

TRAINING GUIDE

ArcGIS Server and Geodatabase Administration

Part 2

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ArcGIS for Server Geodatabase Administration - Part 2

This session touches on key elements of maintaining enterprise geodatabases that help drive ArcGIS for Server services as well as backup techniques.

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Maintenance

Geodatabase Administration Tools

You can use the ArcCatalog interface for administrating users in the Enterprise Geodatabase.

1. Go to ArcCatalog and connect to a Geodatabase as an administrator with Dbo privileges. Once connected, right click on the connection and choose administration.

Ē	Сору	Ctrl+C		
ê	Paste	Ctrl +V		
×	Delete			
	Rename	F2		
З	Refresh	F5		
	New	•		
	Import	•		
	Export	•		
	Administration	•		Administer Geodatabase
	Distributed Geodatabase	×	ą,	Compress Database
	Connect			Add User
	Disconnect			Create and Manage Roles
	Connection Properties			
	Geodatabase Connection Propert	ies		
Q	Share as Geodata Service			
8	Properties			

2. In the administration menu, you will see four choices. Compress is now integrated within the administration menu. Also, you can add users and create/manage roles in your enterprise Geodatabase without touching SQL Server. Roles will allow you to give permissions to the role without having to give permissions to each and every user. Think of a role as a group.

3. Click on Add User. You have two choices, operating system authentication or sql server authentication which gives an arbitrary login and password not related to windows but related to sql server only. You have the choice of adding the user to a role.

💊 Create Database User	- • •
Input Database Connection	Database User 🏠
Database Connections\demo.default.osa.sde	
Create Operating System Authenticated User (optional)	Type a name for the new database user.
Database User	lf you obase to erecte a
gbams\ccrupi	If you chose to create a database user for an
Database User Password (optional)	operating system login, the
	user name must match the
Role (optional) Genius	login name.
Tablespace Name (optional)	
*	
OK Cancel Environments << Hide Help	Tool Help

4. Go to Administer Geodatabase on the administration menu, the Geodatabase Administration dialog will appear. You can create versions, check connections and locks.

🝶 Geodatabase Administration (DBO@TEST-DB/LucityGIS)										
Versions Connections Locks										
Filtering Name: Owner:	Properties Name: DEFAULT Owner: dbo									
Name Owner Modified	Parent:									
DEFAULT dbo 8/1/2012 3:33:22 PM edit DBO 6/28/2012 7:14:32 AM	Description: Instance default version. Access: Public ▼ Created: 6/28/2012 7:14:32 AM Modified: 8/1/2012 3:33:22 PM Is Blocking: False Is Replica: True									
Refresh 2 of 2 Versions at 8/17/2012 12:31:29 PM >	Is Locked: False									
Transactional Tree View Reconcile Order Historical										

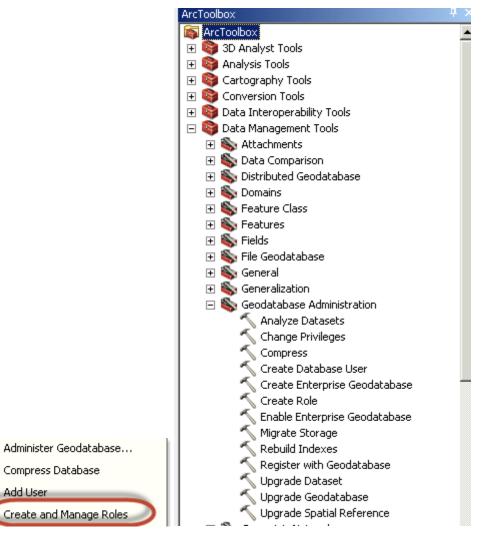
Create Role

IJ

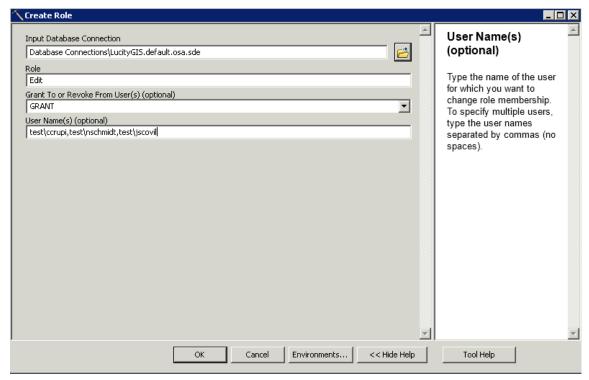
There are two different ways you can create roles. One way is to create an SDE role and assign users to the roles. The other way is to create Active Directory groups, add active directory groups to SQL Server allowing for Active Directory groups to act like roles. The great thing is that Active Directory is then managed by your IT user administration system without needing to manage all the users through SQL Server. We will show both ways below.

Create Role within ArcCatalog

1. Right click on the database connection and go to Create and Manage Roles. You can access this from ArcToolbox Data Management Tools as well.



2. The create role dialog will appear. You can grant or revoke users from roles from this interface.



3. Create Active Directory Groups for the Enterprise Geodatabase

Notes:_____

4. Open the Active Directory Users and Computers dialog from your domain controller and add a group by right clicking on users and select new group. Add a name such as GISView. The default settings are fine. Click ok.

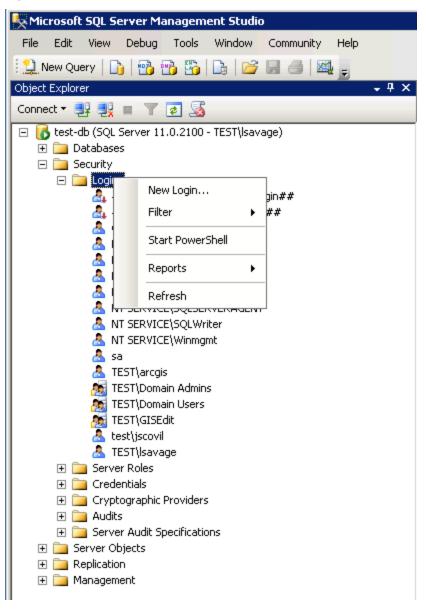
lew Object - Group	×									
Create in: test.local/Users										
Group name:										
GISView										
- (ur l eee)										
Group name (pre-Windows 2000):										
GISView										
Group scope	Group type									
C Domain local	Security									
Global	O Distribution									
C Universal										
	OK Cancel									

5. Double click on the new group and add members within the members tab.

GIS	View Properties			<u> </u>		Select Users, Contacts, Computers, Service Accounts, or Group	os ? 🗙
G	eneral Members	4ember Of Managed	Ву			Select this object type:	
	Members:				[Users, Service Accounts, Groups, or Other objects	Object Types
	Name	Active Directory Dom	ain Services Folder		ľ	From this location:	
					e	test.local	Locations
					E	Enter the object names to select (<u>examples</u>):	
					Ŀ	Rick Wilson (rwilson@test.local)	Check Names
					ŀ		
					þ	Advanced	Cancel
					ĥ	Advanced	
	Add	Remove					
T							
_		OK	Canaal	Apply			
		UK	Cancel	Apply			

6. Add the member and click ok.

7. Open SQL Server Management Studio and add new group to SQL Server by going to the TOC of the instance connection and expand security. Right click on the Login folder and select new login.



8. Click on Search and make sure you are connecting to your domain as the location and add groups as a selectable item from Object Types. Click ok when you've found the group. In this example, we're using test\GISView. Make sure the default database is selected to something other than master. Since these users are going to a view only group, we're assigning the group to the replica as the default database.

