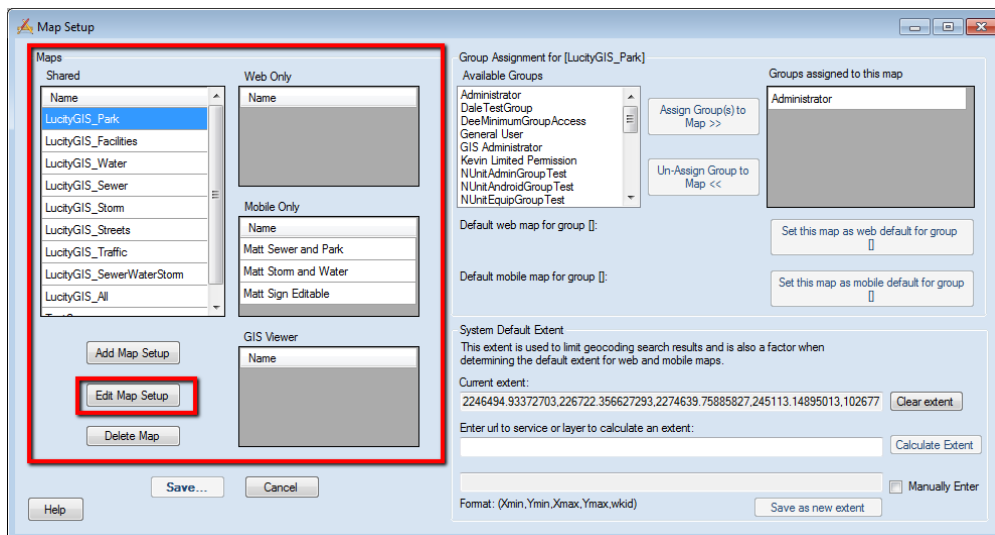
2. The GIS Map Edit form will appear.
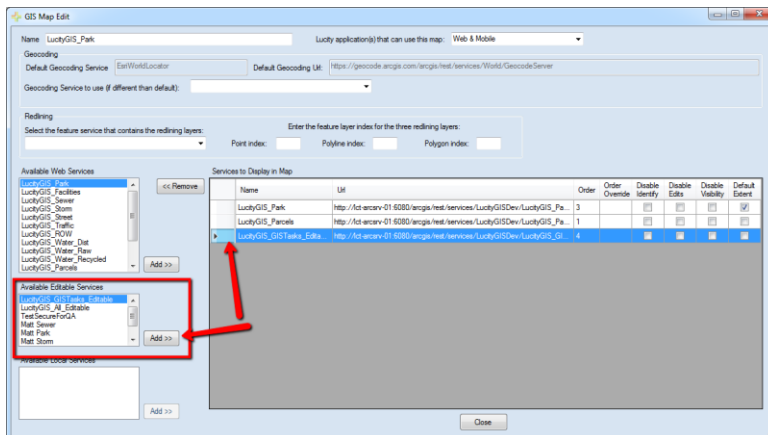
3. Under the Available Editlable Services form select the service you wish to add to the map, and click the *Add* >> button. This will add a record under the Service to Display in Map grid for the service. Click Close.

4. Back on the Map Setup form, click the Save… button. The map has been saved and the next time it is accessed the user should have the ability to edit the data that was provided in that service.

Lucity Administration Tool: GIS Connection Strings

Each geodatabase configured with Lucity can be assigned to a default service. This default service is used by many of the Lucity GIS tools. Some tools require this service to have feature access capabilities enabled (feature server) such as pushing attribute edits from Lucity to GIS.

Note: Associating a service to a geodatabase can also be done via the Lucity Geodatabase Configuration Tool in ArcCatalog.
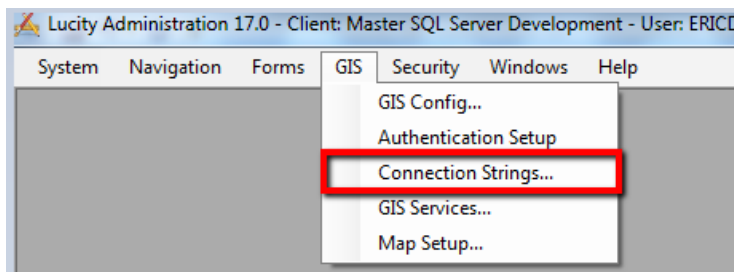
- On the GIS Connection Strings form, each geodatabse connection can be associated to its own Editable Map Service. Simply, select a service from the drop down. Once your selection is made the change is saved automatically.
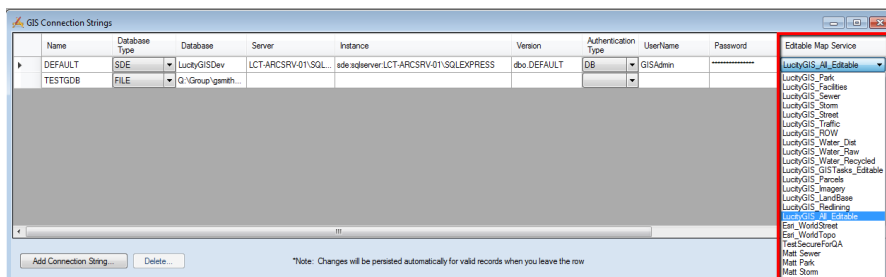
GDB Config: Edit Map Service (Geodatabase level)

Each geodatabase configured with Lucity can be assigned to a default service. This default service is used by many of the Lucity GIS tools. Some tools require this service to have feature access capabilities enabled (feature server) such as pushing attribute edits from Lucity to GIS.

Note: Associating a service to a geodatabase can also be done via the GIS Connection Strings module in the Lucity Administration Tool.

