Developing Comprehensive Central Geodatabases with PostGreSQL

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MAPC

- The Metropolitan Area Planning Council (MAPC) is a regional planning agency serving the people who live and work in Metropolitan Boston, 101 cities and towns.
- Mission: to promote smart growth and regional collaboration, which includes protecting the environment, supporting economic development, encouraging sustainable land use, improving transportation, bolstering affordable housing, ensuring public safety, advancing equity and opportunity among people of all backgrounds, and fostering collaboration among municipalities.



MAPC DATA SERVICES

- GIS services provided for the last 15+ years
- Data Formats: coverages, shapefiles, personal geodatabases, file Geodatabases, etc
- Data Storage: CD's, archived servers, external hard drives
- Data Organization: project specific folders by year
 - Relied on historical/legacy knowledge for data locations.

DATA EVERYWHERE!



DATA SOURCES

Project/internally derived data (i.e. Buildout analyses)

Locally provided data (i.e. parcels)

State level data (i.e. Roads)



WHY POSTGRESQL?

- No licensing cost (\$\$)
- Existing projects being developed that would require PostGreSQL
- No other supported DBMS within agency



GETTING STARTED

- Training: ESRI Data Management course, PostGreSQL Administration
- Virtual server running Windows Server 2003
 - Easy to make mistakes and start over again
 - Easier to upgrade processing power (4 GB)
- Downloaded and Installed PostGreSQL 8.3.0 using ArcGIS Server Standard Enterprise 9.3.1



LESSON LEARNED: INSTALLATION

- PostGreSQL and ArcSDE <u>MUST</u> be installed on a local machine
 - Attempted to utilize an external mapped drive and change the data_directory path in the configuration file
 - Due to server size limitations
 - NAS storage allowed a local drive installation until purchase of SAN array arrived with 5 TB of space.
- Ensure storage space before installation!!

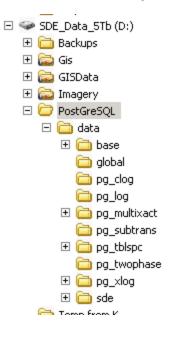


LOCAL INSTALLATION

C Drive (software)



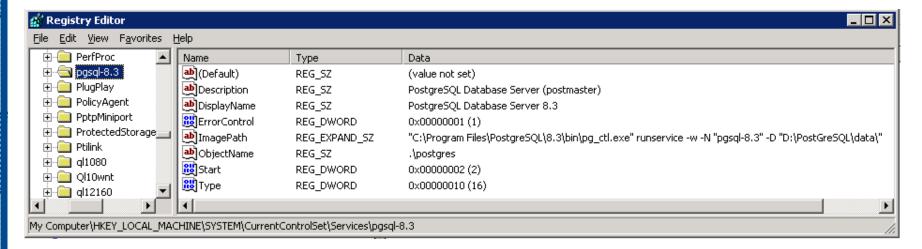
D Drive (data)





LOCAL INSTALLATION

- Relocating the data to a different local drive (D:\data)
 - Stopped PostGreSQL within Windows Services
 - Change path in Registry Editor