🚪 Login - New				
Select a page	🛒 Script 👻 📑 Help			
General Server Roles Suser Mapping	Login name:	TEST\GISView		Search
Securables	Windows authentication			
🚰 Status	O SQL Server authentication			
	Password:]
	Confirm password:			
	Specify old password			
	Old password:			
	🗹 Enforce password polic	y.		
	🗹 Enforce password expir	ation		
	🔽 User must change pass	word at next login		
	Mapped to certificate		T]
	O Mapped to asymmetric key		T]
	Map to Credential		v	Add
Connection	Mapped Credentials	Credential	Provider]
Server: test-db				
Connection: TEST\Isavage				
View connection properties				
Progress				Remove
Ready	Default database:	Replica]
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Default language:	<default></default>	•	]
			OK	Cancel

### Notes:_____

9. In the TOC of the Login - New dialog, click on user mapping. Check the boxes next to the databases you want the group to be assigned to. Just keep database role membership for <database> set to public. We'll let the Enterprise Geodatabase control privileges. Click ok.

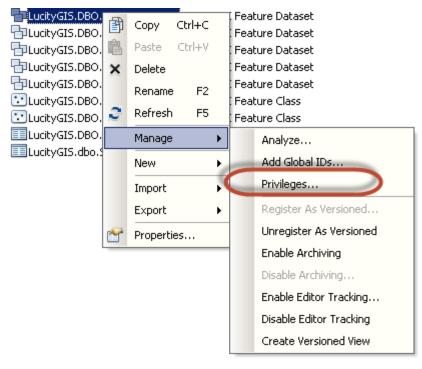
🚪 Login - New					
Select a page	<u> S</u> Script 👻	🖪 Help			
😭 General					
😭 Server Roles	llsers mar	oped to this login:			
User Mapping Securables	Map	Database	User	Default Schema	
Securables		GBAWork001	0301		
		LucityGIS			
		master			
		master			
		msdb			
	- -	Raster	TEST\GISView	dbo	
		Replica	TEST\GISView	dbo	
		ReportServer	1231 (0134)644	359	
		ReportServerTempDB			
		tempdb			
		tempab			-
	🗖 Guest	account enabled for: Replic	а		
	Database	role membership for: Replic	_		
Connection		· · ·	•		
		cessadmin ckupoperator			
Server: test-db		itareader			
	🗌 db_da	tawriter			
Connection: TEST\lsavage		lladmin			
_		nydatareader nydatawriter			
View connection properties					
	db_se	curityadmin			
Progress	🔽 public				
Ready					
No. of					
				ОК	Cancel

### Notes:_____

# Change/Add Privileges

In the previous exercise, we created two types of role scenarios. One is using the enterprise Geodatabase tools to create a role with multiple users which can be revoked per user. The other is allowing Active Directory Groups to be assigned like roles. Now, we are going to assign privileges to these two types of roles.

1. Go to ArcCatalog database connection as administrator and right click on the data you want to add privileges to. Remember, you can multiply select one object at a time (Feature Datasets, Feature Classes, and Tables). In this example, we'll be adding the active directory group we created. Select Privileges.



2. Click on the user/role you would like to add. Click ok.

🔊 Privileges				_ 🗆 ×	aj u	lser/Role			_ 🗆 ×
Replica.DBO.LucityTRAFFIC						Name	Туре		
_User/Role	Select	Insert	Update	Delete		dbo guest TEST\arcgis TEST\GISEdit TEST\GISView test\jscovil	User User Public User Group User	ОК	Cancel
Add	0	<	Cancel	Apply					

3. Since the GIS View group is read-only, only keep the select box checked. Click ok.

🝶 Privileges				
Replica.DBO.LucityTRAFFIC				
User/Role	Select	Insert	Update	Delete
TEST\GISView	~			
Add	Ok	(	Cancel	Apply

Notes:_____

# Analyze and Index

Analyze and index is something that you want to do on a regular basis if you creating and adding features to your database. This will allow for better faster access to your database. Make sure ArcGIS for Server services are stopped before rebuilding indexes.

• Go to your database connection and select on the objects you want to analyze and rebuilt index. Right click on the select items and go to manage/analyze. There is no feel good complete dialog given so let the wheel turn until complete.

Contents Preview	Des	cription								
Name			Type							
💩 DBO.STNETG_A	ddre	ssLocator	Locat	or:						
💩 DBO.STNETG_C	reate	AddressLo	. Locat	or:						
🖶 demo.DBO.Lan			SDE F	SDE Feature Dataset						
📴 demo.DBO.Luci			SDE F	eature	e Dataset					
demo.DBO.Luci					e Dataset					
demo.DBO.Luci					e Dataset					
demo.DBO.Luci					e Dataset					
demo.DBO.Luci					e Dataset					
🖶 demo.DBO.Luci					e Dataset e Dataset					
demo.DBO.Luci					e Dataset e Dataset					
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demo.DBO.Luci					e Dataset					
demo.DBO.Luci					e Dataset					
demo.DBO.Luci			SDE F	eature	e Dataset					
🖶 demo.DBO.Luc	ara.			eature	e Dataset					
😳 demo.DBO.CM	a Can			eature	e Class					
🖸 demo.DBO.CM			rl+V	eature	e Class					
demo.dbo.SDE	×	Delete								
		Rename	F2							
	3	Refresh	F5							
		Manage	×		Analyze					
		New	•		Add Global IDs.,					
		Import	•		Privileges	Analyze				
		Export	•		Register As Vers	<ul> <li>Analyze this</li> <li>DBMS statist</li> </ul>	dataset to update the tics.			
	nig.	Properties			Unregister As Ve					
l	_				Enable Archivin	Advanced license and is disabled				
					Disable Archivir					

# Compression

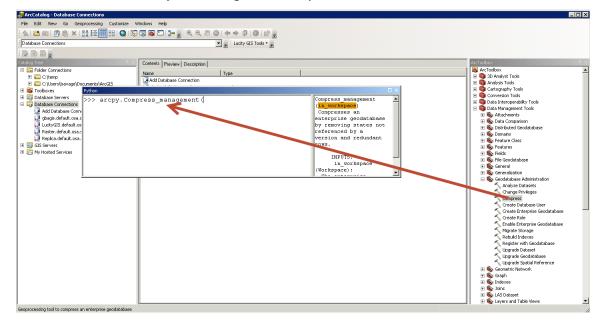
### What is Compression?

Is a process of moving rows of data from the delta (add and delete) tables to the base tables of the feature classes. This is a versioning performance process.

- If your data is in default and you have the data versioned, you should compress.
- Performance and Data Integrity Tip: Analyze statistics and rebuilt indexes before and after compression
- Data Integrity Tip: Compress at least once a week
- Data Integrity Tip: Compress after large loads of data or major changes in data

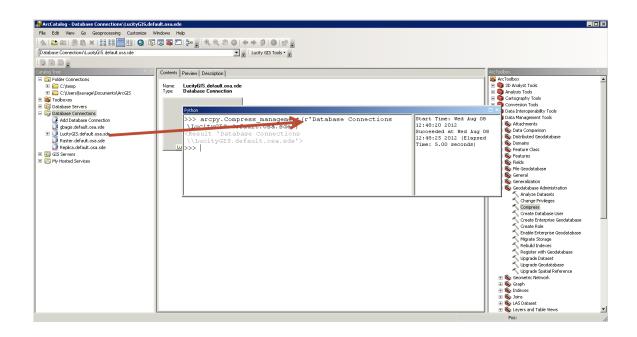
There are several ways to compress your database. Below are the different ways to compress your database.

- 1. Using Python
  - a. Open ArcToolbox and go to data management tools/Geodatabase Administration/Compress
  - b. Open the Python dialog by going to the Geoprocessing Menu and left click on Python
  - c. A dialog window will open for Python. Left click on the Compress tool in ArcToolbox and drag the tool within the Python window
  - d. Notice that the Python dialog has been updated with the new function



e. Now open the database connection you would like to compress. Make sure the connection has rights to perform a compress. Drag and drop the connection into the Python dialog

f. Hit the Enter button on the keyboard as this will execute the command. On the right, the dialog will show the start time and how long it took to complete the operation.