1. In ArcCatalog, click the Geodatabase Configuration menu item on the Lucity GIS Toolbar.
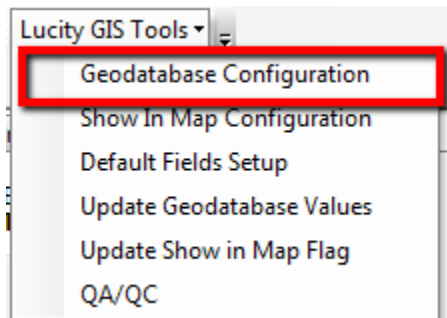
2. The Geodatabase Configuration form will appear. Select the desired geodatabase node, and on the Connection Properties tab, there is an Edit Map Sevice section that allows you to specify a service from the drop down. Once your selection is made the change is saved automatically.
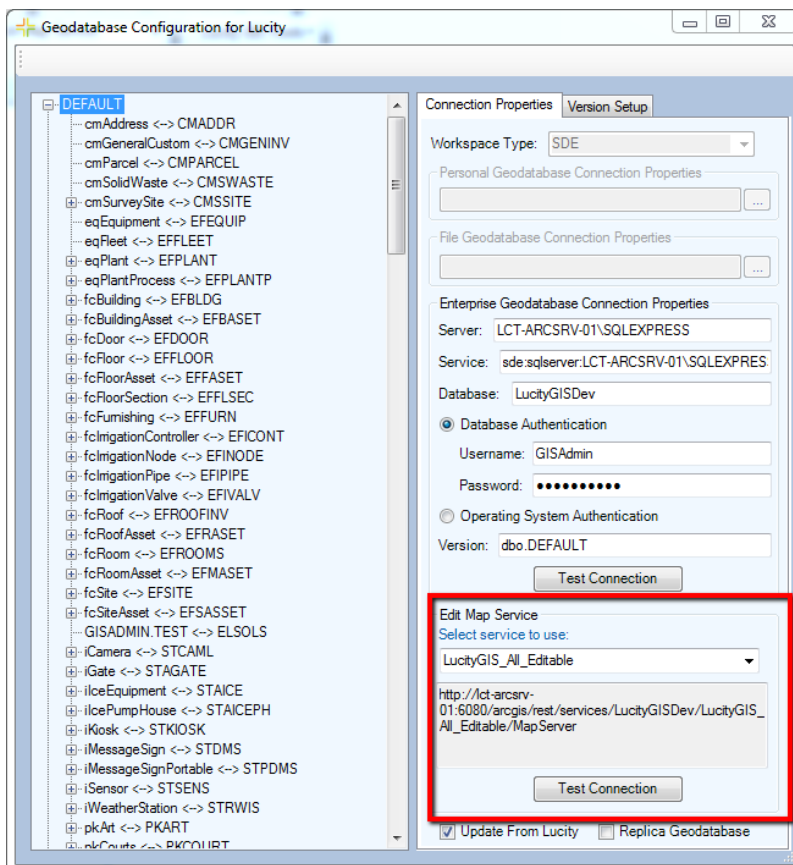
GDB Config: Edit Map Service (Feature Class level)

Each feature class configured with Lucity can be assigned to a service. If a service is not defined at the feature class level, then the service defined with the associated geodatabase will be used. This default service is used by many of the Lucity GIS tools. Some tools require this service to have feature access capabilities enabled (feature server) such as pushing attribute edits from Lucity to GIS.

Note: Associating a service to a feature class can also be accomplished via the Update Feature Class Services tool in the Geodatabase Config tool.

1. In ArcCatalog, click the Geodatabase Configuration menu item on the Lucity GIS Toolbar.
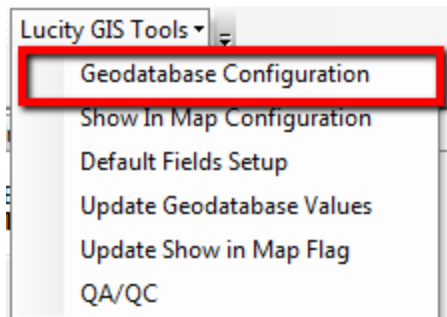
2. The Geodatabase Configuration form will appear. Select the desired feature class node, and on the Edit Map Service tab, there is an Alternate Feature Sevice section that allows you to specify a service from the drop down. Once your selection is made the change is saved automatically.

    a. This setting is optional. If an alternate feature service isn't defined, then Lucity GIS tools needing access to the feature class via a service will attempt to use the service defined at the geodatabase level.
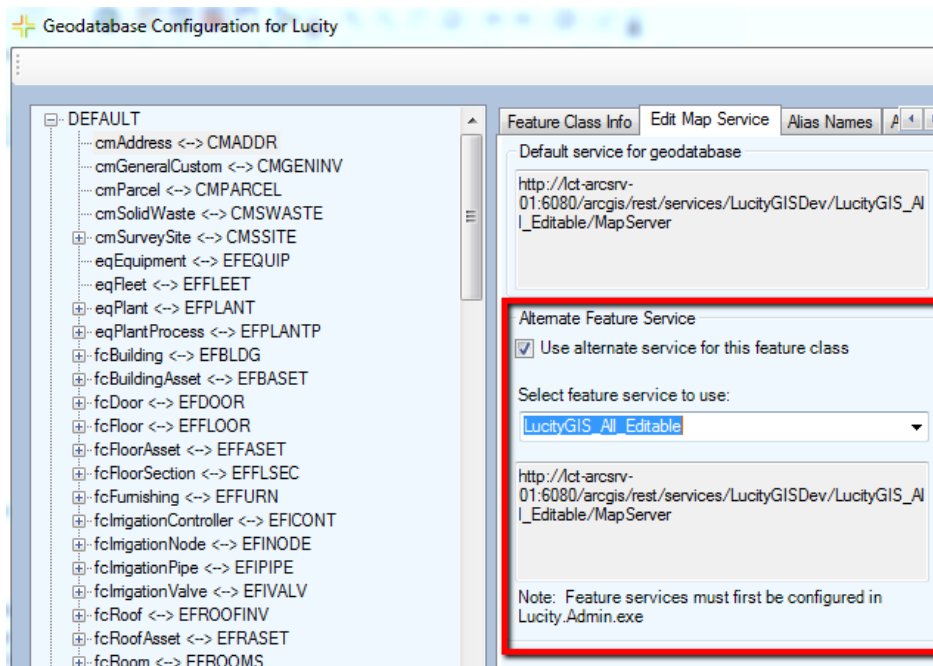
GDB Config: Update Feature Class Services

Each feature class configured with Lucity can be assigned to a service. If a service is not defined at the feature class level, then the service defined with the associated geodatabase will be used. This default service is used by many of the Lucity GIS tools. Some tools require this service to have feature access capabilities enabled (feature server) such as pushing attribute edits from Lucity to GIS. The Update Feature Class Services tool easily allows you to associate multiple feature classes to a single service.

