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## TRAINING GUIDE

# Lucity GIS Admin Tools

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# Lucity GIS Admin Tools

In this session, we'll cover the tools necessary to properly configure Lucity to work with your GIS environment. We'll give you information about the synchronization setup, synchronization process and database connection.

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# Introduction

Some system configuration and setup is required prior to using any of the Lucity GIS applications. This configuration occurs in the Lucity Administration tool, Lucity desktop application, ArcCatalog, ArcMap, and ArcGIS Server.

Lucity Administration

- 1. Create geodatabase connection strings
- 2. Specify map and/or feature service connection info
- 3. Configure system settings

#### Lucity Desktop application

1. Configure show in map settings

#### ArcCatalog

- 1. Using the Geodatabase Configuration tool to map feature classes and fields to Lucity
- 2. Associate map/feature services for feature classes
- 3. Default fields configuration (optional)
- 4. GIS Scheduled Tasks (optional)

#### ArcMap

- 1. Optional .mxd and user specific settings
- 2. Alias Name import

#### ArcGIS Server

- 1. Install/Enable Lucity Data Update SOE (optional)
- 2. Create/modify map/feature services
- 3. Registering the Lucity Work database to the server

The following pages describe the above steps in further detail.

# Lucity Administration Tool

The Lucity Administration tool (Lucity.Admin.exe) is used to configure various GIS settings. This .exe can be found in your local workstation \bin directory or can be accessed by the Start>>All Programs>>Lucity>>Lucity Administration Tools

## GIS Connection Strings

GIS Connection Strings are created and modified within the Lucity Administration Tool. This information is used in the following situations:

- The Lucity extension for ArcGIS for Desktop (ArcMap/ArcCatalog) compares the layer's connection info in the ArcGIS for Desktop application to the connection info in GIS Connection Strings to determine if the layer is configured with Lucity.
- Some tools (Work Location Viewer, Work Frequency) that are part of the Lucity extension for ArcGIS for Desktop require access to feature classes configured with any of the various Lucity modules. These tools don't require that the feature classes be loaded in the .mxd; therefore, if the Lucity extension can't locate a particular feature class in the .mxd it will create a connection to the geodatabase using the settings in GIS Connection Strings to obtain access to the feature class.
- The Edit Map Service Url property in GIS Connection Strings is used with the following tools:
  - Lucity Spatial Indexer- This service will query this map service URL to obtain the geometry for a particular asset inventory record.
  - Lucity to GIS Updates- When edits are made within the Lucity application, Lucity will attempt to apply the same edit to the corresponding GIS feature. For client's using the Lucity SOE, the Edit Map Service would indicate the map service that has the Lucity SOE enabled. For client's using the Feature Service option, this URL would indicate the feature service that contains the Lucity linked feature classes that can be updated with edits.
  - GIS Scheduled Tasks via GIS Task Runner- A scheduled task interacts with the map and/or feature service specified at the individual feature class level, or if one is not defined, it uses the service configured to the Edit Map Service URL property for the geodatabase. Depending on the GIS Scheduled Task type queries, updates, inserts and/or deletes are being made to the layers configured with the service.

To add a geodatabase connection use the GIS Connection Strings form under the GIS menu.

Ă Lucity A	dministration	7.30 - Client: C	LINT015 -	User: EDAN	VIEL			
System	Dashboard	Navigation	Forms	Reports	GIS	Security	Windows	Help
						Connection	n Strings	
						Map Servic	es	
						Map Setup		

🔏 GI	🖌 GIS Connection Strings																
	Name	Database Type	Database	Server	Instance	Version	Authentication Type	<sup>1</sup> UserName	Password	Edit Map Service Url	Map Service User	Map Service Password	LastModifiedBy	LastModifiedDate	LastModifiedTime	Update GDB?	Replica GDB?
•	DEFAULT	SDE 🔻	LucityGISDev	LCT-ARCSRV-01	sde:sqlserver:LC	dbo.DEFAU	DB	GISEditor		http://lct-arcsrv-0			edaniel	7/8/2014	11:40 AM	V	
-	Add Connection String Delete "Note: Changes will be persisted automatically for valid records when you leave the row																

- Name: This is simply a name for the connection. Note: You must have one connection named DEFAULT, so if you only have one geodatabase configured with Lucity, you must name the connection DEFAULT.
- Database Type: Specify either SDE, Personal, or File.
- **Database:** This must contain the name of your geodatabase. The database listed in this field is not the SDE repository database. Instead, it is the geodatabase that contains the infrastructure data that you want to integrate with the desktop.
  - For SQL Server geodatabases this must contain the geodatabase name.
  - For Oracle geodatabases this must be blank.
  - For Access or File geodatabase this is the path to the .mdb/.gdb.
- Server: (For SDE databases only) The name of the server that holds the SDE database
- Instance: (For SDE databases only) The name of the instance for the SDE database. This supports either spatial or direct connections.
  - SQL Server example: sde:sqlserver:LCT-ARCSRV-01\SQLEXPRESS
  - Oracle example: sde:Oracle11g:OracleDBServer
- Version: (For SDE databases only) Designates the name of the geodatabase version that Lucity will use to connect to the geodatabase. For Oracle, the Version is case sensitive.
- Authentication type: How Lucity will connect to the database. The desktop app will attempt to connect to the geodatabase using either Database Authentication or Operating System Authentication. If you specify DB you must also populate the UserName and Password fields.
- UserName: If using DB authentication type you must specify a user. This database login will be used by Lucity to connect to the geodatabase.
- Password: If using DB authentication type you must also specify a password for the user.
- Edit Map Service URL: This is the URL for a map/feature service that contains this geodatabase's feature classes linked to Lucity.
- Map Service User: If the Edit Map Service URL is for a secured map service enter user name that has permissions to access the service.
- Map Service Password: Enter the password for the Map Service User.

#### ArcCatalog/Map Connection String

	se Connection			×								
D	atabase Platform:	SQL Server		-								
ь	nstance:	sde:sqlserver:Exam	ple	-								
	uthentication Type:	Database authentication										
		User name: 0	SIS									
		Password:	•••••						-	-		
		Save user name and p	assword									
D	atabase:	LucityGIS										
AD	out Database Connec	tions	ОКСС	Cancel								
<u></u>												
		au Chuin a										
		on string										
LUCIT	y connecti	on string										
LUCIT	Connection Strings	on string										- • •
LUCIT	Connection Strings	Edit Map Service Url	Database	Map Service User	Map Service Password	Server	Instance	Version	UserName	Password	Authentication Type	Database Type
GIS	Connection Strings Name DEFAULT	Edit Map Service Url	Database	Map Service User RCalhoun	Map Service Password	Server Example	Instance sde:sqlserver:Exampl	Version e dbo.DEFAULT	UserName GIS	Password	Authentication Type 1 DB <b>v</b> S	DatabaseType
GIS	Connection Strings Name DEFAULT	Edit Map Service Ukl	Database LucityGIS	Map Service User RCalhoun	Map Service Password	Server Example	Instance sde:sqlserver:Exampl	Version dbo.DEFAULT	UserName GIS	Password	Authentication Type I DB v S	DE V
GIS	Connection Strings Name DEFAULT	Edit Map Service Ut http://example.lucity.com.6080/.	Database	Map Service User RCalhoun	Map Service Password	Server Example	Instance sde.sqlserver.Exampl	Version e dbo.DEFAULT	UserName GIS	Password	Authentication Type 1 DB v S	Database Type DE V
	Connection Strings Name DEFAULT	Edit Map Service UH	Database	Map Service User RCalhoun	Map Service Password	Server Example	Instance sde :xg/server: Exampl	Version e dbo.DEFAULT	UserName GIS	Password	Authentication Type 1 DB v S	Database Type
	Connection Strings Name DEFAULT	Edit Map Service UH	Database LucityGIS	Map Service User RCalhoun	Map Service Password	Server Example	Instance side siglserver: Example	Version dbo.DEFAULT	UserName GIS	Password [	AuthenticationType ( DB v S	Database Type
GIS	Connection Strings Name DEFAULT	Edit Map Service UH	Database	Map Service User RCalhoun	Map Service Password	Server Example	Instance side:sqlserver:Exampl	Version e dbo.DEFAULT	UserName GIS	Password [	AuthenticationType II	Database Type
GIS	Connection Strings Name DEFAULT	Edit Map Service UH	Database	Map Service User RCalhoun	Map Service Password	Server Example	Instance sde agleerver Example	Version e dbo.DEFAULT	UserName GIS	Password	AuthenticationType 1 DB VS	DE V
	Connection Strings Name DEFAULT	Edit Map Service UH	Database	Map Service User RCalhoun	Map Service Password	Server Example	Instance sde agleerver Example	Version e dbo.DEFAULT	UserName GIS	Password [	Authentication Type 1 DB VS	DE V
	Connection Strings Name DEFAULT	Edit Map Service UH	Database	Map Service User RCathoun	Map Service Password	Server Example	Instance sde sgleerver Example	Version e dbo.DEFAULT	UserName GIS	Password	AuthenticationType 1 DB v S	DE V
	Connection Strings Name DEFAULT	Edit Map Service UH	Database	Map Service User RCathoun	Map Service Password	Server Example	Instance sde sgleerver Example	Version deo.DEFAULT	UserName GIS	Password	AuthenticationType D DB v S	DE V

# GIS Map Services

Starting with 2014r2, GIS Map Services are no longer just used for Web Maps. Services can now be associated to feature classes. Services defined at the feature class level (instead of the geodatabase level) are used for some new tools available at 2014r2. Before you can associate map/feature services to a feature class the service must first be defined in GIS Map Services.