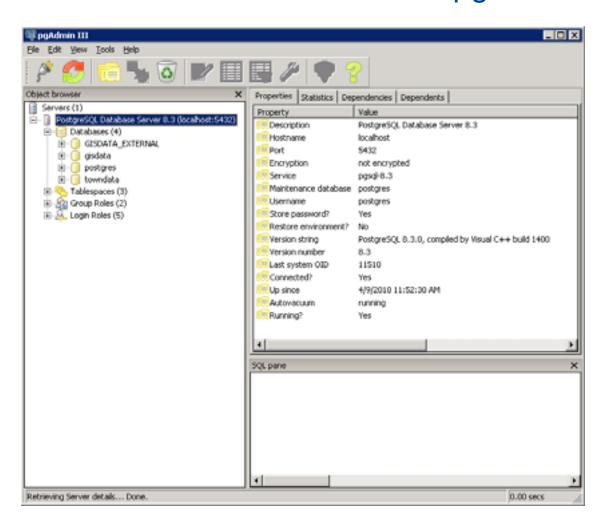


Restart the PostGreSQL within Windows Services



PGADMIN III

PostGreSQL Windows Interface is pgAdmin III





POSTGRESQL CONFIGURATION

3 Configuration files:

pg_hba.conf – controls computer IP access to the database

pgpass.conf – stores the access information: port, user name and password

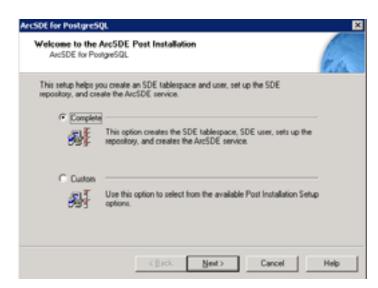
pg_config.conf – main configuration settings



ARCSDE FOR POSTGRESQL

- Easy to follow instructions after installing ArcSDE for Post Installation.
- PostGreSQL super user password MUST be long and complex

 otherwise it will fail at end and you will have to start over

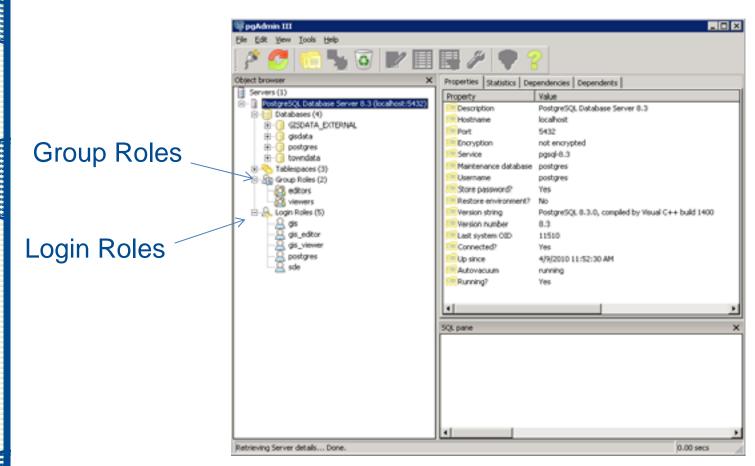


cSDE for PostgreSQL	
User information Correct at superuser	Co.
Correct as Postgal QL signs use	
Signs on name	PROFES
Eugen user presented	
224	ack [ged.) Carcel Help.



USER PERMISSIONS

 Controlling access to the databases is done through the pgAdmin III console.





LESSON LEARNED: PERMISSIONS

 Created login and group roles and assigned read only privileges to the gis_viewer.

Problem: The gis_viewer login role could see the data, but not make large spatial queries (>100 records)

Selection	
	missions or resources to create tables[ERROR: schema "gis_viewer" does not exist



LESSON LEARNED: PERMISSIONS

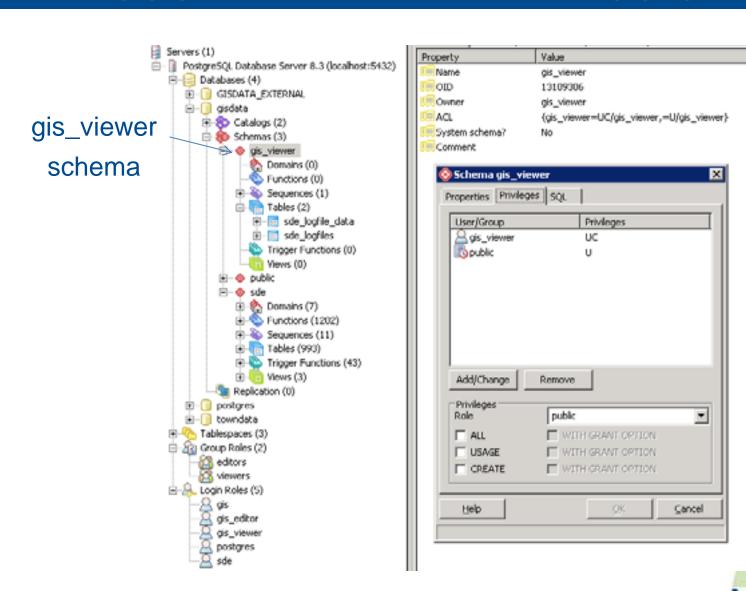
Solution: Shared Log files are used with the read-only gis_viewer account which limits the record selection based on the default configuration.