- 2. Using the ArcCatalog Tool
  - a. Right Click on a database connection in the ArcCatalog TOC
  - b. Choose Administration/Compress Database

=									
	💭 repl.default 🚰 Dacta Ctvl		Ctrl+C	LucityEQUIP S		SDE Featu	ire Da	taset	
			Ctrl+V	Lucit	yFACILITY	SDE Feature Dataset			
💭 repl.default		Delete		Lucit	yPARK	SDE Featu	ire Da	taset	
GIS Servers		Rename	F2	Lucit	WRIGHTOFWAY	SDE Featu	ire Da	taset	
👌 My Hosted Serv	~			Lucit	yroad	SDE Featu	ire Da	taset	
<u> </u>	2	Refresh	F5	Lucit	SEWER	SDE Featu	ire Da	taset	
		New	•	Lucit	STORM	SDE Featu	ire Da	taset	
		Import	•	Lucit	STREET	SDE Featu	ire Da	taset	
		Export		Lucit	yTRAFFIC	SDE Featu	SDE Feature Dataset		
		•	•	Lucit	WATER	SDE Featu	ire Da	aset	
		Administration	•		Administer Geodatabase			aset	
		Distributed Geodatabase	•	Q.	Compress Data	base		aset	
		Connect			Add User			aset	
		Disconnect			Create and Manage Roles		Compress Database		
		Connection Properties		CINIO COMIO		JDE LOCO		Compress a versioned	
		Geodatabase Connection P	roperties	SDE_0	SDE_compress_log Table			odatabase. This removes	
	_		ropercies	-			unreferenced states from the states tree, improving query		
	Q	Share as Geodata Service						formance.	
	8	Properties		L					
								ly the geodatabase	
								ninistrator can compress the Idatabase.	
							3		
								juires a Standard or an	
								vanced license and is read-only h a Basic license.	
							0010	n a basic license.	
			-						

**Note:** Compress process will only compress data that is in read-only mode. If a feature class is being edited, the compress process will bypass the feature class table and only compress non-edited data. If you are having problems with compression, please reconcile, post all versions. Afterwards, delete the versions and make sure all state locks are terminated as well as all users are disconnected. After all users are disconnected, perform the compression routine. This is better known as "Zero State Compression". Afterwards, recreate your versions and you'll have clean delta tables.

# Spatial and Attribute Indexes

Spatial indexes are managed for you in a sql table. You can delete and recreate the spatial index from the feature class properties. Spatial indexes allow your spatial data to be queried faster within a grid concept. Each grid has a size based on the density of your spatial data. In the past, this was a calculation that needed to be performed by the GIS DBA or GIS Analyst but is now automated for you. Kudos ESRI!

**Spatial Indexes** 

- 1. If you are recalculating your feature extent and feel that you want to recreate your spatial index, right click on a feature class and choose properties.
- 2. When the feature class properties dialog appears, go to the indexes tab.
- 3. Click Delete and Create under Spatial Index at the bottom of the dialog. Click Apply.

Feature Clas	s Properties				[X]
General	Editor Tra	cking ×		Domain, Resolu	ition and Tolerance
Fields	Indexes	Subtypes	Feature Extent	Relationships	Representations
R507_ UUID UUID UUID Ascend Fields: Globali OBJEC	OID_507 : Yes ing: Yes ID TID Index			Add Delete	
			40	Cance	Apply

4. This process will recreate the feature class spatial index table for the feature class.

### **Attribute Indexes**

Attribute indexes are used to speed the performance of data queries used on a consistent basis. As an example, we are going to setup an attribute index for Lucity GIS data. Both the common ID and the Lucity AutoID will speed up your query performance capability for each feature class that is linked to Lucity when assigning an attribute index.

- 1. In the same dialog as the previous exercise (Feature Class Properties), please go to the indexes tab.
- 2. Click on the Add button next to Attribute Indexes.

General	Editor Tra	cking X	Y Coordinate System	Domain, Resolu	ution and Tolerance
Fields	Indexes	Subtypes	Feature Extent	Relationships	Representations
Attribut	e Indexes —				
	SDE_ROWID	_UK		Add	
	507 OID_507			A00	
				Delete	
Unique:	Yes				
•	ing: Yes				
Fields:					
GlobalI					
OBJEC	ΠD				

3. Create LucityIDX for the Name and add the NTG_ID which is linked to the Lucity AutoID.

Add Attribute	Index			8
Name:	LucityIDX			
Fields Fields avail NTG_SHAI NTG_CLN NTG_IDD NTG_OWN NTG_DB LastModB LastModD LastSynDz GlobalID	P_CD _CD {_CD {_CD N_CD	Fields selec	ted:	
		ОК	Cancel	

4. Click ok and Apply.

5. Complete the same operation again by adding LucityCMN index and associate it with the field NTG_NUMBER which is linked to the Lucity AltID.

Add Attribute	Index				23
Name:	LucityCMN				
🔲 Unique	ng				
Fields Fields availa	able:		Fields selected:		
NTG_OWN NTG_ID NTG_DB LastModBy LastModDa	ite	Â	NTG_NUMBER		Ť
LastSynDa GlobalID NTG_NUME SHAPE.len	BER	•			J
			ОК	Cancel	

6. Click Ok and Apply.

Notes:	 	 	

# Tune SQL Server space for Geodatabases

In terms of SQL Server space for Geodatabases, the functionality of the Geodatabase is key to how much space you will need. Recommend splitting up the vector and the raster data into two separate Geodatabases. Raster should be in its own database. This will allow for easy to manage backups and system configuration.

1. When loading Raster data calculate the decompressed size of the image and set this as the file size for the initial load. The logfile can be somewhat small as ESRI has changed the transaction of the loads from one long transaction to iterative raster load transactions. A good rule of thumb, create logfiles for Raster 1/3 of the size of the Raster database. For the data file size, find out the decompression size of the complete mosaic raster data or single image size as a collection. You can choose to use the new mosaic option for raster as this will create a virtual mosaic dataset like the terrain datasets but that's totally up to you as the administrator.

🥛 Database Properties - Rast	er						
Select a page Page General	🔄 Script 👻 📑 H	elp					
Files Filegroups Options	Database name: Owner:		Raster TEST\lsava	age			
Change Tracking Permissions Extended Properties	Use full-text indexing Database files:						
	Logical Name	File Type	Filegroup	Initial Size (MB)	Autogrowth / Maxsize		
	Raster_dat	Rows	PRIMARY	1900	By 10 percent, Unlimited		
	Raster_log	Log	Not Applicable	575	By 10 percent, Limited to 209		
Connection							
Server: test-db							
Connection: TEST\lsavage							
View connection properties							
Progress							
Ready	<u>+</u>			Add	Remove		
					OK Cancel		

2. For log files, don't let the log files use unlimited file growth as a looped transaction could bring your server down.

🚪 Change Autogrowth for Raster	_log 🛛 🗙
Enable Autogrowth	
File Growth	
<ul> <li>In Percent</li> </ul>	ho 🛨
C In Megabytes	10
Maximum File Size	
Eimited to (MB)	5,000 🛨
O Unlimited	
	OK Cancel

3. Do the same for the data filegroup.

🚪 Change Autogrowth for Raster_	_dat 🛛 🗙
Enable Autogrowth	
File Growth	
In Percent	10 +
C In Megabytes	10 -
Maximum File Size	
<ul> <li>Limited to (MB)</li> </ul>	5000
O Unlimited	
	OK Cancel

- 4. Most Raster datasets are 30 GB to 70 GB once loaded in the Enterprise Geodatabase. You may want to compensate for the increase. It's faster to pre-allocate space for Raster before you load. Don't allow Raster databases to get too large. As a recommendation, you could split up Raster databases into separate databases maxing out each one into 300GB databases.
- 5. After loading, analyze through ArcCatalog and assign permissions. Make sure you backup, truncate log file and shrink the log file before making it available to the public.
- 6. If large loads for vector data or a Geodatabase that is used as an editing Geodatabase, perform similar operations.
- 7. Set your growth to a manageable amount within your data storage. For Vector, you can use percentage. For Raster, you will be adding large amounts of data in one transaction. You should consider size growth rather than percentage.