Note: Associating a service to a feature class can also be accomplished via the Edit Map Service tab on an individual feature class in the Geodatabase Config tool.

1. In ArcCatalog, click the Geodatabase Configuration menu item on the Lucity GIS Toolbar.
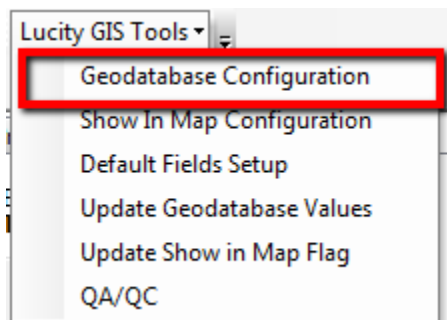
2. The Geodatabase Configuration form will appear. Right-click on the desired geodatabase node, and click the *Update Feature Class Services* menu item.
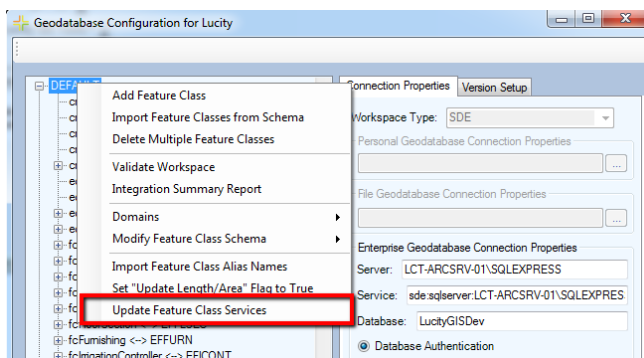
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3. The Feature Service Associations form will appear.

4. Select the desired service (either choose the Geodatabase map service or select the alternate service you wish to associate/disassociate feature classes).

5. Once the service is selcted, the *Assigned Feature Classes* listbox will display all the feature classes currently assigned to the selected service. Likewise, the *Unassigned Feature Classes* listbox will list those that do not have the selected service listed as their default.

6. Use the >> and << buttons to associate and disassociate the feature classes to the selected service.

7. Once you have completed with the changes, click the Save button.

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GIS Updates via Feature Services

Starting with version 2014r2 Lucity offers the ability to push edits from Lucity to GIS directly via a feature service. Unlike the old Lucity SOE, this new option doesn't require any Lucity installation components on your ArcGIS for Server.

Requirements

A few requirements must be met before implementing the GIS Updates via Feature Service option:

- Each Lucity linked feature class must be assigned to a default map service
- The default map service for the feature class must:
    - Contain the feature class
    - The feature class alias as listed in the service must be configured with Lucity
    - Enabled Feature Access capabilities
        - At a minimum, the Query and Update operations should be allowed
- System Settings in UI Admin must be configured:
    - The "Use Feature Service instead of Lucity SOE" system setting must be set to TRUE

Setup

Create Feature Service

If you haven't already created a map service with Feature Access capabilities enabled, then you will need to do that first.

Assign default map services

The GIS Updates via Feature Service interacts with map services in order to push edits made to Lucity to their corresponding feature in GIS. To push edits to the GIS the following process is followed:

1. Determine the list of feature classes linked to the Lucity asset type being edited.
2. Do the following for each feature class until the asset is found:
    a. Determine the map service
        i. If a map service is defined at the feature class level then that one will be used.
        ii. If a map service isn't defined at the feature class level then the one defined at the geodatabase level will be used.
    b. Query the map service for the asset
        i. If it exists, update all asset fields that are linked to Lucity.
        ii. If it doesn't exist, move to the next feature class

- The geodatabase edit map service is defined in the Geodatabase Configuration Tool in ArcCatalog. It is listed under the Connection Properties tab when you have a geodatabase node selected.

- A service defined at the feature class level will be listed under the Edit Map Service tab when you have the feature class node selected.

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Configure System Settings

In UI Admin, system settings the following must be configured:

1. On the GIS Edit Integration tab, set the "Use Feature Services instead of Lucity SOE" to TRUE
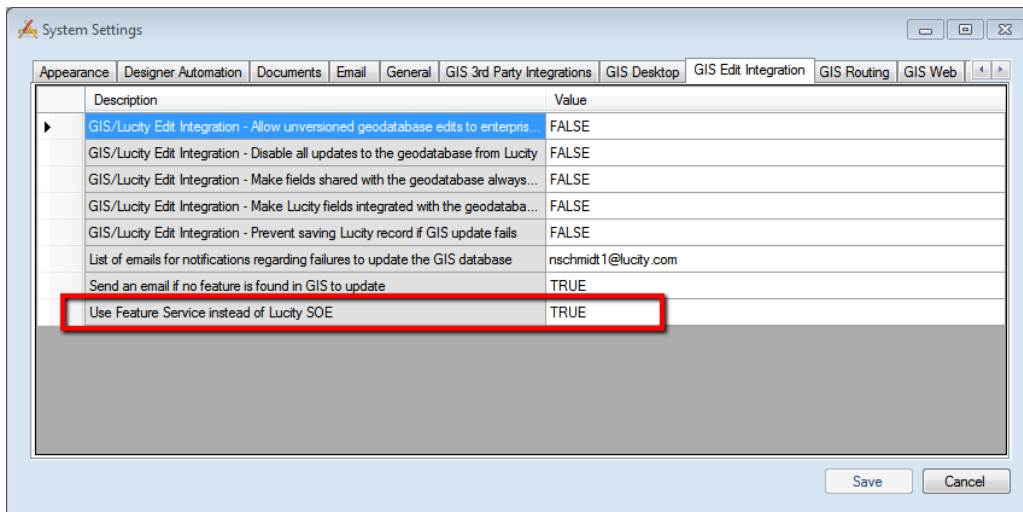
- o **Allow unversioned geodatabase edits to enterprise geodatabase**: This allows edits to be made to unversioned geodatabases.

- o **Disable all updates to the geodatabase from Lucity**: This prevents the geodatabase from being updated with edits made in Lucity desktop and web.

- o **Make fields shared with the geodatabase always read only**: Any field that is shared with the geodatabase will be set as read-only in Lucity desktop and web.

- o **Make Lucity fields integrated with the geodatabase read only if the geodatabase cannot be updated**: If a connection to the geodatabase fails when loading a form, all fields integrated with the geodatabase will be read-only.