Create a separate Schema for Gis_viewer, which stores 2 tables: sde_logfiles and sde_logfile_data.

These allow the queries and the records are cleared out once the connection is closed.



LESSON LEARNED: PERMISSIONS



LOADING DATA

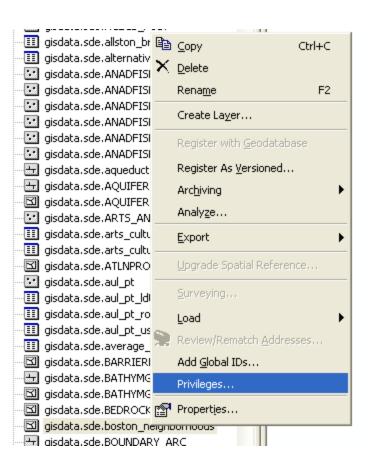
Spatial data loaded into PostGreSQL thru ArcCatalog

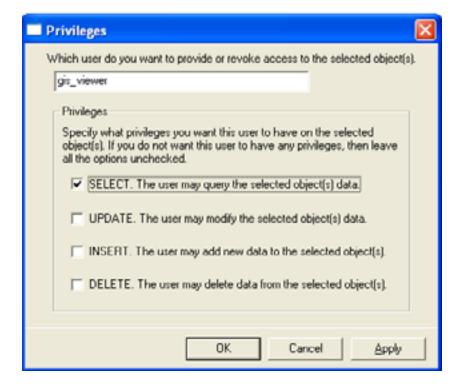


Spatial Databas	e Connection	?×
Server:	SDEVM	
Service:	5152	
Database:	gisdata	
	(If supported by your DBMS)	
Account		
 Database a 	authentication	
Username:	gis_editor	
Password:		
	✓ Save username and password	
C Operating a	ystem authentication	
Connection deta	ds	
The following tr	ansactional version will be used:	
sde.DEFAULT	Change	
Save the tra	ensactional version name with the connection file.	
Test Connec	tion OK C	ancel



LOADING DATA







USING THE DATABASE

 Layer files, and a custom Data Viewer tool from within ArcMap, users can now easily add data from the database; saving time finding and symbolizing the

data.

■ MassGIS SHP Data Viewer 9.x(v.2.2) - Browse Data Layers to Add Data				
Category Arts and Culture Boundaries Census 2000 Census 2010 Economy Education Emirronment and Recreation General Population Statistics Housing Images Infrastructure Public Safety Regulated Areas Technology Town Data Transportation	Subcategory Legislative Districts SMAN Repriso Massachusetts New England States Outside Massachusetts State Regions	Dataset Name Community Types MA towns outside MAPC (250 towns) MAPC Outline MAPC Subregions MAPC Subregions MAPC Subregions Metro Mayors Coalition North Shore Coalition Transportation Analysis Zones (TAZ)		
Information for Selected Dataset CATEGORY: Boundaries SUBCATEGORY: MAPC Region DATASET NAME: MAPC Towns PATH: \ Data=001\public\DataServices\r) SOURCE: glodata.sde.MAPC_TOWNS_P LYR FILE: Boundaries\MAPC_Towns.lyr View Dataset Web Page: http://www.	OFA	Add Your Own Data to to the Browse Menu Add LYR		



RECOMMENDATION

- PostGreSQL support from ESRI is still being developed
- Database Administration training is required
- Good and efficient solution for agency's dimension
- Plan ahead for storage space and access.





NEXT STEPS

- Ongoing development with raster data
- Data Versioning
- Data publishing through a web interface



THANK YOU!

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