# Backups

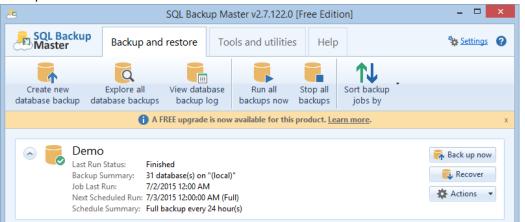
If you want to create backups using the SQL Server maintenance wizard, this is an easy step by step process. However, in our example below, we will be creating backups from SQL Backup Master. This an optional program to use for backing up SQL Express as well as full blown SQL Server Standard and Enterprise. Note: when you want 99% assurance of your enterprise geodatabase backups, simply backup to a known location both offsite and onsite as a file geodatabase.

🧾 Database Properties - Demo		
Select a page	🛒 Script 🔻 🛐 Help	
🚰 General	To scubr + Di Lieb	
🚰 Files		
Filegroups	Collation: SQL_Latin1_General_CP1_CI_AS	•
Options	Recovery model:	<b></b>
Change Tracking	E.J	
Permissions Extended Properties	Compatibility level: Bulk-logged	
Extended Properties	Containment type: Simple	
	Other options:	
	Auto Shrink False	*
	Auto Update Statistics True	
	Auto Update Statistics Asynchronously False	
	Default Fulltext Language LCID 1033	=
	Default Language English	
	Nested Triggers Enabled True	
	Transform Noise Words False	
с:	Two Digit Year Cutoff 2049	
Connection	Cursor	
Server:	Close Cursor on Commit Enabled False Default Cursor GLOBAL	
LUKESAVAGE\SQLEXPRESS	Default Cursor     GLOBAL     FILESTREAM	
Connection:	FILESTREAM Directory Name	
GBAMS\lsavage	FILESTREAM Directory Name FILESTREAM DIRECTO	
View connection properties	Miscellaneous	
	Allow Snapshot Isolation False	
Progress	ANSENTITE Default False	
Flogless	Allow Snapshot Isolation	
Ready		
Name of Contract o		
	OK	Cancel

# Enterprise Geodatabase Backups

- Full Backup: This will backup the entire database.
- Intermediate Backups: Captures changes to the database since the last full backup (also known as differential backups.
- Truncate Logs: Truncates logs to free up space
- Shrink: Shrinks log files.
- Analyze and Index: Analyze/update statistics, and updates indexes
- We will be calculating an index of 90% capacity for fillfactor (which gives 10% growth for data indexes). Also, we will retain the backups for 13 days and starting over on the 14th day.
- Full Backup: Every day at night
- Differential or Intermediate backup: Running every 12 hours

- Backup Logs: Run every 4 hours.
- Shrink Logs: Run after full backup
- Analyze, update statistics and indexes: Run after full backup.
- Create backup copy
- Test Recovery every once in a while (maybe every quarter)
- For Raster or Large Static Databases (20GB or more), consider separate plan for backup and recovery. Still backup transaction logs and shrink transaction logs on a periodic basis.
- 1. A free or paid tool to use is <u>http://www.sqlbackupmaster.com/</u>. SQL Server Maintenance Backup Job.



### 2. Create new database backup

2	SQL Backup	SQL Backup Master v2.7.132.0 [Professional Edition] - TRIAL LICENSE						
BOL Backup Master	Backup and	restore	То	ols and utilities	Help		Settings 🕜	
Create new database backup	Explore all database backups	View datal		Run all	Stop all backups	Sort backup		

Notes:____

3. Connect to SQL Server instance, backup databases and add destinations for backup

	Database Backup Editor
Source:	Destinations:
Current: [Unspecified] Choose SQL Server Back up all non-system databases (?) Show system databases	🛼 Add 🛼 Remove   💭 Enable 🐔 Disable   🛧 Up 🕹 Down
	Configuration:
	Schedule:       Not scheduled         Job runs as (?):       NT AUTHORITY\SYSTEM         Email notifications:       On for successes; On for failures         Backup name:       New Database Backup         Description:
Backup job settings	Save Cancel Help

<u>.</u>	Connect to SQL Server	x
Server name	:	
(local)		•
Server logo	n ————	
Choose member	t using Windows Authentication this option if your current Windows account is a r of the System Administrator role in SQL Server	
Usernai	t using the following SQL Server account:	
Passwo		
Test SQL Co	nnection OK Ca	ncel

4. If using Windows Auth, you'll be prompted for running the backup as windows auth.

<u>.</u>	Backup Job Settings							
General Databa	ase Windows Account Compression / Encryption SQL Scripts Notifications							
✓ Run backup as different Windows user								
Account name:	TEST\lsavage							
Password:	•••••							
	Test							
connect to SQI and move back	nen running a backup job as a different Windows user, the specified account will be used to L Server (when Windows Authentication is specified in the database connection settings) kup files to their destinations (e.g. a network folder, etc.). <u>help file topic</u> for more information regarding this option.							
Save these se	ttings as default Save Cancel Help							

5. Click on the schedule hyperlink. You may want to start this overnight when there is little chance people are on Lucity/GIS or other sql databases within the sql server instance.

<u>.</u>	Backup Job Schedule		x		
Schedule					
<ul> <li>Full Backup</li> <li>Differential</li> <li>Transaction Log</li> </ul>		mins (after the full backup) mins (after the full backup)			
Start date/time: End date/time:	8/6/2015 3:00 PM ■ Enter date ■	(applies to full backup)			
Days of week: Load a preset backu <u>Reset to defaults</u>	✔ Sun ✔ Mon ✔ Tues ✔ Wed ✔ T ip plan	'hu ✔ Fri ✔ Sat			
Estimated Execut	ion Plan				
Date / Time		Backup Type	*		
Thursday, August	06, 2015 3:00 PM	Full			
Thursday, August 06, 2015 7:00 PM Transaction Log					
Thursday, August	06, 2015 11:00 PM	Transaction Log	•		
Help		Save Can	cel		

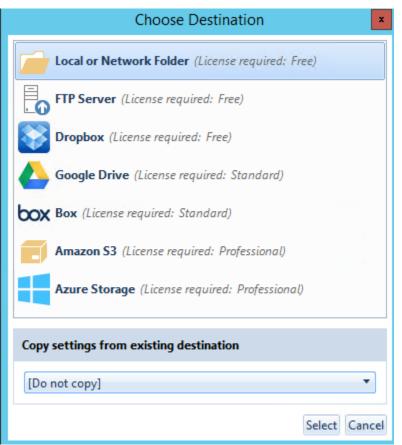
6. Click on e-mail notifications hyperlink

<u>.</u>			Backup Job Settings		×
General Datab	ase Wir	ndows Account	Compression / Encryption	SQL Scripts	Notifications
✓ Send email	notificati	ons			
Notify on —					
✓ Successfu	ıl backup	✓ Failed back	up (or completed with error	5)	
-Notify about					
✓ Full backu	ups 🔽 D	ifferential backu	ps 🔽 Transaction log back	ups	
-Notification e	mail add	resses			
From address:	:	wonderifthiswo	rks@lucity.com		
Recipient add	ress(es):	itmustwork@lu	city.com		
- Server setting:	s ———				
Oustom	⊖ GMa	il			
SMTP server:	smtp.of	fice365.com			
SMTP port:	587				
Username:	wonder	ifthisworks@luc	ity.com		
Password:	•••••	•••			
Encryption:	V Use	SSL			
					Send test message
Save these se	ettings as	default			Save Cancel Help

7. Save and you can see your Backup plan listed. You can create multiple plans for different SQL Server instances as well. As you can see, recovery is simple and time stamped for each different type of backup within the plan.