- o **Prevent saving Lucity record if GIS update fails:** (Web Only) If a modification is made to a record in Lucity and the geodatabase fails to get updated this will prevent the record in Lucity from being saved.

- o **List of emails for notifications regarding failures to update the GIS database:** Enter a comma delimited list of email addresses. This list will receive emails when the GIS update fails to update the geodatabase.

- o **Send an email if no feature is found in GIS to update:** Sends an email when the GIS Update cannot find a feature in the geodatabase to update. This is sent to the list specified in the "list of emails for notifications regarding failures…" setting.

How it works

What occurs when opening a Lucity record for editing

The following page shows the process that occurs when opening a Lucity record in the desktop or web for editing. This process determines if the field should be editable or read-only based upon the GIS settings.

Lucity GIS Updates- Process that determines the editability of a Lucity field

Flowchart

Start → Disable all updates to the geodatabase from Lucity?
- **No** → Field is linked to GIS?
  - **Yes** → Make fields shared with the geodatabase always read-only?
    - **No** → Disable all updates to the geodatabase from Lucity?
      - **No** → Make Lucity fields integrated with the geodatabase readonly, if the geodatabase cannot be upated?
        - **Yes** → Build Service List for Module → Is Service List for Module Empty?
          - **No** → Lucity Field is Editable
          - **Yes** → Lucity Field is Read-Only
      - **Yes** → Lucity Field is Editable
    - **Yes** → Lucity Field is Read-Only
  - **No** → Lucity Field is Editable
- **Yes** → Make fields shared with the geodatabase always read-only?
  - **No** → Lucity Field is Editable
  - **Yes** → Lucity Field is Read-Only

Build Service List for Module

For each feature class associated to module → Does feature class have a service defined?
- **Yes** → Is service editable (as listed in map services in UI Admin)?
  - **Yes** → Change url so pointing to IFeatureServer instead of MapServer → Connect to service → Connection Successful?
    - **Yes** → Is layer in service?
      - **Yes** → Add service to list → Service List for Module
    - **No** → Was this a service defined at the feature class level?
  - **No** → Connect to service
- **No** → Is there a service defined at the geodatabase level?
  - **No** → Was this a service defined at the feature class level?
    - **Yes** → (loop)

Lucity System Setting

Version 2014r2- 8/7/2014

Advanced Lucity GIS- Working with Feature Services (ACT 2016)   22
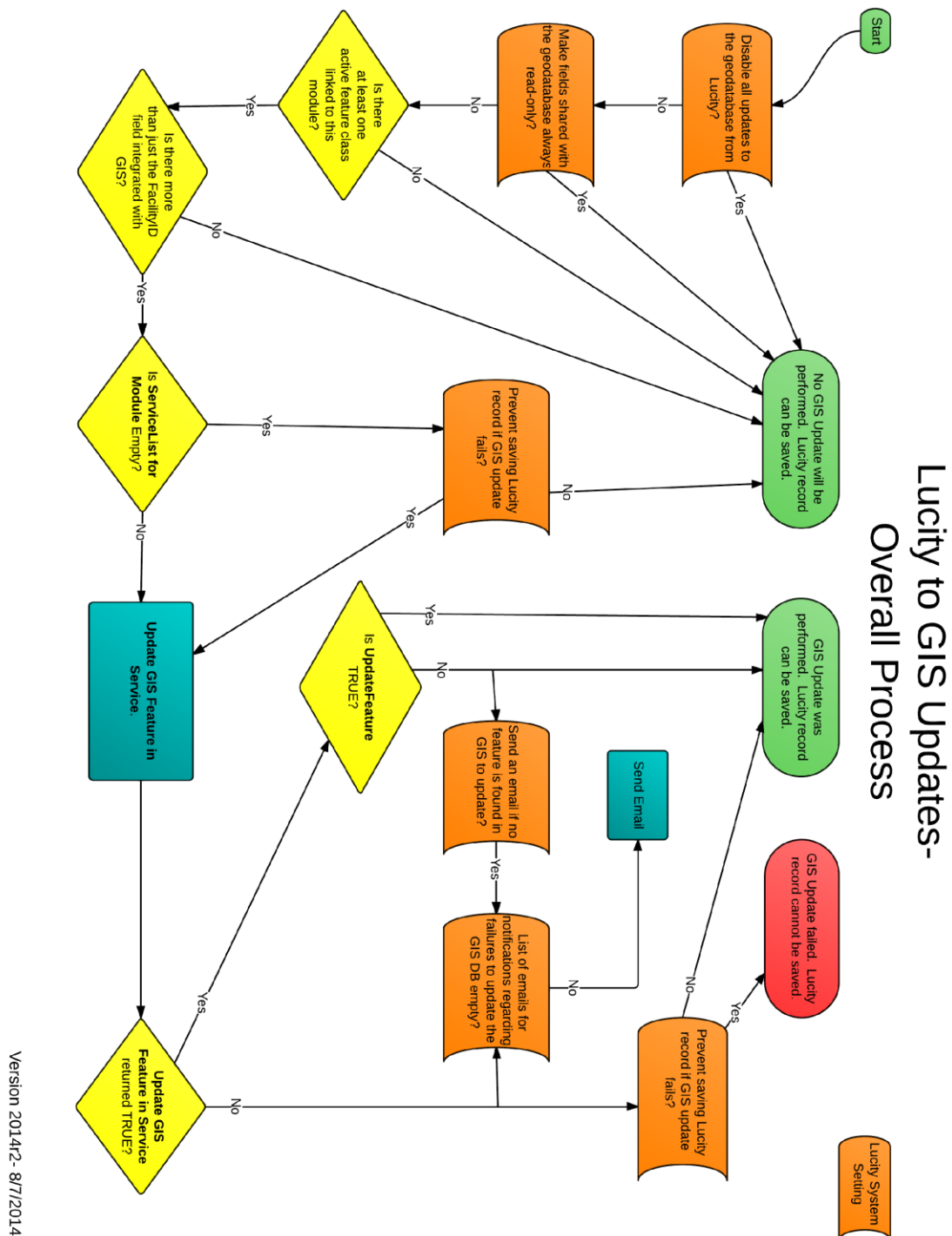
What occurs when saving a Lucity record after editing

The following pages show the process that occurs when saving a Lucity record in the desktop or web. The save could be due to adding a new record or modifying an existing one. This process determines if the GIS record should be edited, and if so, performs the edit.