-¦⊢ GIS	Map Services																
	Name	и	Order	Opacity	Base Map?	Tiled?	Has Feature Service?	Disable Local Caching	Require Logon?	UserName	Password	Mobile Url	Offline Mobile Feature Service Ufl	Proxy Url	LastModified	LastModifiedD	Zast Modified Time
•	LucityGISDev_AlLayers	http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev_AsFeatureService/MapServer	2												edaniel	7/25/2014	8:32 AM
	LucityGISDev_GISTasks	http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev_GISTasksEditable/MapServer	4												edaniel	8/1/2014	2:57 PM
	LucityGISDev_Redlining	http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev_MarkupSecure/FeatureServer	4												edaniel	8/1/2014	2:57 PM
	LucityGISDev_Parcel	http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev_Parcel/MapServer	1												edaniel	7/25/2014	8:32 AM
	LucityGISDev_SewerSyncEnabled	http://ct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev_SewerSyncEnabled/MapServer	3				<b>V</b>								edaniel	7/25/2014	8:32 AM
	LucityGISDev_SewerWaterStorm	http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev_SewerWaterStorm/MapServer	2												edaniel	7/25/2014	8:32 AM
	LucityGISDev_Park	http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev_Park/MapServer	2												edaniel	7/25/2014	8:32 AM
	LucityGISDev_Imagery	http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev_ImageService/ImageServer	0												edaniel	8/1/2014	2:57 PM
	EsriTopo	http://services.arcgisonline.com/ArcGIS/rest/services/USA_Topo_Maps/MapServer	0												edaniel	7/25/2014	11:33 AM
	LiveOpenWorkOrders	http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev_LiveWorkLayers/MapServer													edaniel	7/25/2014	11:28 AM
Ac	d Map Service						Delete		Test							Save	Cancel

- Name: A unique name for the service. This is used to identify the service during setup.
- URL: The URL of the service, or path to a local map package. This must include /rest after ArcGIS.
  - Note: In ArcGIS 10.x the service name is case sensitive
- Order: The order in which map services will appear when used together. Lower numbers will appear underneath higher numbers. Base map services will always be on the bottom.
  - Note: The Order can be overwritten for individual maps in Map Setup
- Opacity: Controls the opacity of this service
- **Base Map?:** Mark whether a layer should be used as a base map. All layers marked as a Base map will be available to all users in the base map selection tool in the Webmap. This functionality is not available in the Lucity GIS Viewer or Lucity Mobile app.
  - Note: Base maps must be either a Tiled, Image, or Bing Map service
- Tiled?: Mark whether the service is tiled. Tiling allows multiple concurrent requests and cached tiles perform faster.
- Has Feature Service?: This setting indicates if the map service has a corresponding feature service. This would be the case if the map service had the Feature Access capability enabled on it. This setting is used by Lucity tools to allow editing of the service.
- **Disable Local Caching:** Prevents the mapping tools from using locally cached data. They will always request the latest data from the server.
- **Require Logon?:** If the service is a secured service it should have a username and password assigned. Mark this field to force users to enter their own login credentials as an added layer of security.
- Username: If the map service is secured enter a user name that has permission to access it. This is required for secure services that contain Lucity Operational Data.
  - Note: If no username/password is provided users will be required to login
- **Password:** Enter the password for the User Name.

- Mobile URL: If this service will be used by Lucity Mobile use this field to enter an alternative URL for the service that is available externally.
  - This functionality only applies to Lucity Mobile
- Offline Mobile Feature Service Url:
- Proxy Url:

Notes:

# System Settings

There are various settings for Lucity GIS that are maintained under System Settings.



#### **GIS Edit Integration Tab**

The GIS Edit Integration tab of system settings contains the options that impact how the Lucity application will update the geodatabase.

Edit Integration GIS Routing GIS Web
Value
FALSE
FALSE
FALSE
annot be updated FALSE
FALSE
nschmidt1@lucity.com
TRUE
TRUE
Save Cancel

- **GIS/Lucity Edit Integration:** Allow unversioned geodatabase edits to enterprise geodatabase: This allows edits to be made to unversioned geodatabases.
- **GIS/Lucity Edit Integration:** Disable all updates to the geodatabase from Lucity: This prevents the geodatabase from being updated with edits made in Lucity desktop and web.
- **GIS/Lucity Edit Integration:** 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.
- **GIS/Lucity Edit Integration:** 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.
- **GIS/Lucity Edit Integration:** Prevent saving Lucity record if GIS update fails. This does not apply to the desktop application. 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.
- List of emails for notifications regarding failures to update the GIS database: Provide a comma delimited list of email addresses that should receive notification if the geodatabase failed to get updated with an edit.

- Send an email if no feature is found in GIS to update: Sends an email when 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.
- Use Feature Service instead of Lucity SOE: This setting indicates if Lucity should attempt to make updates to GIS features directly through a feature service or if it should use the Lucity SOE.

#### **GIS Desktop Tab**

The GIS Desktop tab of system settings contains many of the editing options for the Lucity GIS tools

Арреа	arance	Designer Automation	Email	General	GIS	GIS 3rd Party Integration	GIS Desktop	Object Locking	REST API	Settings with custom in					
	Des	cription					Value								
•	Add s	sewer service address t	o custor	er address	module		FALSE								
	Add s	street name records to t	he Street	Name List	that do	n't exist	FALSE								
	Add	water service address to	o custom	er address	module		FALSE								
	Autor	matically insert a sewer	structure	for each n	ew sewe	er pump station	FALSE								
	Autor	matically insert a storm s	structure	for each n	ew storm	detention basin	FALSE								
	Autor	matically insert a storm s	structure	for each n	ew storm	pump station	FALSE								
	Defa	ult location for map exp	orts				\\gbams-dev-01\t\TestData\Documents								
	Form	at for map exports					pdf								
	Log	gbaMS edit session to 0	GBACom	n.GBAELO	G		FALSE								
	Numb	ber of days to keep item	ns in GBA	Comm.GB	AELOG		30								
	Sewe	er Parallel Pipe Naming	Conventi	on Index			P								
	Storm	n Parallel Pipe Naming (	Conventio	on Index			Р								
									ſ	Save Cancel					

- Add sewer service address to customer address module: Set this option to true if you want the sewer service address added to the Customer Address module.
- Add street name records to the Street Name List that don't exist: Set this option to true if you want street name records that do not exist added to the Street Name List.
- Add water service address to customer address module: Set this option to true if you want the water service address added to the Customer Address module.
- Automatically insert a sewer structure for each new sewer pump station: Set this option to true is if you want a sewer structure added for each new sewer pump station.
- Automatically insert a storm structure for each new storm detention basin: Set this option to true if you want a storm structure added for each new storm detention basin.
- Automatically insert storm structure for each new storm pump station: Set this option to true if you want a new storm structure added for each new storm pump station.
- **Default location for map exports:** This option allows you to choose the location that you would like to store the map images you save when creating a new work order, request, etc.
- Format for map exports: This option allows you to choose the file type for the map exports.

## **General Tab**

	Desc	cription							V	alue		-		_	_	_	
Allows access to web services with certificate errors								TF	RUE								
	Days	to keep data in l	ogin au	diting table (0	to maint	ain all histo	vry)		90	)							
	Days	to keep data in t	he eve	nt track table	(O to mai	ntain all his	story)		30	)							
	ELA E	Email to send exp	piration	warning emai	s to				bv	andusen@luci	ty.com						
	ELA r	number of days b	efore e	piration whe	n warning	is begin			40	)							
Enable Lucity Spatial							TF	TRUE									
	Inacti	ve User License	Expirat	ion in Minute	s (recomn	nended va	lue=60)		60	60							
	List of	f values that are	not allo	wed in searcl	n filters to	reduce ris	k of getti	ng hacked.	(ir	(insert   update   delete   truncate  reconfigure  union  sysobjects waitforkp_cmdshell ; -)							
	Locat	tion of the Lucity	help file	es for this syst	em				htt	http://help.lucity.com/webhelp							
	Max a	amount of days to	proce	ss spatial hist	ory				10	1000							
	Minim	ium Length For P	asswor	ds (Must be i	or great	er)			3								

The general tab of system settings contains some options for GIS services

- Enable Lucity Spatial: Set this option to true if you want to turn on the Lucity Spatial Updater service that manages live work spatial views.
- Max amount of days to process spatial history: This is the number of days into the past the Lucity Spatial Updater service will process records. For example, if the value is 90, then the Lucity Spatial Updater will not process work history that is more than 90 days old.

Notes:

# Lucity Desktop

## Show in Map Configuration (Single User)

The GIS Show in Map configuration is a user-based setting. This window allows you to choose a custom programmed component for the desktop application to use in place of the default component. You can then select the parameters that the system passes to the component.

Note: Since this window determines what GIS project is displayed, it must be defined before initial use of the Show in Map button.

- 1. Select System>>Configuration>>GIS>>Show in Map to open the configuration window.
- 2. In the ArcMap Project for Display field, browse to the location of your standard ArcMap project. By default, this map will be displayed whenever you click the Show in Map button in either your desktop version of the desktop application. Note: If you do not have a project set up, the web map will be the default.

GIS - Show In Map Configuration
ArcMap Project for Display
If no project is specified, the default web map for this user will be opened.
Show In Map
Component Lucity.ShowInMap.exe
Parameters: /Client Number /GeoDatabase Table Name /GeoDatabase ID Field Name /Asset ID
Include comma delimited lists of all possible feature classes
X/Y Component
Component Lucity.ShowInMap.exe
Parameters xcoord ycoord
Work Order Component
Component Lucity.ShowInMap.exe
Parameters WO_ID
Add to Work Order Component
Component Lucity.ShowInMap.exe
Parameters W0_ID
Add X/Y to Work Order Component
Component Lucity.ShowInMap.exe
Parameters WO_ID
Change to Default OK Cancel

## Show in Map Function

The Show in Map function allows you to set the map document to display on a per-module basis. This is useful if you have a separate map document for each asset type. For example, you may have one ArcMap project for sewer features, another for water features, and a third for street features. You can set up the Show in Map function for all *Sewer* modules to open your sewer map, and set up the Show in Map function for all *Sewer* modules to open your sewer map, and set up the Show in Map function for all *Water* modules to open your water map. Additionally, you can use the Show in Map function from equipment features that are not in the map if the parent feature is in the map.