😓 Database Backup Recovery Explorer						
Backup Job: Full Backu	p •	Start date: Enter	start date	60		
Destination: E:\backup	*	End date: Enter	end date	Refresh Help		
Database Name	File Na Type	Created	Size	Action		
🧧 GBACommEsri	GBA Diff	8/6/2015 3:00 PM	45.0 KB	Recover Delete		
🧧 GBAElecPoky	GBA Diff	8/6/2015 3:00 PM	51.0 KB	Recover Delete		
🧧 GBAUserEsri	GBA Diff	8/6/2015 3:00 PM	50.2 KB	Recover Delete		
🧧 GBAWaterEsri	GBA Diff	8/6/2015 3:00 PM	37.5 KB	Recover Delete		
🧧 GBAWorkEsri	GBA Diff	8/6/2015 3:00 PM	48.4 KB	Recover Delete		
🧧 GBAParkPoky	GBA Diff	8/6/2015 3:00 PM	37.6 KB	Recover Delete		
🧧 GBAStretPoky	GBA Diff	8/6/2015 3:00 PM	47.8 KB	Recover Delete		
🧧 GBAUserPoky	GBA Diff	8/6/2015 3:00 PM	58.4 KB	Recover Delete		
🧧 GBAWaterPoky	GBA Diff	8/6/2015 3:00 PM	53.6 KB	Recover Delete		
🧧 GBAWorkPoky	GBA Diff	8/6/2015 3:00 PM	53.1 KB	Recover Delete		
🧧 esrilct	esril Diff	8/6/2015 3:00 PM	43.4 KB	Recover I Delete		
Delete all shown database b	backup files	✓ Sho	w files not created	by the selected destination		

8. Add a destination, there are several choices. Pick one.



9. Add in your credentials and recycle period.

	Folder Destination Settings						
Local or netwo	ork folder location:						
E:\backup\m	aintenance	Browse					
		Open folder location					
Optional sett	ings						
	eed to specify authentication credentials when Otherwise, leave these fields blank. Do not spe						
Username:	testVsavage						
Password:	•••••						
backup job	IMPORTANT: If you specify a username and password above, you must also configure the backup job to run under a specific Windows user account (see Windows Account tab of backup job settings).						
Cleanup							
Delete versi	ions older than 14 Adays (0 = never)						
Test		OK Cancel					

10. Click on backup job settings and change temporary backup folder. Recommend somewhere local on the server if you can. This will backup and compress the files before it's copied to the final destination

<u>.</u>			Backup Job Settings			×			
General	Database	Windows Account	Compression / Encryption	SQL Scripts	Notifications				
_ Temp	orary backu	p folder ———							
G:\do	wnloads\m	naintenance							
E	Browse								
Auton	Note: You can enable remote database server backups by specifying a shared network folder location above. We strongly recommend against the use of mapped network drive letters for this purpose. Instead, use UNC paths in the form of \\server\share. For details, see the related help topic.         Automatic cleanup         Image: Automatic ally delete old differential backup files (after each full or differential backup)								
<ul> <li>Automatically delete transaction log backup files (after each full or differential backup)</li> <li>Note: Enabling automatic cleanup options will conserve storage space by removing uncessary differential and/or transaction log backup files at each full and differential backup interval.</li> </ul>									
🖌 Save	Save these settings as default Save Cancel Help								

Notes:_____

11. Go to SQL Scripts tab and you can add your maintenance scripts. For this example, the maintenance script will only run after the full backup is complete and bypasses script on differential and transaction log backups. The script will update statistics, rebuild indexes, and shrink the transaction logs. In our setup in this example, this script only fires off every 24 hours at night. The maintenance sql script is available to you in the class material on sharefile.

<u>.</u>		Backup Job Settings				x
General Database	Windows Account	Compression / Encryption	SQL Scripts	Notificat	ions	
Before backup job:						
After backup job:	-					
EXEC sp_updatesta go	ts					Ê
EXEC sp_MSforeact		='print ''?''', @command2='s CTOR=90,ONLINE=OFF)'	et QUOTED_ID	ENTIFIER	ON;ALTER	₹ 🗏
go USE MASTER						
declare						
@isql varchar(2000 @dbname varchar						
@logfile varchar(1						~
Execute the abo	ve scripts during full	backups only				
	2 I I I I I I I I I I I I I I I I I I I	is 4,096 characters. Executior , and will not halt backup op	-	ged as wa	rnings wit	hin
✓ Save these settin	gs as default			Save	Cancel	Help

Notes:

# Example Script for After Full Backup

-- Update Statistics DECLARE @cmd VARCHAR(8000); SET @cmd = 'EXEC sp_updatestats' EXEC sp_msforeachdb @command1 =@cmd go --Rebuild Indexes Use Master go DECLARE @cmd VARCHAR(8000); SET @cmd = 'exec sp_MSforeachtable @command1="print ""?""", @command2="set QUOTED_IDENTIFIER ON;ALTER INDEX ALL ON ? REBUILD WITH (FILLFACTOR=90,ONLINE=OFF)" EXEC sp_msforeachdb @command1 =@cmd go --Shrink Logfiles for non-system databases USE MASTER declare @isql varchar(2000), @dbname varchar(64), @logfile varchar(128) declare c1 cursor for SELECT d.name, mf.name as logfile--, physical_name AS current_file_location, size FROM sys.master_files mf inner join sys.databases d on mf.database_id = d.database_id where d.name not in ('master', 'model', 'msdb', 'tempdb') and mf.type_desc = 'LOG' open c1 fetch next from c1 into @dbname, @logfile While @@fetch_status <> -1 begin select @isql='USE ' + @dbname + ' checkpoint' print @isql exec(@isql) select @isql='USE ' + @dbname + ' DBCC SHRINKFILE (N''' + @logfile + "', 10)' print @isql exec(@isql) fetch next from c1 into @dbname, @logfile end close c1 deallocate c1 gо

Notes:

### Backup ArcGIS for Server Site

Provided with ArcGIS for Server, you can now backup your site. This backup only accounts for the site configuration not the data. If you have caches, handle the backup of the caches using another copy or backup utility.

1. On your ArcGIS for Server, go to C:\Program Files\ArcGIS\Server\tools\admin and copy the two python script utilities.

Name	Date modified	Туре	Size
🔁 backup.py	2/13/2014 3:42 PM	Python File	7 K
🛃 convertcachestorageformat.py	2/13/2014 3:42 PM	Python File	1 K
🛃 createcacheschema.py	2/13/2014 3:42 PM	Python File	1 K
🛃 createservice.py	2/13/2014 3:42 PM	Python File	1 K
🛃 deletecache.py	2/13/2014 3:42 PM	Python File	1 K
🛃 managecachetiles.py	2/13/2014 3:42 PM	Python File	1 K
🛃 manageservice.py	2/13/2014 3:42 PM	Python File	1 K
🔁 managesite.py	2/13/2014 3:42 PM	Python File	1 K

- 2. Create a new folder in a known location that is easy to get to in command line. As an example, I created an agsutil folder under the root of c:\.
- 3. Paste them in the new location.