Lucity to GIS Updates-
Overall Process

Version 2014r2- 8/7/2014

Lucity to GIS Updates- Update GIS Feature in Service

Start

Service List for Module

Have all services been processed?
- No → Get next service in **Service List for Module**
- Yes → Is **Error Message List** empty?

Get next service in **Service List for Module** → Does layer exist in service?
- No (back to Have all services been processed?)
- Yes → Build GIS Payload (query and update statements).

Build GIS Payload (query and update statements). → Error with Payload?
- Yes → Add error to list → **Error Message List**
- No → Does feature exist in layer?

Does feature exist in layer?
- No → Was there an error?
- Yes → Send update to feature service.

Send update to feature service. → Was a successful response received?
- No → Was there an error?
- Yes → Set **UpdateFeature** to TRUE

Was there an error?
- Yes → Add error to list

Is **Error Message List** empty?
- Yes → Return TRUE
- No → Return FALSE

Set **UpdateFeature** to FALSE
Return FALSE
Set **UpdateFeature** to TRUE
Return TRUE

Version 2014r2- 8/7/2014

Lucity GIS- Scheduled Tasks

Scheduled Tasks provide the ability to automatically sync data between your GIS and Lucity products.

Requirements

A few requirements must be met before implementing GIS Scheduled Tasks:

- Each Lucity linked feature class must be assigned to a default map service
- The map service for the feature class must:
    - Contain the feature class
    - The feature class alias as listed in the service must be configured with Lucity
    - The Lucity To GIS synchronization task also requires:
        - Enabled Feature Access capabilities (with Create, Delete, Query, and Update)
- System Settings in UI Admin must be configured:
    - The "Use Feature Service instead of Lucity SOE" system setting must be set to TRUE
- Enable Esri's Editor Tracking on feature classes
    - At a minimum have a last_edited_date field
    - Record Dates in **UTC** not Database Time!
- Enable Lucity's Last Sync DateTime field on feature classes

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Setup

Assign default map services

The Lucity GIS Task Runner interacts with map services in order to synchronize the data between GIS and Lucity. The following process determines the map service used with the GIS Task:

1. If a map service is defined at the feature class level then that one will be used.

2. If a map service isn't defined at the feature class level then the one defined at the geodatabase level will be used.

- The geodatabase edit map service is defined in the Geodatabase Configuration Tool in ArcCatalog. It is listed under the Connection Properties tab when you have a geodatabase node selected.

- A service defined at the feature class level will be listed under the Edit Map Service tab when you have the feature class node selected.
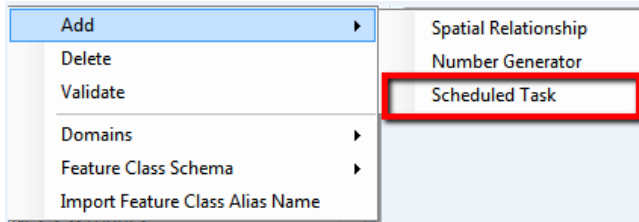
Creating a new Scheduled Task

To setup a new Scheduled Task for a feature class:

1. In the Lucity Geodatabase Configuration tool in ArcCatalog, right-click on the feature class node and click Add>>Scheduled Task.

2. The following form will appear:

3. Under General Info- select the desired Task Type from the drop down menu. The options are: "Sync- Lucity to GIS" and "Sync- GIS to Lucity".

   a. Note: The Disabled checkbox will prevent the Scheduled Task from being processed by the GIS Task Runner service.

4. Filter Options: Select whether the task will process all records (default) or process a filtered set.

   a. If using a Filtered Set- the Select Filter button will only be enabled for task types of "Sync- Lucity to GIS".

   b. If manually entering the Where Clause, it must pass validation of the underlying data source.

5. Options: Adjust any additional settings as needed:

a. **Only process records modified since last run**- This option checks through the records that were selected for processing and only processes those records that were edited since the last time the scheduled task processed.

   i. Note: If this option is checked and the Task Type is "Sync- GIS to Lucity" then you must also provide the Last Edited DateTime Field. If the Task Type is "Sync-Lucity to GIS", then the Lucity Last Mod Date and Time fields will be used.

   ii. Not checking this option will result in the following prompt. Click OK to proceed.
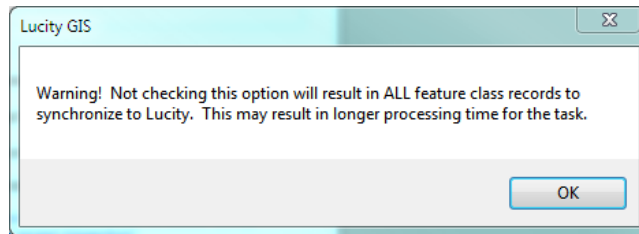
b. **Last Edited Date Time Field**- This option is only enabled if the "Only Process records modified since last run" is checked and the task type is "Sync- GIS to Lucity".

c. **Insert record if it doesn't already exist**- Allows for new records to be inserted into the GIS feature class or Lucity module depending on the task type.

d. **Enable number generators for imports** – Will process the number generators configured for this feature class during the import.

e. **Enable spatial relates for imports** – Will process the spatial relates configured for this feature class during the import. Note: With 2015r2 Reverse Geocode spatial relates are not supported during the GIS Task import process.
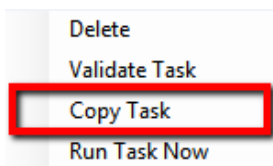
f. **Update existing record**- Allows updates to existing records in the GIS feature class or Lucity module depending on the task type.

g. **Delete previous inspection(s) for asset**- This option is only enabled if the task type is "Sync- Lucity to GIS". This option causes the task to delete any inspection in the feature class that isn't the most recent inspection for an asset. The purpose of enabling this option is if you want the feature class to only contain the most recent inspection for each feature.