To specify a different ArcMap project for each module, complete the following steps:

- 1. Click the down arrow located to the right of the Show in Map tool in the desired module in the desktop application.
- View/Set Map Settings Show in Map Show in Web Map
- 2. A sub-menu will appear; click "View/Set Map Settings"
- 3. A dialog will appear showing you the currently specified .mxd. If no file is specified then it means that there hasn't been an .mxd associated with this module yet.

Select .mxd File	s	×
File Name	C:\Users\edaniel\Desktop\730_Demo.mxd	OK Cancel

4. To associate a new .mxd click the browse button and navigate to the location of the .mxd. Click OK.

Note: If no special Show in Map project is setup for a module, the system will use the project specified under System>>Configuration>>GIS>>Show in Map (Show in Map Configuration dialog).

Notes: \_\_\_\_

# ArcCatalog

# Lucity Show in Map Configuration Tool

The Show in Map Configuration tool allows system administrators to set show in map settings for multiple users. This can save a lot of time, especially if they manage which maps their users access, and if a generally used map changes. To access the Show in Map Configuration tool, go into ArcCatalog, click on the Lucity GIS Tools button and select Show in Map Configuration.

Lucity GIS Tools 🕶 🤤	
Geodatabase Configuration	
Show In Map Configuration	
Default Fields Setup	Lucity Show In Map Configuration
Update Geodatabase Values	Configures the desktop Show In
Update Show in Map Flag	Map settings for multiple users
QA/QC	

#### The following dialog will appear:

#1- Select Method i Groups		Default MXD: C:\Users\edaniel\D	esktop\740Demo.mxd Clear S	Setting
elect Group(s)	Select User(s)	Module Specific MXD: *Settings li	isted in red indicate the setting is not applied to all selected u	sers
Administrator	Administrator	Module	MXD	
GIS Administrator	atowles	Work Master Project Assets	C:\Lucity\Data\GIS\sql.mxd	
GIS User	arobison	Work MasterProject Management	C:\Lucity\Data\GIS\sql.mxd	
Jonathan Test	atuttle	Work PMTemplate Asset	C:\Lucity\Data\GIS\sql.mxd	
NoAccessSecurity	bbb	WorkPMTemplateLocation	C:\Lucity\Data\GIS\sql.mxd	
Noels Security Test	V BP	WorkPMTemplate	C:\Lucity\Data\GIS\sql.mxd	
NoelsTest	bpinkston	WorkWorkOrderAsset	C:\Lucity\Data\GIS\sql.mxd	
PublicWebGroup	buildymadmin	WorkWorkOrderLite	C:\Lucity\Data\GIS\sql.mxd	
test	vandusen	WorkWorkOrderLocation	C:\Lucity\Data\GIS\sql.mxd	
Victoria's Test Group	CCC	WorkWorkOrder	C:\Lucity\Data\GIS\sql.mxd	
WebAppPermissionsTesting - Victori	ccrupi	WorkWorkPermit	C:\Lucity\Data\GIS\sql.mxd	
WorkOrderReadOnly	C cfolsom	WorkRequest	C:\Lucity\Data\GIS\sql.mxd	
	Chris	WaterHydrants	C:\Users\edaniel\Desktop\740Demo.mxd	
	V Dale	WaterPipeInventory	C:\Users\edaniel\Desktop\740Demo.mxd	
	DeleteMe	SewerStructureInventory	C:\Users\edaniel\Desktop\740Demo.mxd	
		SewerLACPInspection	C:\Lucity\Data\GIS\sql.mxd	
	DNSUpdateUser	RawWaterPipeInspection	C:\Lucity\Data\GIS\sql.mxd	
	Don Pinkston			
	DXX			
	v edaniel ·			
	Select All			

To select a Group(s) to configure:

- 1. Choose the Group Select Method.
  - The Select Group(s) grid will be activated. (these groups are from the Lucity Security program)
- 2. Select one or more groups in the grid.
  - The users in those groups will be checked in the Select User(s) grid, but the selection will be read-only.
  - The module settings for the selected users are also displayed in the field and grids to the right.

To select a User(s) to configure:

- 1. Choose the Users select method.
  - The Select Group(s) Grid will be deactivated. The Select User(s) grid will be editable.
- 2. Select the user(s) to configure.
  - The module settings for the selected users are also displayed in the field and grids to the right.

To configure the show in map for selected users:

- 1. Set the Default MXD for the program. Either enter the path, or click the ... button and navigate to the desire MXD
- 2. In the Module Specific MXD grid right-click and select Add. The following screen will popup:

🖶 Module Setting	
Select Module(s):	
Common	
Electric     Ecuioment	
Park	
Sewer	
🖲 🖳 Storm	
B Street	
Water	
ET- VYOR	
Module MXD:	
Apply	Cancel

- 3. Select the modules to set a map for. Selecting a program will select all the modules under that (i.e. Selecting Park will select every park module.)
- 4. Near the bottom of the popup click the ... button to select the .mxd to be used with the show in map for those modules.
- 5. After selecting the .mxd click Apply.
- 6. A record will appear in the right hand grid for each module, with the path to the .mxd.

Note: Existing show in map settings can be modified by right-clicking on them and selecting either Edit or Delete from the submenu:

Module Specific MXD: *Settings	listed in red indi	cate the setting is not applied to all selected users
Module	MXD	
WorkMasterProjectAssets	CVI - 1 1 D 1	<mark>`</mark> ∩IS\sql.mxd
Work Master Project Managemen	Add	IS\sql.mxd
WorkPMTemplateAsset	Edit	IS\sql.mxd
WorkPMTemplateLocation	Delete	S\sql.mxd
WorkPMTemplate	C. YEDGILY YOR	a val S\sql.mxd
WorkWorkOrderAsset	C:\Lucity\Dat	a\GIS\sql.mxd

# Lucity Geodatabase Configuration Tool

Once you have created the geodatabase connections with the Lucity Administration tool you can use the Lucity Geodatabase Configuration tool in ArcCatalog to perform all other configurations.

In ArcCatalog, Click on Lucity GIS Tools>>Geodatabase Configuration.



The following dialog will appear:

Geodatabase Configuration for Lucity	
⊕- DEFAULT ∰- Copy_Replica	Connection Properties Version Setup Vorkspace Type: SDE Personal Geodatabase Connection Properties File Geodatabase Connection Properties Enterprise Geodatabase Connection Properties Server: LCT-ARCSRV-01 Service: sde.sqlserver.LCT-ARCSRV-01\SQLEXPRES Database: LuckgGISDev © Database Authentication Username: GISEdtor Password: © Operating System Authentication Version: do. DEFAULT
	Edit Map Service http://tct-arcsrv- 01.6080/arcgs/rest/services/LucityGISDev_AeFeature Service/MapServer
	UserName: Password: Test Connection
	Update From Lucity Replica Geodatabase

This tool can be used to perform the following activities which are described in detail in the Geodatabase Configuration Overview session:

- Modify and validate connections to geodatabase and map services
- Import Feature Class Schema
- Modify existing feature class schema based upon Lucity properties
- Indicate if geodatabase should be updated from Lucity and if it is a replica
- Specify which versions of the geodatabase should have edits pushed to Lucity
- Add/Modify/Delete feature classes, spatial relationships, number generators, and GIS tasks
- Add/Modify/Delete feature class field mappings
- Create/Sync feature class domains
- View and configure feature class alias names and associated feature services

#### **Connection Properties**

The Connection Properties tab shows you the geodatabase connection information.

Connection Properties Version Setup				
Workspace Type: SDE				
Personal Geodatabase Connection Properties				
File Geodatabase Connection Properties				
Enterprise Geodatabase Connection Properties				
Server: LCT-ARCSRV-01				
Service: sde:sqlserver:LCT-ARCSRV-01\SQLEXPRES				
Database: LucityGISDev				
O Database Authentication				
Username: GISEditor				
Password:				
Operating System Authentication				
Version: dbo.DEFAULT				
Test Connection				
Edit Map Service				
http://lct-arcsrv- 01:6080/arcgis/rest/services/LucityGISDev_AsFeature Service/MapServer				
liserName:				
Beenview				
Password:				
Test Connection				
Vpdate From Lucity 📄 Replica Geodatabase				

Server: The name of the server that holds the SDE database

**Service:** The name of the instance for the SDE database. This supports either spatial or direct connections.

- SQL Server example: sde:sqlserver:LCT-ARCSRV-01\SQLEXPRESS
- Oracle example: sde:Oracle11g:OracleDBServer

**Database:** This must contain the name of your SQL Server geodatabase. The database listed in this field is not the SDE repository database. Instead, it is the geodatabase that contains the infrastructure data that you want to integrate with the desktop. For Oracle geodatabases this must be blank.

Authentication type: Used by Lucity to connect to the geodatabase

- UserName: If using DB authentication type you must specify a user. This user must have permission to ALL feature classes linked to Lucity.
- **Password:** If using DB authentication type you must also specify a password for the user.

**Version:** This information is always required; it designates the name of the ArcSDE version that Lucity will use when connecting to the geodatabase. For Oracle, the Version is case sensitive.