Þ	This P	C ⊧	Local D	isk (C:)	►	AGSUtil
	N	lam	e			
		д b	ackup.p	y		
		<u>е</u> г	estore.py	,		

- 4. Go to the command prompt as an administrator, run the backup.py script. Make sure you are connecting to python's home directory or set python.exe as a path. Below is an example after setting python.exe path in environment variables.
  - a. Python.exe c:\agsutil\backup.py -u <ags admin> -p <password> -s http://<localhost or servername:6080> -f c:\backup\ags
  - b. After running, below is an example of the output.

Aug-28-2014_09-58-13.agssite

### **Restore ArcGIS for Server Site**

Provided with ArcGIS for Server, you can restore a backup of your site.

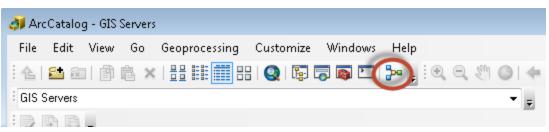
- 1. Go to command prompt and restore your site using the backup and restore.py script. Below is an example.
  - a. Python.exe c:\agsutil\restore.py -u <username> -p <password> -s <localhost or servername>:6080 -f c:\backup\ags\Aug-29-2014_09-58-13.agssite -r c:\backup\ags
  - b. This procedure will take some time and your site will be down until complete.

C:\>python.exe c:\agsutil\restore.py -u AGS -p QWE@zxc1234 -s http://lukesavage: 6080 -f c:\backup\ags\Aug-28-2014_09-58-13.agssite -r c:\backup\ags
Beginning to restore the site running on "lukesavage" using the site backup avai lable at: c:\backup\ags\Aug-28-2014_09-58-13.agssite
This operation can take some time. You will not receive any status messages and will not be able to access the site until the operation is complete

2. It is important that you reregister your web adapter to ArcGIS for Server after the restore is complete.

### Automate Replica Synchronization using Python

1. Go to ArcCatalog and open model builder. This is the Garfield way of creating python scripts for the non-savvy coder.

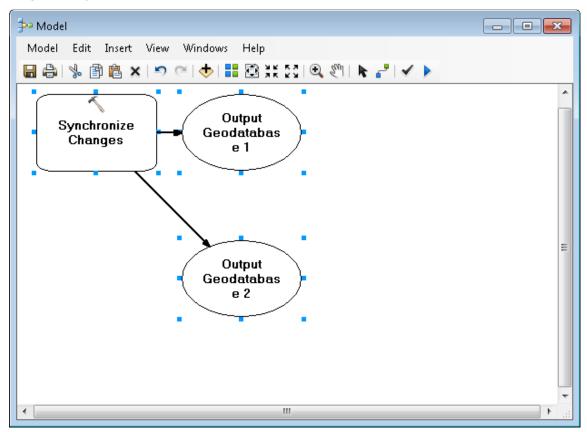


2. In Model Builder, open arctoolbox if not already open and go to Distributed Geodatabases/Synchronize Changes

🖃 💐 Data Management Tools

🚯 🍇 🔠 🚯 🖽 🗞 Data Comparison 😑 🗞 Distributed Geodatabase 🔨 Add Global IDs 🔨 Compare Replica Schema 🔨 Create Replica 🔨 Create Replica Footprints 🔨 Create Replica From Server 🔨 Export Acknowledgement Message 🔨 Export Data Change Message 🔨 Export Replica Schema 🔨 Export XML Workspace Document 🔨 Import Message 🔨 Import Replica Schema 🔨 Import XML Workspace Document Re-Export Unacknowledged Messages Synchronize Changes

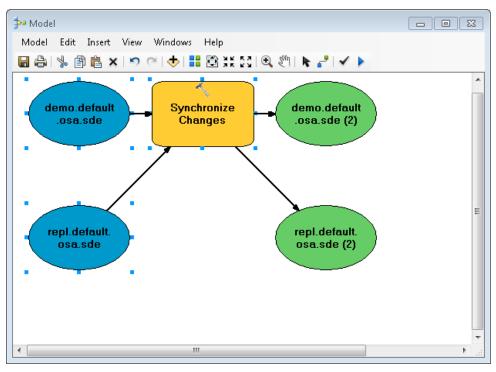
3. Drag and drop the tool into Model Builder.



- 4. Once tool is in Model Builder, double click on Synchronize Changes box to open the dialog.
- 5. Fill in the information appropriately. For reference, please visit the Replica section.

Geodatabase 1		Synchronize
Database Connections\demo.default.osa.sde		Changes
Replica		
DBO.Lucity_Demo	-	Synchronizes updates
Geodatabase 2	_	between two replica geodatabases in a direction
Database Connections\repl.default.osa.sde		specified by the user.
Direction		
FROM_GEODATABASE1_TO_2	-	
Conflict Resolution Policy		
IN_FAVOR_OF_GDB1	•	
Conflict Definition		
BY_OBJECT	-	
Reconcile with the Parent Version (Single Generation only)		

6. Click ok. Notice colors change in the dialog. Run the model to test by clicking on the run button.



7. After successfully testing the model, go to the model menu and click on export/To Python Script.

🥍 М	odel	
Mo	del Edit Insert View W	/indows Help
	Run	🕁   🔡 🕃 👯 🖸   🔍 🖑
-	Run Entire Model Validate Entire Model	
	Save Save As	Changes
	Delete Intermediate Data	
	Print Setup Print Preview	
e	Print	
	Report	1 🖌
1	Model Properties	
	Diagram Properties	
	Export I	• To Graphic
	Import I	To Python Script
	Close	

- 8. Save in location that has Python and ArcCatalog installed. For example, auto_synch.py under the root of c:\.
- 9. Edit the Python script so that it references arcinfo rather than arceditor. This can produce errors in your script. Also, add the RED content below to enable logging when running this script.

# Set the necessary product code

import arcinfo

# Import arcpy module

import arcpy

# Record Logs

arcpy.SetLogHistory(True)

# Local variables:

demo_default_osa_sde = "Database Connections\\demo.default.osa.sde"

repl_default_osa_sde = "Database Connections\\repl.default.osa.sde"

# Process: Synchronize Changes

arcpy.SynchronizeChanges_management(demo_default_osa_sde, "DBO.Lucity_Demo", repl_default_osa_sde, "FROM_GEODATABASE1_TO_2", "IN_FAVOR_OF_GDB1", "BY_OBJECT", "DO_NOT_RECONCILE")

Notes:_____

10. Go to Windows Task Scheduler and create a basic task.

Create Basic Task Wizard		
Create a Basic Tasi	k	
Create a Basic Task Trigger	Use this wizar such as multi	d to quickly schedule a common task. For more advanced options or settings ple task actions or triggers, use the Create Task command in the Actions pane.
Action	Name:	AutoSynchReplica
Finish	Description:	This task will automatically synch the Geodatabase replica.
		< Back Next > Cancel

11. Click next and schedule the synchronization of the replica to whenever you want the synchronization to take place. Usually each day or once a week will fit most organizations. In this example we are going to setup a weekly schedule. Click next.

Create Basic Task Wizard	Image: State Sta
Task Trigger	
Create a Basic Task Trigger Weekly Action Finish	When do you want the task to start?  Daily  Weekly Monthly One time When the computer starts When I log on When a specific event is logged  Keekly Cancel

12. In the timeliness of this schedule, I want this to fire off before the backups have occurred so that my databases stay in tune. In my backup routines, I may have a performance maintenance script that analyzes, updates statistics and indexes as well as backups the transaction logs and shrinks the database. Therefore, in this example we'll set the synchronization to occur after I leave for the day on Friday. Click next.