6. Scheduling Info: This section can be configured so the task is processed by the GIS Task Runner service.

   a. **Units**- Enter a numeric value that indicates how often the process should run. This value is used in conjunction with the Frequency. For example, if Units = 3 and Frequency = Hours then the Scheduled Task would run every 3 hours.

   b. **Frequency**- Select the desired frequency from the drop down. The options are Minute, Hours, Days, or Months.

   c. **Last Run**- This is disabled by default, showing the last time the scheduled task ran. For new scheduled tasks this will be blank.

   d. **Override**-. For new scheduled tasks, or you wish to reset the last run date to trigger the scheduled task to get processed again, then you can check the Override checkbox which will enable the Last Run text box.

   e. **Next Run**- This indicates the next time the scheduled task should be processed. The GIS Task Runner service uses this value to determine which scheduled tasks to process.

      f.   **Recalc**- If the Units, Frequency, or Last Run information was updated then the Recalc button will update the next run date field based upon the new settings.

7. History: This section is read-only and shows when the Scheduled Task was last picked up, when the sync process started and when it last finished.

8. Process log: This section is also read-only and shows all logging related to the previous processing of the scheduled tasks. When a scheduled task is processed either manually or via the GIS Task Runner service, logging entries are recorded in GBAComm.CMGISTASKLOG. Entries are removed after 30 days.

      a.   **TimeStamp**- The time the entry was inserted

      b.   **Status**- Various descriptions to indicate the processing status

      c.   **Edit**- 1=Inserts, 2=Edits, 3=Deletes

      d.   **Error**-1=TransactionalDetails, 2=ValidationFailed, 3=ProcessFailed, 4=ServiceIssue, 5=BusinessObjectIssue, 6=MissingData

      e.   **ErrorDescription**- Further details regarding the edit or error

      f.   **ErrorException**- Further details regarding error

      g.   **GUID**- The processing batch GUID

      h.   **ModID**- The Lucity Module ID

      i.   **LucityID**- The Lucity Record ID

      j.   **GISID**- The GIS feature's ObjectID

      k.   **Syntax**- The syntax used for either retrieving, updating, inserting or deleting

Copying a Scheduled Task

To facilitate the process of setting up scheduled tasks for multiple feature classes, you can use the Copy GIS Task tool to create a new scheduled task for multiple feature classes:

1. In the Lucity Geodatabase Configuration tool, right-click on the existing Scheduled Task and click Copy Task.

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2. The following form will appear:

a. Note: GIS Task Properties are all read-only. Any item needs to be altered can be done on an individual basis after the Copy GIS Task is complete.

3. On the form select the feature class(es) you wish to create a new Scheduled Task for using the existing scheduled task properties. Once the feature classes have been selected click the Assign GIS Task to complete the process.

Validate a Scheduled Task

A validation tool is available for scheduled tasks that will run the following checks. Note: these same checks are also performed when running the scheduled tasks:

- Verifies at least one option has been set: insert, update, delete.

- Verifies there are feature classes linked to parent module (for inspections only)

- Validates Lucity to GIS field mappings

- Validates list of fields used to determine record uniqueness

- Tests connection to map service for feature class

- Validates feature class exists in the service

- Export Validations

  o Confirms feature class is an inspection feature class

  o Tests connection to parent feature class service(s)

  o If Use Last Sync Date option is true- verifies the Lucity module contains a Last Mod Dt field

  o If Delete option is true- verifies that the Lucity module has a Most Recent Inspection flag

  o Tests the SQL syntax used to obtain the list of Lucity records

- Import Validations

  o If Use Last Sync Date option is true- confirms that a GIS Date Time Field is defined and exists in the layer in service

  o Confirms that the Scheduled Task's Last Sync Date Time is populated

  o If feature class configuration contains the Lucity Last Sync Date field- confirm it exists in layer in service

  o Confirms that the Lucity module contains a Last Mod Dt field

  o Tests the SQL syntax used to obtain the list of GIS records from service

1. To run the validations, in the Lucity Geodatabase Configuration tool, right-click on the existing Scheduled Task and click Validate Task.
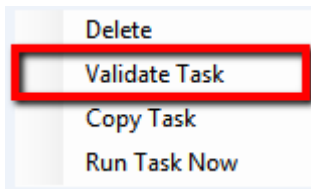
2. The validation will start, once complete you will receive a prompt indicating if the validation passed with our without errors. Any errors or tests that failed validation should be reported in the process log results.

Manually Run a Scheduled Task

With v2014r2 we released a Lucity GIS Task Runner service that, by default, kicks off every min determining if any Scheduled Task is due to run. There may be different situations in which the Scheduled Task needs to be run manually.