Edit Map Service: This is the URL for a map/feature service that contains this geodatabase's feature classes linked to Lucity.

- UserName: If the Edit Map Service URL is for a secured map service enter user name that has permissions to access the service.
- Password: Enter the password for the Edit Map Service User.

**Update From Lucity:** This indicates if the geodatabase should be updated with edits made in the Lucity desktop and web interfaces

**Replica Geodatabase:** This indicates if the geodatabase is a replica geodatabase. If this is checked, functionality with the configuration tool will change preventing some actions (such as deleting feature classes) and enable other actions (such as associating feature classes)

#### Validating the Geodatabase Configuration

You can validate against the entire geodatabase or individual feature classes. There are three parts to the geodatabase verification: verification of the geodatabase setup based on *Lucity* requirements and business rules, verification of the custom geodatabase setup against your geodatabase to ensure that the setup is valid based on your data structure, and finally verification that the layer and fields exist in the map service. Initially, only the verification of your custom geodatabase setup based on *Lucity* requirements is performed. If no critical errors are encountered during that verification, it will continue the verification and validate against your custom geodatabase to make sure feature class names, field names, and field types are valid based on your setup. If you have enabled Lucity Spatial and/or are using Feature Services for GIS updates instead of the Lucity SOE then the validation of the map service is performed.

#### Validating Against Geodatabase

1. Right-Click on the geodatabase node and select Validate Workspace.



- Immediately upon clicking this tool, a dialog similar to the one shown below will be displayed with results of the verification. Once it is complete you will be able to scroll down and view any messages resulting from verification.
- If the validation discovers conflicts between the case in field names a prompt similar to the following will appear. Click 'Yes' to change the field name in Lucity to match that of the feature class. Click 'No' to not make the change for this particular instance and continue. Click 'Cancel' to not make the change for this instance and any future ones during this validation.

Lucity GIS	x
Field names are case sensitive with feature services. A conflict was found: This layer [wtSite] contains field [LASTSYNDATE] but in Lucity it is listed as [LastSynDate]. This must be resolved before interacting with this feature layer. Would you like to change the field name in Lucity to match that of the feature layer? Select Cancel to stop displaying the message during this validation	
Yes No Canc	el

• Once the initial verification is complete, any errors that are found will prompt the following message and you will be unable to continue the validation until the errors are addressed.

Lucity GIS	×
Passed valiadation tests! Please review the validation results for minor warnings	
ОК	

2. When the validation is complete, a message box will appear indicating if the validation result was successful or failed. The validation Results window will remain open. Again, any errors found will be highlighted in red. You can copy the results of this dialog into another file, or you can select File>>Save or File>>Print to print the results.

+ Validation Results			
File -			
Validating Setup Requirements Lucity Module : Feature Class Water Ste : wtSite	Name Validation of	Lucity requirements	
Validating Setup Against Geodatabase Retrieved GIS database connect SERVER = LCT-ARCS INSTANCE = sde sqlas DATABASE = LucityGI VERSION = dob.DEFA USER = GISEditor PASSWORD =	on information RV-01 nver.LCT-ARCSRV-01\SQLEXPRESS SDev ULT	Validation against geodatabase	)
Lucity Module : Feature Class Water Site : wtSite	s Name		
Validating Setup Against Web Service- This may take Lucity Module : Feature Cass Water Site : wtSte : Criteria Fields: FACILITYID Data Fields: NAME. SITE Warning: Lucity field []	a few moments to connect to service(s) I Name : (Alias Name List) (Water Ste) TYPE, LOCDESC, STRUCTTYPE, USER_AREA, Last s mapped to GIS field [LastSynDate] which does not ex- s	Validation aga SynDate, LUCITYID, INLUCITY est in the service layer (http://lct-arcsrv-	inst service
UniqueField: ST_NUM	reservice/reaureserver/152]. This may cause issues BER. Is Required = True.	with Lucity tools that interact with this feature	nayer. Note: neixi namés aré casé sénsitivé.

Notes:

# Default Fields Setup

The Default Fields tool allows you to set up additional fields for the editable grids that are displayed with the Lucity Module tool in ArcMap when creating Requests, Work Orders, PM Work/Templates, and Inspections.

These fields will be displayed in the grid in addition to the required fields (both system and userdefined required fields).

÷	equired Fields for	TV Inspection						
	Inspection #	Asset	Associate Document	Document Path	TV Direction (Required)	Date Televised (Required)		
	1					9/22/2011		
	2	119462				9/22/2011		
		Submit ar	nd View in Luc	ty Submit and View in Lucit	/ Web Submit On	ly Can	cel	.4

#### Setting up Default Fields

In ArcCatalog, Click on Lucity GIS Tools>>Default Fields Setup.

Lucity GIS Tools -	Unregister As Version
Geodatabas	e Configuration
Default Field	ls Setup
Update Geo	database Values
Update Sho	w in Map Flag

1. After you have logged in to the client, the following dialog will appear. Select the Lucity tool from the drop down menu.



2. After selecting the Lucity tool, the "Select a Lucity Module" option will open up. Select the module for which you are setting up default fields.

Step 2: Select a Lucity Module	
	-
Requests	
Work Orders	
PM Work/Template	
Inspections	

• If you selected Inspections in Step 2 then you will be prompted to select the inventory type for the inspection:



• Next, select the inspection module.

Step 4: Select a Lucity Inspection Modul	le
PACP Inspections	-
PACP Inspections	
Pipe Air Testing	
Pipe Mandrel Testing	
Sewer Building Inspection	
Line Lamping	
Smoke Testing	
TV Inspection	

3. After specifying the module you can indicate if you would like to create a new default setting or modify an existing default. Note: If there are no current default settings for the selected module this option will be disabled.



4. After selecting the module and specify the option to create or modify, the following dialog will appear:



Note: The system default fields grid is not editable. This grid shows the fields that are required by the system and will always appear in the grid.

- 5. Check the fields in the "Main Fields" tab that you would like to make as default.
- 6. To select the users you would like the default fields to apply to, highlight the user in the

>>"Available Users" grid and click <sup>J</sup> to move the user to the "Selected Users" grid. Note: If you wish the default field to appear for all users then select the "This is a global default" checkbox.

Save Setting 7. Click to save the default fields to the module.

## Update Geodatabase Value

This tool is designed to allow users to rapidly update the values in a feature class with the values from a related Lucity table. You'll use this tool if you've recently added a field to the Lucity database and need it to be added to your map.

To use this tool:

- 1. Select a feature class in ArcCatalog.
- Lucity GIS Tools • and select the Update 2. Then, click Geodatabase Value tool from the drop down menu. The following window will appear:



3. Select the field you wish to update from the list. Then click OK. You'll receive the following warning notifying you that this tool will overwrite the values for the selected field with new values. If you wish to continue, click OK.

Warning					
⚠	This tool will overwrite the value	s for the selected fi	eld with new values,	Are you sure you want to continue?	
		ОК	Cancel		

4. You'll be notified when the process is complete.



GIS Setup and Configuration (2014 and 2014r2)

## Update Show in Map Flag

You'll use this tool to run an update query on the show-in-map flag in the *Lucity* inventory modules.

To access the Update Show in Map tool open up ArcCatalog, select Lucity GIS Tools>>Update Show in Map Flag.

1. Select the type of map data that you use (Geodatabase or Shapefiles).

- ↓ ► Map Da	ata Selection	
Please se	elect the map data that	at you use
Geodatab	ase	
	ОК	Cancel

2. After selecting the appropriate map data, the following dialog will appear. Select the module(s) you wish to have updated.

Hodule Select	×
Address/Parcel Bridges Equipment Facility Buildings Facility Buildings Facility Floor Facility Floor Facility Floor Facility Floor Facility Site Asset Facility F	<
Park Landscaping Park Lights	-
OK Cancel	

3. The following dialog will appear confirming that you want to continue.



4. Once complete you will receive a dialog indicating the results



# ArcMap

Additional settings can be configured to be used with the Lucity GIS tools in ArcMap. Some of these settings are saved with the map document (.mxd) while others are user specific.

and

These settings can be accessed by the Settings button on the Lucity GIS Edit Tools toolbar.

🖴 🌒 🏭 / S 🐰 🔼 -	<u> <u> </u> </u>	• Settings Alias Import
		Lucity GIS Settin
		settings
🖳 Lucity GIS Settings		
MXD Specific Settings		
Currently logged in client:	Di Sana Davidament	
	at Server Development	
Current default client:		
New default client:	•	
Save new default client value		
User Specific Settings:		
Disable "Lucity will now be up	adated' prompt	
when saving edits	posted prompt	
Disable Lucity Editor Extensi	ion	
Show in Map for Requests:	Assets and Locations	
Show in Map for Work Orders:	Assets and Locations	
Show in Map for Boutine:	Assets and Locations	
Symbology Defaults		
Save	Close E1 for help	

## MXD Specific Settings

Every time a user opens ArcMap and attempts to use a Lucity tool they are prompted for their Lucity login and password and if there is more than one Lucity client, they will be prompted for which client they are logging into. There are two things that can be setup to speed up this process:

#### Bypassing Login and password

The Lucity GIS tools support using Lucity Windows Authentication. Upon using a Lucity GIS tool the program checks to see who is logged into the computer and if that user has windows authentication configured. If it finds an associated Lucity account it checks to see if they have permissions to run the Lucity GIS tools. If the correct permissions are present the user is automatically logged in and the Lucity GIS tools are activated. This will stop users from being prompted for their login and password when they try to use the Lucity GIS tools. Lucity Windows Authentication must be setup by an administrator in the Security program.