Create Basic Task Wizard		X
🖲 Weekly		
Create a Basic Task Trigger	Start: 8/27/2012 🗐 🔻 10:00:00 PM 📑 🔲 Synchronize across time zones	
Weekly Action	Recur every: 1 weeks on:	
Finish	📄 Sunday 📄 Monday 📄 Tuesday 📄 Wednesday	
	🦳 Thursday 🔽 Friday 📄 Saturday	
	< Back Next > Can	cel

13. Choose start a program and click next.

Create Basic Task Wizard		<
o Action		
Create a Basic Task Trigger Weekly	What action do you want the task to perform?	
Action	Start a program	
Finish	Send an e-mail	
	💿 Display a message	
	< Back Next > Cancel	

14. In Windows Vista and above, we need to add the python program as the script so that it knows what executable to use. In Add arguments (optional):, you need to add the location of your saved python script. Also, in 'Start in (optional), you need to add the location folder of the python executable. Once complete, click next.

Create Basic Task Wizard			ß
迿 Start a Program			
Create a Basic Task			
Trigger	Program/script:		
Weekly	C:\Python27\ArcGIS10.1\python.exe		Browse
Action	Add arguments (optional):		c:\auto_synch.py
Start a Program Finish			c:\python27:\arcgis10.1\
	Start in (optional):		c.(pydionzii,(arcgisto.1)
		< Back	Next > Cancel

15. Click the 'Open the Properties dialog for this task when I click Finish' checkbox to verify administrative user to run this task and its credentials. Click Finish.

Create Basic Task Wizard			×
5 Summary			
Create a Basic Task			
Trigger	Name:	AutoSynchReplica	
Weekly	Description:	This task will automatically synch the Geodatabase replica.	
Action			
Start a Program			
Finish			
	Trigger:	Weekly; At 10:00 PM every Friday of every week, starting 8/27/2012	]
	Action:	Start a program; C:\Python27\ArcGIS10.1\python.exe c:\auto_synch.py	]
	📝 Open the	Properties dialog for this task when I click Finish	
	When you cli	ck Finish, the new task will be created and added to your Windows schedule.	
		< Back Finish Cancel	

16. Check the 'Run whether user is logged on or not' radio button and check the checkbox next to 'Run with highest privileges'.

General Trig	gers	Actions	Cond	itions	Sett	ings	Histo	ry								
Name:	Aut	oSynchRe	olica													
Location:	١.															
Author:	GBA	MS\Isava	ge													
Description: This task will automatically synch the Geodatabase replica.																
– Security op When runr		ne task, us	e the f	ollowii	ng use	eracc	ount:									
GBAMS\Isa	vage											Char	ige Us	eror	Group	]
🔘 Run onl	y whe	n user is lo	ogged	on							-					
💿 Run wh	ether	user is log	ged or	orno	ıt											
📃 Dor	not sta	ore passwo	ord. Tł	ne task	: will c	only h	ave ac	cess to l	ocal co	mpute	r res	ource	25.			
🔽 Run wit	n high	iest privile	ges													
🔲 Hidden		Confiqui	e for:	Wine	dows@	® 7, V	/indov	/s Serve	r <b>™</b> 2008	R2						-

- 17. Test the task by right clicking on the new task and select run.
- 18. Check the ArcToolBox results history location by going to the following location.

C:\Users\<username>\AppData\Roaming\ESRI\Desktop10.3\ArcToolbox\History

Notes:_____

# Options

# Versioning

Is an alternative state of the database where you can make edits and changes that will not affect the base tables. When complete and edits are ready, the parent table will be reconciled and posted with the child version. Within the Geodatabase, there are two tables that store changes to the base data. These are called delta tables which are known as Add and Delete tables.

### What are A and D tables?

- A tables are add tables. Anytime you add a record or change a record, the changes are added to the A table.
- D tables are delete tables. Anytime you delete a record, the delete rows are added to the D table.
- A and D tables are numbered based on the registration_id in the SDE_Table_Registry table.

### Example of finding an Add Table.

If you have made an edit to a feature class, you need to get the registration_id for that feature class and go to the appropriate A table. This is stored in the sde_table_registry in SQL Server. For child versions, they are subsequent IDs such as default version would be the actual registration_id (A144) and the child version would be (A145). Same applies to the D tables.

, Ì	***** S		SelectTop	2LQuery34.sql - lu NRows comma. [a445]				avage (1:	34)) \ SC	QLQuery32.sql - Iul	kesavage (133)) 🏹	SQLQuery31.sql - lukesa	vage (132))
•													
E Results 🔓 Messages													
	OBJECTID	EXG_UNITID	EXG_DESC	EXG_TYPE_CD	EXG_TSIZE	EXG_TDEPTH	EXG_FA_ID	EXG_ID	SHAPE	SDE_STATE_ID	GlobalID		
1	20	55789	test	2	NULL	NULL	NULL	4214	19	11471	6FDC0359-64D7-442	28-8349-6C725A73AF8B	
2	20	55789	test	2	NULL	NULL	NULL	NULL	19	11470		8-8349-6C725A73AF88	

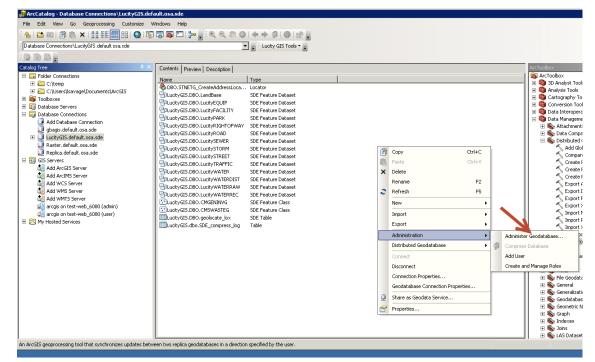
### When Does Versioning Make Sense?

The option to moving edits to base tables is a scary thing for GIS people. Why?

- You can edit simple data only—points, lines, polygons, annotation, and relationships. You cannot edit a feature class in a topology, geometric network, or terrain.
- You cannot archive changes for the dataset.
- You cannot replicate the dataset.
- When you edit the DEFAULT version or post a version to the DEFAULT, you do not have the ability to resolve conflicts, so it is possible to overwrite another user's edits.

### How to Create a Version

1. Right click on a Database Connection link in ArcCatalog TOC or right click in the white space in the contents tab in ArcCatalog



- 2. Click on Administration/Administrator Geodatabase.
- 3. Right click on the Default version and select new version

🚺 Geodatal	oase Adr	ninistrati	on (DBO(	®TEST-DB/Lu	icityGIS)		
Versions	Conne	ctions	Locks				
Filtering				Owner:	•	]	
Name	Owner	Modified					
DEFAULT edit	dbo DBO		2 <u>3:33:22</u> 2 7:14:32	A 🖁 Recon	Version		
Refresh	Refresh 2 of 2 Versions at 8/27/2012 11:08:06 AM >						
Transacti	onal	Tree View	Reco	oncile Order	Historical		

4. Create a Name for the new version and select public. Click Ok.

💐 New Version		
Name		
Test		
Description		
This is a test version		
Access O Private O Public O Protected		
	ОК	Cancel

- 5. What's the difference between Access types
  - Private: Created user eyes only; no one has access unless owner of the version
  - Public: Everyone can see the version and create versions from. If you have edit privileges, you can edit the version.
  - Protected: Everyone can see the version but cannot edit the version unless owner. Everyone can create versions from.
- 6. This is now the child of Default and is listed in the Geodatabase Administration dialog.

alige Geodatabase Administration (DBO@TEST-DB/LucityGIS)	
Versions Connections Locks	
- Filtering	Properties
	Name: Test
Name: Owner: V	Owner: DBO
Name Owner Modified	Parent: dbo.DEFAULT
DEFAULT         dbo         8/1/2012         3:33:22         PM           edit         DBO         6/28/2012         7:14:32         AM	Description:
Test DBO 8/1/2012 3:33:22 PM	This is a test version
	Access: Public 💌
	Created: 8/27/2012 11:14:04 AM
	Modified: 8/1/2012 3:33:22 PM
	Is Blocking: False
	Is Replica: False
Refresh 3 of 3 Versions at 8/27/2012 11:14:05 AM >	Is Locked: False
Transactional Tree View Reconcile Order Historical	



A replica is a copy of a database using GUID attributes that synchronize from the parent to the child databases or vice versa. There are several ways to create a replica but we will be creating the most likely replica used which is a one-way replica. One way replicas are easy to setup and are handy for the administrators to offload view only users off of the production database while performing synchronizations from time to time. Keeping the database in synch when production changes have been approved is a nice way to distribute your data to users while retaining data integrity, security and flexibility.