1. In the Lucity Geodatabase Configuration tool, right-click on the existing Scheduled Task and click Run Task Now.
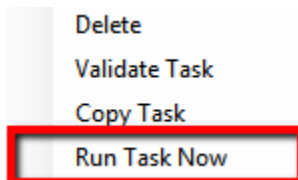
2. The following confirmation prompt will appear. Click Yes if you want to proceed with the process.
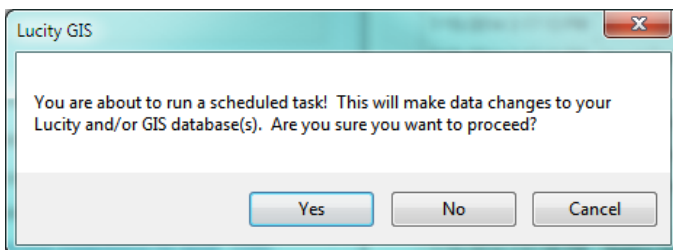
3. Once complete you will receive a prompt indicating if the task completed with our without errors. Any errors or other processing details will be reported in the process log results.
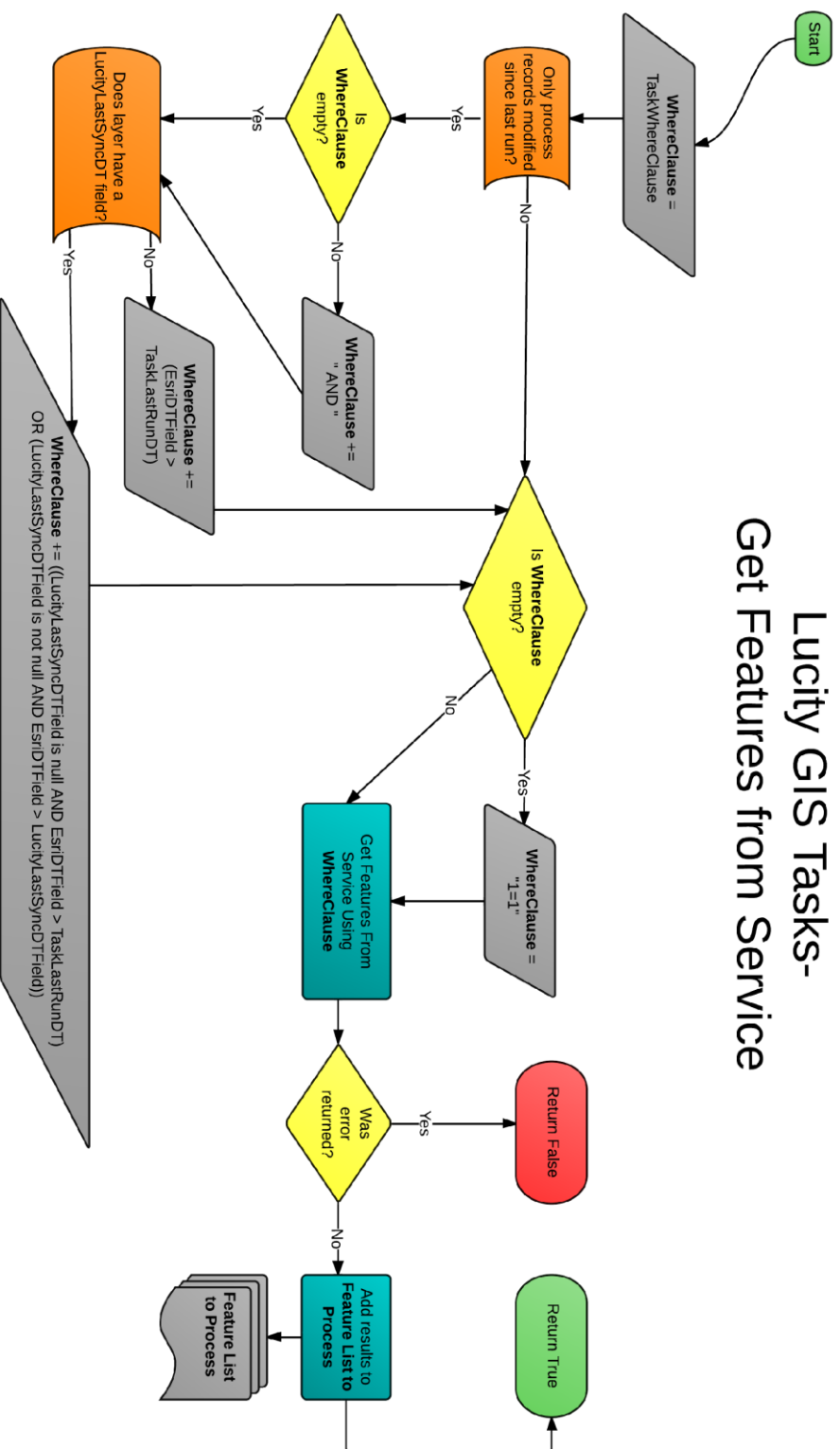
Lucity GIS Tasks- Import Process

Lucity GIS Tasks- Get Features from Service

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Start
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WhereClause = TaskWhereClause

Only process records modified since last run? — Yes → **Is WhereClause empty?**

Only process records modified since last run? — No → **Is WhereClause empty?**

Is WhereClause empty? — Yes → Does layer have a LucityLastSyncDT field?

Is WhereClause empty? — No → **WhereClause += " AND "**

WhereClause += " AND " → **Is WhereClause empty?**

Does layer have a LucityLastSyncDT field? — No → **WhereClause += (EsriDTField > TaskLastRunDT)**

Does layer have a LucityLastSyncDT field? — Yes → **WhereClause += ((LucityLastSyncDTField is null AND EsriDTField is null AND EsriDTField > TaskLastRunDT) OR (LucityLastSyncDTField is not null AND EsriDTField > LucityLastSyncDTField))**

WhereClause += (EsriDTField > TaskLastRunDT) → **Is WhereClause empty?**

WhereClause += ((LucityLastSyncDTField is null AND EsriDTField is null AND EsriDTField > TaskLastRunDT) OR (LucityLastSyncDTField is not null AND EsriDTField > LucityLastSyncDTField)) → **Is WhereClause empty?**

Is WhereClause empty? — Yes → **WhereClause = "1=1"**

Is WhereClause empty? — No → **Get Features From Service Using WhereClause**

WhereClause = "1=1" → **Get Features From Service Using WhereClause**

Get Features From Service Using WhereClause → **Was error returned?**

Was error returned? — Yes → Return False

Was error returned? — No → **Add results to Feature List to Process**

Add results to Feature List to Process → Feature List to Process

Return True → **Add results to Feature List to Process**

Troubleshooting

GIS Tasks are stored in the GBAComm database in CMGISTASKS. As a GIS Task is being processed any errors and/or process updates are recorded in CMGISTASKSLOG. Entries in this table are currently set to be deleted after 30 days. The results of a GIS Task can be found in the Geodatabase Configuration tool under the GIS Task's process log. The following give a description of what each item represents:

Process log

	TimeStamp	Status	Edit	Error	ErrorDescription
	7/31/2014 5:55:04 PM		0	0	Skipping Feature- Esri Last Edited Date Time
	7/31/2014 5:55:04 PM	Starting Import. Number...			
	7/31/2014 5:55:04 PM	ValidationsPassed			
	7/31/2014 5:55:04 PM		0	0	SQL used to retrieve GIS records to process
	7/31/2014 5:55:04 PM	ValidatingForImport			
	7/31/2014 5:54:59 PM	ValidatingConnectionInfo			
	7/31/2014 5:54:59 PM	ValidationBegin			
	7/31/2014 5:49:06 PM	Import Complete.			
▶	7/31/2014 5:49:06 PM		2	0	Updated existing record
	7/31/2014 5:49:04 PM		0	0	SQL used to retrieve Lucity record
	7/31/2014 5:49:04 PM		0	0	Skipping Feature- Esri Last Edited Date Time
	7/31/2014 5:49:04 PM	Starting Import. Number...			
	7/31/2014 5:49:04 PM	ValidationsPassed			
	7/31/2014 5:49:04 PM		0	0	SQL used to retrieve GIS records to process
	7/31/2014 5:49:04 PM	ValidatingForImport			
	7/31/2014 5:48:59 PM	ValidatingConnectionInfo			
	7/31/2014 5:48:58 PM	ValidationBegin			

Syntax

{"ParentLinkingCriteriaForInspection":null,"Criteria":
[{"FieldName":"HY_NUMBER","FieldValue":"test0731a"}],"AdditionalCriteria":[],"Data":
[{"FieldName":"HY_OWNR_CD","FieldValue":2},{"FieldName":"HY_TYPE_CD","FieldValue":4},
{"FieldName":"HY_INLT_SZ","FieldValue":2},{"FieldName":"HY_COLR_CD","FieldValue":null},
{"FieldName":"HY_GPS_FLG","FieldValue":0},{"FieldName":"HY_ELEV","FieldValue":50},

- TimeStamp: This is the time the record was inserted into CMGISTASKSLOG (it will be listed in database time).