#### Setting a Default Client

Part of the login process checks to see what Lucity client the user is logging into. If there is more than one client, the user will be prompted to choose a client every time they start ArcMap and try to use a Lucity GIS tool. To by-pass the client selection dialog, you can specify a default client that should be used for the .mxd.

- 1. In the settings dialog, select a client from the new default client list
- 2. Make sure the Save new default client value checkbox is checked
- 3. Click Save on the Lucity GIS Settings dialog form. A prompt similar to the following will appear:

Lucity GIS	×
The user specific settings have been saved. However, the MXD sp will not be saved until the .mxd is saved! Save the map document under File>>Save or File>>Save As.	ecific settings : in ArcMap
	ОК

4. Save the .mxd.

## User Specific Settings

There are three user specific settings that can be saved. These settings will be used anytime the user logs into the Lucity GIS extension regardless of the .mxd or machine.

#### **Default Search Tolerance**

Users can set a new default search tolerance for Lucity GIS. This is used with all Lucity GIS tools that use a search tolerance. The system default is 7 map units. Alternatively, the search tolerance can be changed on the fly for a specific tool when it is selected by pressing Shift + F7.

#### Disable "Lucity will now be updated" prompt

Users can disable the editing prompt that lets them know that the Lucity editor extension is going to process the ArcMap edits.

#### Disable Lucity Editor extension

Users can disable the Lucity editor extension. This is useful if the user never or rarely edits feature classes linked to Lucity. Having this checked will prevent the extension to become active every time they edit the geodatabase linked to Lucity. Alternatively, the editor extension can be disabled directly on the Lucity GIS Editor toolbar; however, that setting only disables the extension for that session of ArcMap.

#### Show in Map for Requests/Work Orders/Routine

Work Orders, Requests, and PM/Work Templates can be displayed by the Show in Map tool several different ways. They can display the assets and/or the address and XY locations. These settings control how the Show in Map tool should work for the various modules. It will either show Assets, Locations, or both. The default is set to both.

Notes:

# Symbology Defaults

This allows users to specify lyr files as symbology templates for the following set of Lucity GIS tools: Lucity Views, View Work Frequency, View Work Locations and TV Observation tools.

- 1. In order to set symbology defaults, you first need to run the Lucity GIS tool you wish to have a default symbology template for. (Lucity Views, View Work Frequency, View Work Locations, or TV Observations).
- 2. Make any desired changes to the properties of the layer the tool generated. These changes can include:
  - Symbology changes (size, shape, color, etc.)
  - Symbol levels
  - Labeling
  - Scale Dependence
  - Fields Displayed
  - **Etc...**
- 1. In the table of contents right-click on the layer and select Create Layer File



- 2. On the Symbology Settings Form, find the related tool and layer.
- 3. Click the ... button and navigate to the location of the .lyr file. This must be repeated for each layer.
- 4. When complete, click Apply Changes.
- 5. The next time the Lucity GIS tool is ran, the results will use the settings stored in the .lyr file.

Notes: \_

# ArcGIS Server

Lucity Desktop and Web use ArcGIS Server and the Lucity SOE to make attribute updates to an SDE geodatabase. This allows users to edit fields in Lucity that are linked to the geodatabase and have the edits persist to the geodatabase.

## Install the Lucity SOE

The following instructions are for ArcGIS for Server 10.1+. Please refer to the installation instructions provided with your Lucity install media for 10.0 instructions.

1. Log into ArcGIS Server Manager

Arcois server manager
Enter your ArcGIS Server username and password:
Username:
Password:

- 2. Click on Site at the top of the screen
- 3. Select Extensions on the left of the screen
- 4. Select Add Extension. The file selection screen will popup.

ArcGIS Serve	r Manager	Services	2 Site	Security	Logs	
GIS Server Web Ad	daptor Software Authoriz	ation				
Directories Configuration Store Clusters Machines Data Stores	Extensions Server object exter Click Add Extension 4 Add Extension	nsions allow you to add additi 1 to deploy your extension to . Debug Settings	onal features to se ArcGIS Server.	rvices.		<u>Help</u>
Extensions	Name	Extension Descript	ion		Туре	
3	Lucity.GIS.SOE.soe	Lucity Metadata Provides r SOE and table	netadata access fo names from the GI	r Lucity to obtain field names S data where necessary	REST	×
		Lucity Data Provides a Update SOE the geoda	access for Lucity to atabase	make attribute updates to	REST	
	< ►					

5. Click Browse and navigate to the Lucity SOE file downloaded from the Lucity support site.

#### 6. Click Add.



7. The SOE is now installed. Make sure that the Lucity extensions are enabled on the desired map services.

## Enable the Lucity SOE for a Map Service

When Lucity updates the SDE geodatabase using ArcGIS Server it uses a map service made up of Lucity features and the Lucity SOE to correctly update the geodatabase. The following diagram shows the logic the SOE uses to update the feature class.



Note:

- The map service must contain at least one feature class from the geodatabase that contains the features that Lucity will be updating. It is acceptable for the map service to contain all the feature classes that could be updated but this is not required.
- Map service can be new or existing

- Map service does not need to be included in any web maps
- The feature classes in the map service must be connected using a user account that has edit permissions. Note: If map service isn't going to contain all Lucity linked feature classes then the feature class at layer index = 0 in the map service must be connected using a user account that has edit permissions to ALL Lucity linked feature classes.
- The feature classes in the map service must be pointed to the version that Lucity should update.
- 1. To enable the Lucity Data Update SOE extension for a map service, Log into ArcGIS Server Manager



- 2. Click Services > Manage Services
- 3. Find the map service to use for the SOE update



- 4. Click on the map service to see its properties
- 5. Click on the Capabilities button

6. Check the Lucity Data Update SOE

ArcGIS Ser	ver Manager		Services	Site	Security	Logs
Manage Services	OGC Services	KML Network Links	Sharing			
Editing: <u>Site (root)</u>	> LucityGIS760_	ERICDANIEL_LT			Help Save and I	Restart Cancel
General	Sele	ect and configure capabi	ities			
Parameters Capabilities		🛛 Mapping (always enab	led)	WCS		
Pooling		WMS		Feature Acc	ess	
Processes		Schematics		Mobile Data	Access	
Caching		WFS		Lucity Data	Update SOE	
Item Description						
	Мар	ping Configuration				

- 7. Click Save and Restart
- 8. If you have more than one geodatabase configured with Lucity, you will need to repeat these steps so that each Lucity linked geodatabase has a map service with the Lucity Data Update SOE enabled.

Notes:	

# Configure SOE settings in Lucity

After publishing the map service and enabling the SOE there are several options that must be reviewed inside the Lucity Administration tool

You must know the REST URL of the map service that has the Lucity SOE extension enabled. If you are unsure this information can be obtained in ArcGIS Server Manager on the Capabilities tab of the map service. The REST URL should have a path similar to:

http://<servername>/ArcGIS/rest/services/<servicename>/MapServer

#### Specify Edit Map Service URL

- 1. In the Lucity Administration Tool go to GIS > Connection Strings
- 2. Find the record which contains the connection properties for the data within the map service and update the URL field with the REST URL of the map service.

Note: Version 7.6 supports secured map services, so if using a secure map service you must also populate the Map Service User and Map Service Password fields in order for the Lucity SOE to have the ability to update the gdb.

🔏 GIS Connection Strings									
	Name	Service Url	Database	User	Password	Server	Instance		
•	DEFAULT		C:\Lucity\Data\L						
	ESRI_SAMPLE		C:\Lucity\Data\E						
	replica		C:\Lucity\Data\L						

3. You will need to repeat this process for each geodatabase connection that contains feature classes linked to Lucity

Notes: \_\_\_\_

#### **Configure GIS Edit Integration settings**

- 1. In the Lucity Administration Tool go to GIS > Settings
- 2. The GIS Edit Integration tab contains all the settings used by the SOE.

💪 Systen	n Setti	ngs									
Appear	ance	Designer Automation	Documents	Email	General	GIS 3rd Party	Integrations	GIS Desktop	GIS Edit Integration	GIS Routing	GIS Web
	Des	cription					Value				
•	GIS/Lucity Edit Integration - Allow unversioned geodatabase edits to enterpris						s FALSE				
GIS/Lucity Edit Integration - Disable all updates to the geodatabase from Lucity					ity TRUE	TRUE					
	GIS/Lucity Edit Integration - Make fields shared with the geodatabase always					S FALSE					
	GIS/Lucity Edit Integration - Make Lucity fields integrated with the geodataba					a FALSE					
	GIS/Lucity Edit Integration - Prevent saving Lucity record if GIS update fails					FALSE					
	List of emails for notifications regarding failures to update the GIS database					nschmid	nschmidt1@lucity.com				
	Send	an email if no feature is	s found in GIS	to updat	e		TRUE				
										Save	Cancel

- Allow unversioned geodatabase edits to enterprise geodatabase: This allows edits to be made to unversioned geodatabases.
- **Disable all updates to the geodatabase from Lucity:** This prevents the geodatabase from being updated with edits made in Lucity desktop and web.
- **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.
- 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.
- **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.
- 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 Lucity Data Update SOE fails to update the geodatabase.
- Send an email if no feature is found in GIS to update: Sends an email when the Lucity Data Update SOE 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.
- 3. After you are finished reviewing the settings, click Save. You have completed the steps necessary to properly configure the Lucity SOE.

# 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
- Lucity linked feature classes must be one of the following geometry types:
  - o **Point**
  - Line, polyline
  - o 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
  - $\circ$   $% \ensuremath{\mathsf{The}}$  The Max amount of days to process spatial history must be set to a value greater than 0  $% \ensuremath{\mathsf{The}}$

Notes:

## Setup

#### Assign default map services

The Lucity Spatial Updater service interacts with map services in order to obtain an asset's geometry to store in the Lucity database. To obtain the geometry for an asset the following process is followed:

- 1. Determine the list of feature classes linked to a given asset type
- 2. Do the following for each feature class until the asset geometry is returned:
  - 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, return the geometry
    - ii. If it doesn't exist, move to the next feature class
- The geodatabase 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.