1. Prepare your data for a replica. Go to your database and right click on Feature Datasets, and go to manage/add global ids. Global Ids are necessary for the Geodatabase to keep track of changes in each database that is a part of a replica.

Note: Data	must be registered as versioned
	1761
🗞 DBO.STNETG_AddressLocator	Locator
- 🗞 DBO.STNETG_CreateAddressLo	. Locator
둼 demo.DBO.LandBase	SDE Feature Dataset
둼 demo.DBO.LucityEQUIP	SDE Feature Dataset
demo.DBO.LucityFACILITY	SDE Feature Dataset
🔁 demo.DBO.LucityPARK	SDE Feature Dataset
🖶 demo.DBO.LucityRIGHTOFWAY	SDE Feature Dataset
🖶 demo.DBO.LucityROAD	SDE Feature Dataset
🖶 demo.DBO.LucitySEWER	SDE Feature Dataset
🖶 demo.DBO.LucitySTORM	SDE Feature Dataset
🖶 demo.DBO.LucitySTREET	SDE Feature Dataset
🖶 demo.DBO.LucityTRAFFIC	SDE Feature Dataset
🖶 demo.DBO.LucityWATER	SDE Feature Dataset
🖶 demo.DBO.LucityWATERDIST	SDE Feature Dataset
🖶 demo.DBO.LucityWATERRAW	SDE Feature Dataset
demo.DBO.Lucit/WATERREC	¬ SDE Feature Dataset
🖸 demo.DI 🗊 Copy Ctrl+C	SDE Feature Class
🖸 demo.DI 💼 Paste Ctrl+V	SDE Feature Class
🔲 demo.dl 🗙 🛛 Delete	Table
Rename F2	
Sefresh F5	
Manage 🕨	Analyze
New ►	Add Global IDs
Import +	Privileges

Note: Data must be registered as versioned

- 2. Do this for stand-alone Feature Classes as well.
- 3. To create a replica, go to ArcToolbox/Data Management Tools/Distributed Geodatabase and expand.

4. Click on Create Replica



5. Browse or drag and drop data you want to replicate from into the Create Replica dialog window. Change the Replica Type to one-way replica. Add the replicated database connection to replicate the data to. Give the Replica a name.

Replica Datasets				
Database Connections\a	emo.default.osa.sde\dem	no.DBO.LandBase		▲ 📕
Database Connections\o	emo.default.osa.sde\dem	no.DBO.LucityEQUIP		
Database Connections\o	emo.default.osa.sde\dem	no.DBO.LucityFACILITY	-	×
Database Connections\o	emo.default.osa.sde\dem	no.DBO.LucityPARK		
Database Connections\o	emo.default.osa.sde\dem	no.DBO.LucityRIGHTOFW4	4Y -	
Database Connections\a	emo.default.osa.sde\dem	no.DBO.LucityROAD		
Database Connections\o	emo.default.osa.sde\dem	no.DBO.LucitySEWER		
Database Connections\o	emo.default.osa.sde\dem	no.DBO.LucitySTORM		+
•	1 X K 111		•	
Replica Type				
ONE WAY REPLICA				-
Geodatabase to replicate dat	to			
Database Connections\repl.				
Database Connections (repi.	iei auic.usa.sue			
Replica Name				
LucityReplica				

- 6. The advanced settings allow you to change the behavior of your replica. Usually, you would except the defaults and click ok.
- 7. Once replica is in place, you can assign privileges.

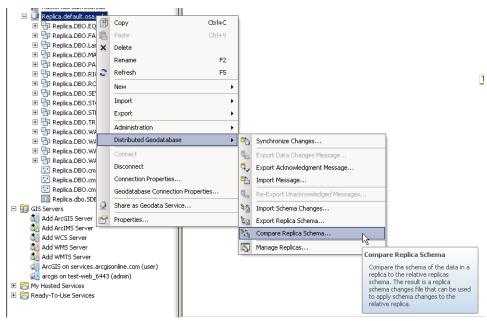
# Apply Schema Changes to Replica

In order to update the schema in a replica, there are three tools that you can use to update the schema. However, there are certain instances where you will need to unregister the replica, delete the replica feature class/tables/datasets and recreate the replica in order for the changes to push down from the parent to the child. Below is a matrix from <u>Esri's ArcGIS Resources</u> page for schema changes. It describes what is supported with the update process and what is not supported.

he following is a list of schema changes and whether or not they can	be applied:		
	Add	Change	Drop
Field	Y	Y (domains)	Y
Domain	Y	Y	Y
Table/Feature Class	Y	Y (domains, add/drop fields)	Y
Geometric network	N	N	Y
Topology	N	N	Y
Feature dataset	N	N	Y
Relationship class	N	Y (add/drop fields, domains)	Y
This table describes the schema changes that may be done on replicated datasets.			

Steps to complete

- Compare Schema in Parent
- Import Schema into Child
- 1. Open ArcCatalog.
- 2. Right Click on the Replica database and choose distributed geodatabase/compare replica schema

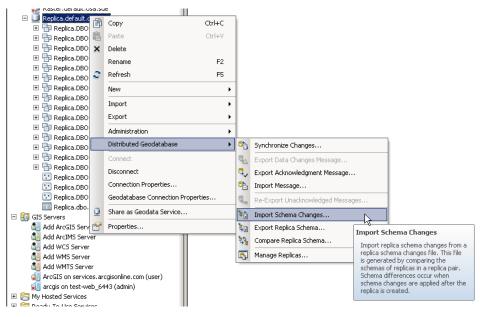


- 3. Browse to the parent geodatabase
- 4. Choose Replica Name if you have multiple replicas

5. Choose a location to save the replica schema changes xml file

ompare Replica Schema	Wizard	×
This wizard exports the s	chema changes between a relative replica and your replica.	
Choose the relative re	plica schema to compare:	
Geodatabase:		
test-db-sde:sql	erver:test-db-LucityGIS	
C Replica schema X	۹L file:	
Replica name:	DBO.Lucity	
Replica type:	One way parent to child	
Output replica schema (	hanges XML file :	
C:\temp\compare.xml	🖻	
About comparing replica	<u>schema</u>	
	Finish Cancel	

6. After complete, right click on the Replica database and choose distributed geodatabase/import replica schema



7. Locate the schema change xml file generated and add to the import schema changes wizard

mport Schema Changes W	lizard	×
This wizard imports the sch	ema changes from a relative replica to your replica.	
Choose the replica schem	a changes xml file:	
C:\temp\compare.xn	1 🖻	
Replica name:	DB0.Lucity	
Replica type:	One way parent to child	
Import to database:	test-db-sde:sqlserver:test-db-Replica	
About importing schema c	hanges	
	< Back Next >	Cancel

- 8. Review the information and click next
- 9. In the next screen, you should see the changes to the schema to apply. In this scenario, we deleted a field called 'test; short int'.

Apply	Change	Details	
Repl.DBO.cmGeneralCustom	DeleteField	field = test	
<			>

10. Click Finish and Synchronize Changes.