- Status: This is a description of what the current process status is. It typically indicates processing events such as starting validations, or results of import/export processes.

- Edit: The type of edit being performed. 0 = N/A, 1 = Insert, 2 = Update, 3 = Delete.

- Error: The type of error encountered or if it is 0 then details regarding the transaction. 0 = Transactional Details, 2= Validation Failed, 3 = Process Failed, 4 = Service Issue, 5 = Business Object Issue, 6 = Missing Data

- Error Description- Further details regarding the edit or error.

- Error Exception- The error exception if one was encountered during the process.

- GUID- The GUID associated to the processing batch

- ModID- The Lucity Module ID. This is the ID associated to the module that the GIS Task is performed against.

- LucityID. The Lucity Record ID. This would be prvoided for Updates and Deletes.

- GISID- This is the ObjectID for the GIS feature.

- Syntax- The syntax used for querying, updating, inserting, or deleting

Lucity Spatial

With version 2014 Lucity offers the ability to store work order and work request spatial components directly in the Lucity database. Storing the spatial component (geometry) in the Lucity database allows for faster analysis, better efficiency, and more flexibility when showing these locations in a map.

Requirements

A few requirements must be met before implementing Lucity Spatial:

- The Lucity Work database must be one of the following:
    - SQL Server 2008 or higher
    - Oracle with MDSYS.SDO_GEOMETRY data type enabled
- The Lucity Services must be installed
- Each Lucity linked feature class must be assigned to a default map service. This service doesn't need to have feature access capabilities enabled, since we are not editing the underlying data simply querying. Lucity Spatial process will work with either map or feature services.
- Lucity linked feature classes must be one of the following geometry types:
    - Point
    - Line, polyline
    - Polygon
- System Settings in UI Admin must be configured:
    - *URL for Geocoding Service* must be defined
        - The Geocoding Service's style version must be at 10.1 or higher (uses Single Line Input)
    - The *Enable Lucity Spatial* system setting must be set to TRUE
    - The *Max amount of days to process spatial history* must be set to a value greater than 0

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Work Maintenance Zones

Starting with version 2015 Lucity provides the ability to automate the process of assigning supervisors to requests and work orders based upon the problem and location. It also provides the ability to automatically classify your work based on alternate zones such as for billing, land use, special districts, etc.

For example, say your organization has two supervisors in charge of performing utility locates. One supervisor is in charge of locates on the west side of town the other is in charge of the east. When a request is entered into Lucity with the problem of utility locate, the Lucity application can be configured to automatically determine which supervisor the request should be assigned to given the location of the request.

Requirements

- You will need to have a polygon feature class(es) that store the maintenance and/or alternate zones.

- These feature class(es) need to have a field that stores the maintenance and/or alternate zone codes. These codes must match the values entered into the Work Maintenance Zone Setup and Work Alternate Zone setup modules.

- You will need a map service containing the maintenance and/or alternate zone feature classes (feature service is also supported)

- You must specify the zone map service in The Lucity Administration Tool- GIS Services

Setting up the zone map service in Lucity

1. In the Lucity Administration Tool, access the GIS Services form under the GIS menu.
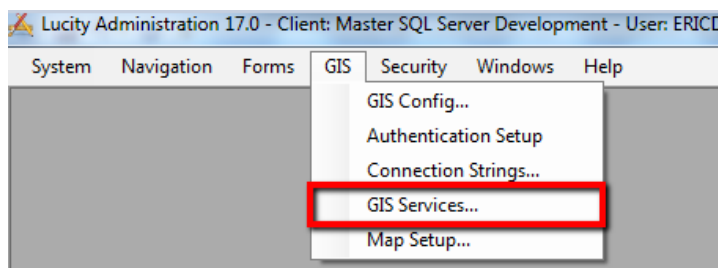
2. On the GIS Services form click the *Add Map Service* button in the lower left corner to create a new record for your maintenance and alternate zone map service(s). Click *Save* once you have completed filling out the necessary information.
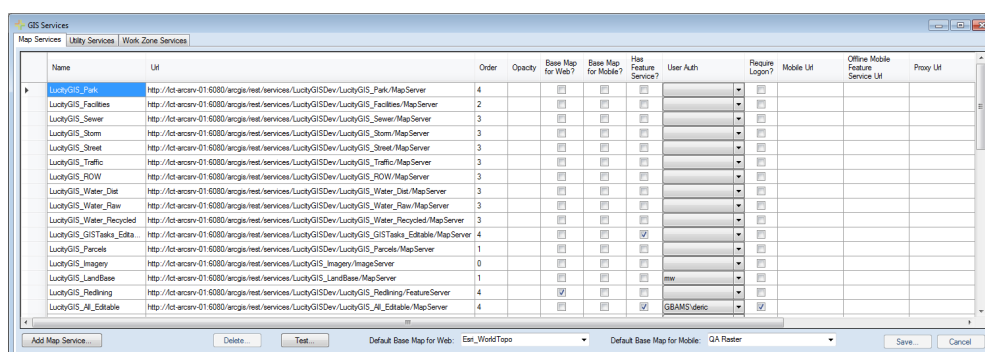
3. Click the Work Zone Services tab on the GIS Services form. The following will be displayed

4. Fill out the Maintenance and/or Alternate Zone information. Click *Save* once you have completed filling out the necessary information.

   a. The Service Name field must match the name of the service that you entered in the previous step.

   b. Note: Use the lookup buttons to the right of the fields to choose from a list of services, layers, field names instead of typing them.

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