Connection Properties Version Setup	Feature Class Info	Edit Map Service	Alias Names A
Workspace Type: SDF	Default service fo	r geodatabase	
Personal Geodatabase Connection Properties	http://lct-arcsrv- 01:6080/arcgis/re ervice/MapServe	est/services/LucityC r	SISDev_AsFeatureS
	Alternate Feature	Service	
Enterprise Geodatabase Connection Properties	🔽 Use alternate	service for this fea	ture class
Server: LCT-ARCSRV-01	Select feature se	rvice to use:	
Service: sde:sqlserver:LCT-ARCSRV-01\SQLEXPRES	LucityGISDev_G	ISTasks	-
Database: LucityGISDev	http://lct-arcsrv-	et /eenvicee /l ucituí	SISDev GISTackeEd
<ul> <li>Database Authentication</li> </ul>	itable/MapServer	si/services/LucityC	ISDEV_CISTASKSED
Username: GISEditor			
Password:	Note: Eesture se	nvices must first be	a configured in
Operating System Authentication	Lucity.Admin.exe	avices must mat be	e comgured m
Version: dbo.DEFAULT			
Test Connection			
Edit Map Service			
http://lct-arcsrv- 01:6080/arcgis/rest/services/LucityGISDev_AsFeature Service/MapServer			
UserName:			
Password:			
Test Connection			
Update From Lucity 🔲 Replica Geodatabase			

#### **Configure System Settings**

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

1. On the GIS Web tab, specify the URL to the geocoding service that can be used to determine the coordinates of work addresses.

🔏 Sy	stem Set	tings										
App	pearance	Designer Automation	Documents	Email	General	GIS 3rd Party Ir	tegrations	GIS Desktop	GIS Edit Integration	GIS Routing	GIS Web	
	De	scription					Value				•	
	Com	ma separated criteria to	use for a whe	e clause	if parcel la	ayer is to be q	ADG_ADF	BDG={BUILD	ING},ADDRESS='%{	STREETNAME)	%'	
	Defa	ault Base Map Name										
	Defa	ault extent for Mercator b	asemaps xmir	ymin xma	ax,ymax							
	Ford	e the GIS Web Map to	always open to	the defa	ult extent		TRUE					
	Ope	rational Data Spatial Re	ference WKID				2868					
	Sch	ema name where the Liv	veData geodat	abase rep	oository is	loaded					-	
	Sep	arator to use for Geocod	ling Intersectio	ns			I				-	
	Stre	et Address Geocodina F	ìeld				Street					
	URL	for Geocoding Service	or URL to pan	cel layer i	n map ser	vice	http://demo.lucity.net/arcgis/rest/services/GeoLocate/GeocodeServer					
	URI	for Geometry Service					http://dem	o.lucity.net:608	0/arcgis/rest/services	s/Utilities/Geom	etry/Geome	
	Use	an address layer for add	dress queries ir	stead of	a geocod	ing service	FALSE					
	Use	Use GIS Viewer instead of GIS Web for Show in Map						FALSE				
											+	
										Save	Cancel	

2. On the General tab, set the Enable Lucity Spatial to TRUE

Å	System	System Settings												
	Appeara	nce	Designer Automation	Documents	Email	General	grations	GIS Desktop	GIS Edit Integration	GIS Routing	GIS Web			
		Description							Value					
	•	Allows access to web services with certificate errors						TRUE						
		Days to keep data in login auditing table (0 to maintain all history)						90						
		Days to keep data in the event track table (0 to maintain all history)							30					
		ELA Email to send expiration warning emails to							bvandusen@lucity.com					
		ELA number of days before expiration when warnings begin						40						
		Enab	le Lucity Spatial					TRUE						
		Inact	ive User License Expira	ation in Minutes	s (recomr	nended va	lue=60)	60						
		List o	f values that are not al	lowed in search	n filters to	reduce ris	k of getting ha	(insert   update   delete   truncate  reconfigure  union  sysobjects waitforkp_c						
		Loca	tion of the Lucity help f	iles for this syst	em			http://help.lucity.com/webhelp						
		Max	amount of days to proc	ess spatial hist	ory			1000						
		Minin	num Length For Passwo	ords (Must be 1	or great	er)		3						
											Save	Cancel		

- 3. On the General tab, adjust the Max amount of days to process spatial history (must be greater than 0).
  - a. Example: If you enter 180, the Lucity Spatial Updater will process all work orders/requests modified today and within the last 180 days.
  - b. Note: The Lucity Spatial Updater service is reliant on back end configuration that was added to the Lucity database in 7.4. Therefore, depending on your upgrade history there could be a few years' worth of locations that have the potential to be processed.

# How it works



#### **Behind-the-scenes**

The following GBAWork tables and views are used with Lucity Spatial:

- WKSPATIALCHANGE
  - This table is updated automatically by the Lucity application with any change made to Work Requests and Work Orders that deal with location information.
  - The Lucity Spatial Updater service processes these records by obtaining their corresponding geometries
- WKGEOMPT- This table stores all point geometries populated by the Lucity Spatial Updater service retrieved when processing WKSPATIALCHANGE
- WKGEOMLN- This table stores all linear geometries populated by the Lucity Spatial Updater service retrieved when processing WKSPATIALCHANGE
- WKGEOMPG- This table stores all polygon geometries populated by the Lucity Spatial Updater service retrieved when processing WKSPATIALCHANGE

- GIS\_WKGEOMLNRQ- View showing all linear Request locations
- GIS\_WKGEOMPGRQ- View showing all polygon Request locations
- GIS\_WKGEOMPTRQ- View showing point Request locations (asset only)
- GIS\_WKGEOMPTRQLOC- View showing point Request locations (address and x/y)
- GIS\_WKGEOMLNWO- View showing all linear Work Order locations
- GIS\_WKGEOMPGWO- View showing all polygon Work Order locations
- GIS\_WKGEOMPTWO- View showing point Work Order locations (asset only)
- GIS\_WKGEOMPTWOLOC- View showing point Work Order locations (address and x/y)

#### Troubleshooting

Sometimes there may be records that fail to process. When a spatial change record cannot be processed it is kept in the Spatial Change table (GBAWork.WKSPATIALCHANGE) and marked with an error code. These records are kept in the Spatial Change table for 30 days after they were initially processed. After 30 days they are deleted.

The error codes are found in the SPCH\_SU\_ERROR column:

- MissingData
  - Usually means that there was an issue with the data in WKSPATIALCHANGE like the moduleID is invalid, ParentRecID is invalid, invalid x/y data, etc.
- Servicelssue
  - This occurs if there isn't a map service associated with the feature class or the feature class related to the asset type is not in the service
- NoGeometry
  - Returned if a record's geometry was found but was empty, if the indexer was unable to geocode an address, or if there was an issue with the REST call to retrieve the geometry.
- NoLucityRecord
  - Returned if the associated record no longer exists in Lucity

How to Process Records that have failed:

- 1. In the WKSPATIALCHANGE table find the record that failed
- 2. Review the error code for the record and resolve the problem
- 3. Delete the contents of the SPCH\_GUID and SPCH\_SU\_ERROR fields for the record
- 4. The next time the Lucity Spatial Updater service runs it will attempt to process the record again.

## Generating Live Work Layers

After you setup the Lucity Spatial Updater and the service has begun processing work locations you are ready to display and interact with the results. The Lucity GIS extension in ArcMap provides some out-of-the-box tools to facilitate the generation of layers that can be used to show the work locations.

1. In ArcMap on the Lucity toolbar, click on the 🏥 button. The following pop-up will appear:

- 🖳 Work Location Generator	
Select the type of work location	n layer to create:
	•
ОК	Cancel

2. Select the type of work location you would like to create from the drop down list and Click OK.

This creates temporary static layers of work request locations based on Dates, Categories, Filters, and Spatial Filters.
This creates dynamic (live) views of work request data based on a filter.
This creates temporary static layers of work order locations based on Dates, Categories, Filters, and Spatial Filters.
This creates dynamic (live) views of work order data based on a filter.
This creates temporary static layers of Master Projects based on a filter.
This creates temporary static layers of PM/Routine locations based on a Dates, Categories, Filters, and Spatial Filters.

3. The associated tool will appear allowing you to provide further details specific to the type of work.

Select a filter option:	Search Criteria
<ul> <li>Select an existing filter</li> </ul>	Select a filter:
<ul> <li>Specify advanced filter</li> <li>No filter (load all records)</li> </ul>	2006 A Services All Open WOs Building
Time Options Time Options Time Field: WO_STRT_DT End Time Field: WO_END_DT	BV CurrentYear BV WO Last bv/ParanTesting BWWO 2 COREYC OPEN WO Customer Address Customer Address WO ADR donnac test Emergency Response - Open Work Orders
Time Step Interval: 1 Days -	Eugene Open WOs
Misc. Options           Image: Do not plot addresses for records with assets.           Image: Do not plot addresses for records with X/Y           Image: Do not plot addresse	Reet - Open Work Orders FLEET COMPLETE Freaky IN My Filters Only Manually enter WHERE clause:
Work Order Locations	
Layer description:	
Display Cancel	

Selec	t a filter option	Provides se	veral ways for users to select a set of work requests to display.
	Select an existin	ng filter	Allows users to select a filter that was previously created and saved in the Requests module.
	Specify advance	d filter	Allows users to manually enter a filter using SQL.
	No filter (load a	ll records)	Displays all requests that have spatial information.
Searc	h Criteria	These fields	allow users to select or add a filter depending on their previous selection
	Select a Filter		Displays all filters that were previously created and saved in the <i>Requests module</i> . Check the <i>My Filters Only</i> box to show only the filters created by the current user.
	Manually enter clause	WHERE	Type in a filter for the request module using SQL. Start with WHERE
Time	Options	These allow ArcMap.	users to enable time functions within the layer. This allows users to use the ESRI Time functions within
	Enable Time on	Layers	This enables the time function for the request layers.
	Start Time Field		These are the pre-configured fields that the time functions will use.
	End Time Field		
	Time Step Interv	val	Fill out the number of days/weeks/ months that the time functions should group the requests into. Note: This can be changed in the layer properties after the layer is created.
Misc	Options	These allow	users to control the results in several other ways.
	Do not plot addr requests with as	resses for ssets	This option causes the results to not plot the address of the work request if there is an associated asset. If this is turned off the work request will plot both.
	Do not plot addr work request loo X/Y Coordinates	resses for cations with	This option causes the results to not plot the address of the request if there is an X/Y coordinate set. If this is turned off the request will plot both.
	Select which fie included in the r layer(s)	lds should be resulting	The results produced by this tool will plot the location of different requests and will contain attribute information from the Request module in the Attribute table. Check this option to open another section of the tool to change which fields from the Request module show up in the Attribute table.
	Alias name for l	ayer	The name that will appear in the able of contents.
	Layer description	n	The description that will appear in the layer's properties.

- 4. Fill out the form based upon the various settings and options that are available.
  - a. Note: All request and work order fields are available for use in the resulting layer. To adjust which fields should be included in the results you will want to check the "Select which fields should be included in the resulting layer(s)".



5. Click Display once you are ready to generate the layers. Once the tool has completed processing, the resulting grouped layer will be added to the map.



Examining the resulting layers:

- The tool will generate 4 layers:
  - Point layer for address and x/y data
  - Point layer for asset data
  - o Polyline layer for asset data
  - Polygon layer for asset data
- General- The resulting layer name and description is determined by the user specified settings that were defined on the Lucity Spatial Views form.

		Time		HTML Popup				Lucity Field Links		
	General	Sourc	e Selection	Display	Symbology	Fields	Definition Query	Labels	Joins & Relates	
	Layer Nam	e:	Work Order Locat	ons - Line Ass	ets 🔶		Visible			
	Description	:	LucitySpatialWork	: All open WO				*		
								Ŧ		
	Credits:									
	Scale Rang	je								
	You can s	pecify t	he range of scales a	at which this la	yer will be show	n:				
	Show	/ layer a	t all scales							
	O Don't	t show la	yer when zoomed:							
	Out	beyond:	<none></none>	– (mir	nimum scale)					
	In	beyond:	<none></none>	- (ma	ximum scale)		<u>s</u>	5		
name for layer:							57.7 a.	Υ.		
: Order Locations										
r description:										
open WOs										

Note: The Description will start with "LucitySpatialWork:" or "LucitySpatialRequest:".
 You can modify the description, but the description must start with these key words.
 This is a requirement if these layers are to be used in the Lucity Web Map.

• Source- The source used for the work layers is the GBAWork database. The tool connects to the GBAWork database as Lucity\_User. You will need to know this information if you wish to publish the layer as a service later.

	Time			HTML Popup			Lucity Field Links			
General	Source	Selection	Display	Symbology	Fields	Definition Query	Labels	Joins & Relate:		
Extent Left: 7	52443.51935	Top: 57 ft Bottom:	849970.031 846508.664	496 ft Right: 698 ft	754132.011	811 ft				
					Up	date Extent				
Data Sou	rce									
Data Typ Client: Connecti Database	e: on Properties	Qu SQ : GB GB	JERY Feature	Class DEV		E				
Feature Geometr Coordina	ie: Type: y Type: tes have Z va	Sin Lin alues: No	nple nple							
Coordina	tes have mea	isures: No								
•										
					Ch	ange Query				

• Symbology- The default for the tool is to symbolize based upon the Work Category Text (RQ\_CAT\_TY, WO\_CAT\_TY). The symbology can be altered by going to the layer's symbology tab.

	Time			HTML Popup			Lucity Field Links			
General	Source	Selection	Display	Display Symbology		Definition Q	uery	Labels	Joins & Relates	
Show:		-								
Features		Draw cat	egories using	unique value	es of one fi	eld.	_ Ir	mport		
Categorie	5	Value Field	-		Color Ra	mp				
Unique	values	Category	Text	•				-		
Unique	values, many									
-Match t	o symbols in a	Sumbol	Value	1.	hal	0	ou unt			
Quantities		Symbol	Value			C.	Juni	_		
Charts			all other values	> <al< td=""><td>other values</td><td>&gt;</td><td></td><td></td><td></td></al<>	other values	>				
Multiple A	ttnbutes	·	<heading></heading>	Ca	tegory lex	t .				
			ark Fence	Par	k Fence	?				
		Sewer Service		Sei	ver Service	7				
<										
	( YF									
	-11									
- L	_7 []									
	- ~ } d			luce Po		Demous All	Adver			
		Add All Va	Add Va	Ides	move	Remove Ai	Adva	nceu ·		
		<u> </u>								
		<b>-</b>								
		-								

- Note: The symbology is not dynamic. In other words, if a new work order/request is created that as is assigned to a category that hasn't been used yet- it will not show in the layer. To account for this situation:
  - Adjust the symbology to include the "<All other values>". Even though you visually won't be able to tell what work category the work item has been assigned, at least it will be visible in the layer.
  - Occasionally you will want to update the symbology of the layer by using "Add All Values".

• Definition Query- A definition query was applied to the layer if the option to use an existing filter or an advanced filter was specified on the Lucity Spatial Views Form.

	Time			HTML Popup		Lucity Field Links		
General	Source	Selection	Display	Symbology	Fields	Definition Query	Labels	Joins & Relates
Definition (	)uery:							
WO_STAT	"_CD < 950							
Qu	ery Builder				Search	o Order		

• Time- If the option to enable time on the generated layer was set, then the Time tab on the resulting layer will have some additional settings that can be configured.

General	Source	Selection	Display	Symbology	Fields	Definition Query	Labels	Joins & Relates				
	Time			HTML Popup		I	Lucity Field Li	nks				
✓ Enable t	time on this la	iyer										
- Time prop	perties											
Layer 1	Time:	Each feat	ture has a sta	rt and end time f	ield	•						
Start T	ime Field:	Start Dat	Start Date 💌									
End Tir	ne Field:	End Date	End Date 👻									
		Selected f	Selected fields are not indexed. Index the fields for better performance.									
Field Fe	ormat:	<date t<="" td=""><td>ime&gt;</td><td></td><th>•</th><td></td><td></td><td></td></date>	ime>		•							
Time S	tep Interval:	1.00	1.00 Days 💌									
Layer 1	Time Extent:		To: Calculate									
		🔽 Data c	hanges frequ	ently so calculate	e time extent	t automatically.						
Advanced	d settings											
Time Z	one:	(UTC-06:	00) Central Ti	me (US & Canad	a)	•						
		Values	Values are adjusted for daylight savings									
Time O	ffset:	0.00	0.00 Years 🔻									
Disp	Display data cumulatively											

- Customizations to the layer settings (symbology, labeling, etc) can be saved and used as the default for future runs of the Lucity Spatial View tool. For more information on how to save these settings refer to the Lucity Symbology default tool: <u>http://help.lucity.com/webhelp/v140/gis/index.htm#25859.htm</u>
- The Lucity extension tries to handle all the situations needed with generating query layers; however, there may be some additional requirements needed based upon the underlying database platform. Refer to <u>http://resources.arcgis.com/en/help/main/10.2/index.html#/Preparing\_to\_use\_query\_layers/</u>00s500000032000000/ for more information.

## Publishing Live Work Layers

After you have created the live work layers, you can distribute access to those layers for users on the ArcGIS Desktop platform. If you wish to provide access to those layers in the Lucity web map, or any of the Lucity mobile applications then you will need to create a map service that contains these layers.

There is more than one way to publish a map service; the following is an example of how you can create the service from within an ArcMap document (.mxd).

- 1. In ArcMap add the live work layers to the map and customize properties so the map is displaying the data as you like.
- 2. In ArcMap, click File>>Share As>>Service.



3. Before you publish the service, you will want to analyze.

Service Editor		X
Connection: arcgis on lct-a	srv-01_6080 (publisher) Service Name: MyMapService 🖳 Import 🗸 Analyze	편 Preview  🔬 Publish 🔿
General	General	
Parameters	General	

- 4. The following are some common warnings/errors found when publishing the Lucity Live Work Layers and how they can be resolved:
  - Layer's data source is not registered with the server and data will be copied to the server

	Severity	Status	Code	Description 🗸						
•	High	Unresolved	24011	Data source is not registered with the server and data	Data source is not registered with the server and data will be copied to the server (8 items)					
$\vdash$	High	[Re-analyze]	24011	Layer's data source is not registered with the server an	Layer's data source is not registered with the server and data will be copied to the server					
+	High	Unresolved	24011	Layer's data source is not registered with the server	d data will be conied to the server					
F	High	Unresolved	24011	Layer's data source is not registered with the server	Register Data Source With Server					
+	High	Unresolved	24011	Layer's data source is not registered with the server	Show Data Store Registration Page					
F	High	Unresolved	24011	Layer's data source is not registered with the server	Help					
-	High	Unresolved	24011	Layer's data source is not registered with the server	Calent Laura In Table Of Contrasts					
-	High	Unresolved	24011	Layer's data source is not registered with the server	Select Layer In Table Of Contents					
L	High	Unresolved	24011	Layer's data source is not registered with the server	Mark As Exception					
Δ	Medium	Unresolved	10045	Map is being published with data copied to the ser	Com					
A atus:	Complete		10000	NA 2 10 11 11 11 11 12 12 11	Сору					
uus.	compiete				Select All					

- i. This must be fixed; otherwise, the layer will not be refreshed with updates.
- ii. To resolve, right-click on the error and select the Register Data Source With Server option.
- iii. If needed, you may need to manually create a db connection to GBAWork using Lucity\_User.



Shape field is not visible .

	Severity	Status	Code	Description 🛛	
Δ	High	Unresolved	10066	Map is not time enabled and all data ir	n time enabled layers will draw by default
- 🛆	Medium	Unresolved	24048	Shape field is not visible (8 items)	
-	Medium	Unresolved	24048	Shape field is not visible	Malas Charas Galdadabha
-	Medium	Unresolved	24048	Shape field is not visible	Make Shape field visible
-	Medium	Unresolved	24048	Shape field is not visible	Remove Layer
-	Medium	Unresolved	24048	Shape field is not visible	Help
-	Medium	Unresolved	24048	Shape field is not visible	Select Laver In Table Of Contents
-	Medium	Unresolved	24048	Shape field is not visible	
-	Medium	Unresolved	24048	Shape field is not visible	Mark As Exception
L	Medium	Unresolved	24048	Shape field is not visible	Copy
atus:	Complete				Select All

- i. This must be resolved before publishing
- ii. To resolve, right-click and select Make Shape Field Visible
- 5. Once you resolved all the issues, you can publish the service. Once published, you can add this service to the Lucity web map or mobile applications.

The Lucity Live Work layers are essentially query layers. They are pointing to various spatial views in the GBAWork database. These layers are 'live' meaning if a work location is added/updated/deleted this information automatically refreshed in the live work layer.

# GIS Updates via Feature Service

Starting in version 7.6 Lucity updates to the GIS required the use of the Lucity SOE for ArcGIS Server. This Server Object Extension had to be installed on ArcGIS for Server and the extension had to be enabled on the Edit Map Service defined in Lucity Admin UI. With version 2014r2 Lucity offers the ability to push edits from Lucity to GIS directly via a feature service. 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

Notes:

## 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.

Connection Properties Version Setup	Feature Class Info	Edit Map Service	Alias Names	A + >
Workspace Type: SDF	Default service for	geodatabase		
Personal Geodatabase Connection Properties	http://lct-arcsrv- 01:6080/arcgis/re ervice/MapServer	st/services/Lucity@	GISDev_AsFea	tureS
	Alternate Feature	Service		
Enterprise Geodatabase Connection Properties	Use alternate :	service for this fea	ture class	
Server: LCT-ARCSRV-01	Select feature ser	vice to use:		
Service: sde:sqlserver:LCT-ARCSRV-01\SQLEXPRES	LucityGISDev_G	STasks		-
Database: LucityGISDev	http://lct-arcsrv-			
Oatabase Authentication	itable/MapServer	st/services/Lucityu	alSDev_GISTa	SKSED
Username: GISEditor				
Password:	Noto: Ecoturo co	nuinne munt firet be	o configurad in	
Operating System Authentication	Lucity.Admin.exe	rvices must inst be	e comigured m	
Version: dbo.DEFAULT	_			_
Test Connection				
Edit Map Service				
http://ict-arcsrv- 01:6080/arcgis/rest/services/LucityGISDev_AsFeature Service/MapServer				
UserName:				
Password:				
Test Connection				
Update From Lucity 🔲 Replica Geodatabase				

## **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

Å	System	n Setti	ings									
	Appeara	ance	Designer Automation	Documents	Email	General	GIS 3rd Party In	tegrations	GIS Desktop	GIS Edit Integration	GIS Routing	GIS Web
		Description				Value						
	•	GIS/Lucity Edit Integration - Allow unversioned geodatabase edits to enterpris						FALSE				
		GIS/Lucity Edit Integration - Disable all updates to the geodatabase from Lucity F						FALSE				
		$GIS/Lucity\ Edit\ Integration\ .\ Make\ fields\ shared\ with\ the\ geodatabase\ always$						FALSE				
		GIS/Lucity Edit Integration - Make Lucity fields integrated with the geodataba						FALSE				
		GIS/I	Lucity Edit Integration -	Prevent savin	g Lucity i	record if G	IS update fails	FALSE				
		List o	f emails for notifications	regarding fail	ures to up	odate the (	GIS database	nschmidt1@lucity.com				
		Send	an email if no feature is	s found in GIS	to updat	e		TRUE				
		Use F	Feature Service instead	of Lucity SOE				TRUE				
l		_										
											Save	Cancel

- Allow unversioned geodatabase edits to enterprise geodatabase: This allows edits to be made to unversioned geodatabases.
- **Disable all updates to the geodatabase from Lucity:** This prevents the geodatabase from being updated with edits made in Lucity desktop and web.
- **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.
- 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.
- **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.
- 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.
- 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.



#### 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 GIS- Scheduled Tasks

Scheduled Tasks were introduced in v2014. Starting with v2014, scheduled tasks were designed to push inspection data from Lucity into the related GIS feature class. Although the name implies they could be scheduled, with v2014 they had to be run manually via the Run GIS Task tool in Lucity Geodatabase Configuration tool. With v2014r2, we added support for GIS to Lucity synchronization. We also released a new service, Lucity GIS Task Runner, which automates the processing of Scheduled Tasks.

#### **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

Notes:

## 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.

Connection Properties Version Setup	Feature Class Info Edit Map Service Alias Names A
Workspace Type: SDF	Default service for geodatabase
Personal Geodatabase Connection Properties	http://lct-arcsrv- 01:6080/arcgis/rest/services/LucityGISDev_AsFeatureS ervice/MapServer
	Allemate Fashing Casting
Enterprise Geodatabase Connection Properties	Use alternate service for this feature class
Server: LCT-ARCSRV-01	Select feature service to use:
Service: sde:sqlserver:LCT-ARCSRV-01\SQLEXPRES	LucityGISDev_GISTasks
Database: LucityGISDev	http://ct-arcsrv- 01:6080/arcgis/rest/services/LucityGISDev_GISTasksEd
Database Authentication	itable/MapServer
Username: GISEditor	
Password:	Note: Feature services must first be configured in
Operating System Authentication	Lucity.Admin.exe
Version: dbo.DEFAULT	
Test Connection	
Edit Map Service	
http://tct-arcsrv- 01:6080/arcgis/rest/services/LucityGISDev_AsFeature Service/MapServer	
UserName:	
Password:	
Test Connection	
Update From Lucity 🔲 Replica Geodatabase	

#### 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.

Add	•	Spatial Relationship
Delete		Number Generator
Validate		Scheduled Task
Domains	×	
Feature Class Schema	•	
Import Feature Class Alias Name		

2. The following form will appear:

Scheduled Tasks					
General Info	Process log				
Task Type: 🗾 Disabled	TimeStamp	Status	Edit	Error Err	orDescription
Filter Options  None (process all source records)  Filtered set Where Clause: Select Filter					
Options  Options  Only process records modified since last run Last Edited DateTime Field:  Insert record if it doesn't already exist  Update existing record  Detete provisi inspection(s) for asset. (Only  keep most recent inspection)					
Scheduling Info Units: 0 Frequency: Last run: Override	•	III			Þ
Next run: Recalc					
Hadoy Last Process DateTime: Last Sync Start: Last Sync End: Last Sync contained errors					

- 3. Under General Info- select the desired Task Type from the drop down menu. For v2014r2, 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.

Lucity GIS	X
Warning! Not checking this option will res synchronize to Lucity. This may result in le	ult in ALL feature class records to onger processing time for the task.
	ОК

- 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. **Update existing record** Allows updates to existing records in the GIS feature class or Lucity module depending on the task type.
- e. **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.



2. The following form will appear:

- Copy GIS Task to other feature class(es)	
GIS Task Properties	ch feature class(es) to assign GIS Task
General Info Task Type: Sync-Lucity to GIS	alCustom
Filter Options         cmParce <ul></ul>	l1 Vaste
Options cmSurve eqEquipr Only process records modified since last run eoRect	ySite nent
Last Edited DateTime Field: LastModDate	J
V Inservedual in doesn't already exist V Update existing record Delete previous inspection(s) for asset (Only	JASSEL
keep most recent inspection)	iset action ing
Units: 1 Frequency: Months Fichigation	nController nNode nPipe
Next run: 5/2/2014 1:46:00 PM	nValve
fcRoom fcRoom fcRoom	iset
Assign GIS Task Cancel fr Site	•

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
  - Confirms feature class is an inspection feature class
  - Tests connection to parent feature class service(s)
  - If Use Last Sync Date option is true- verifies the Lucity module contains a Last Mod Dt field
  - If Delete option is true- verifies that the Lucity module has a Most Recent Inspection flag
  - Tests the SQL syntax used to obtain the list of Lucity records
- Import Validations
  - If Use Last Sync Date option is true- confirms that a GIS Date Time Field is defined and exists in the layer in service
  - Confirms that the Scheduled Task's Last Sync Date Time is populated
  - 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
  - $\circ$  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.

Lucity GIS			×
You are about to run a sche Lucity and/or GIS database(	duled task! This w s). Are you sure y	vill make data chan ou want to proceed	ges to your !?
	Yes	No	Cancel

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.

## How it works







#### 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:

	TimeStamp	Status	Edit	Error	ErrorDescription	٠
	7/31/2014 5:55:04 PM		0	0	Skipping Feature- Esri Last Edited DateTime	
	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 DateTime	
	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				Ŧ
		·		-		

- 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