Developing Comprehensive Central Geodatabases with PostGreSQL

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ESRI UC 2010

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- 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.

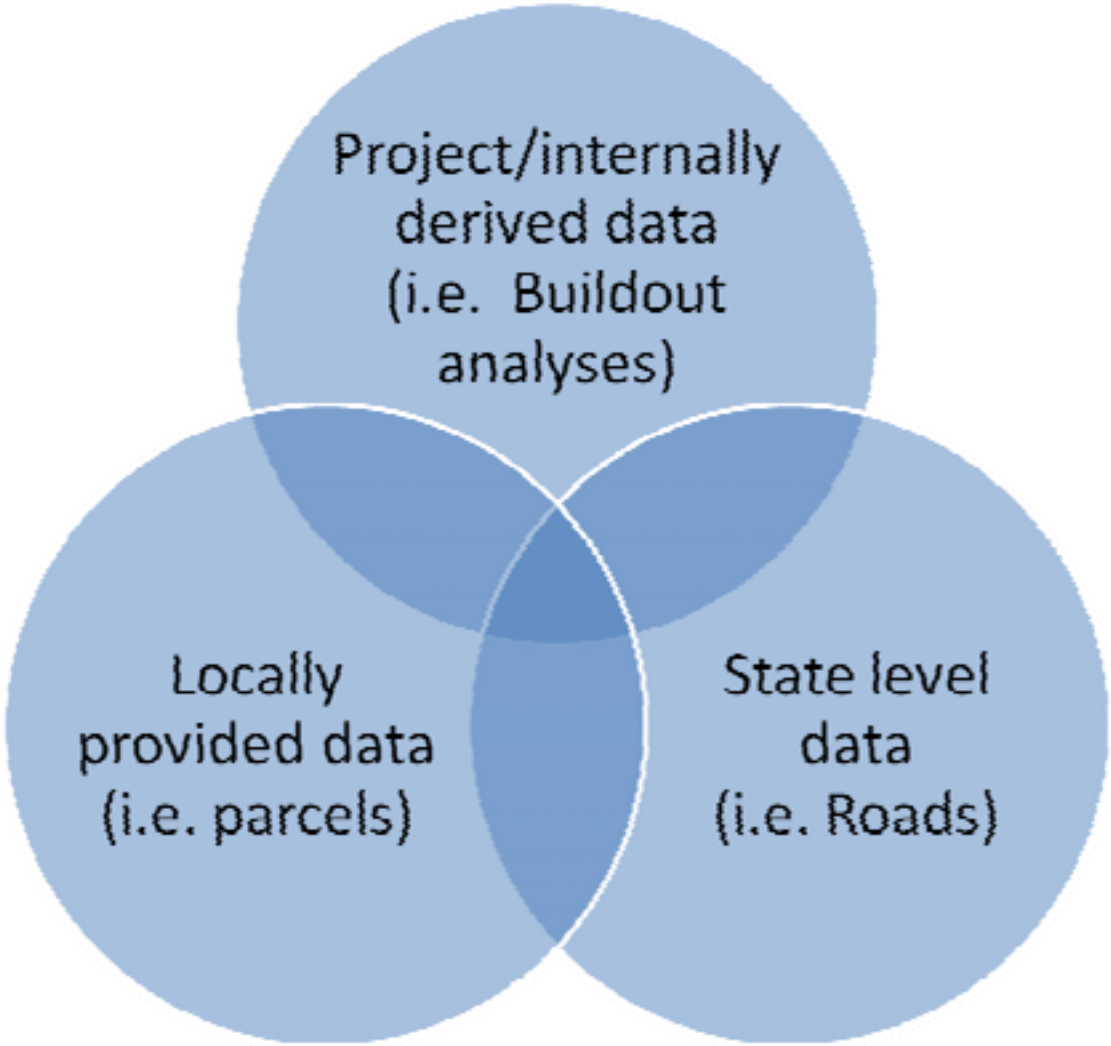
MAPC DATA SERVICES

- 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



WHY POSTGRESQL?

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

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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

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LESSON LEARNED: INSTALLATION

- PostGreSQL and ArcSDE **MUST** 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!!

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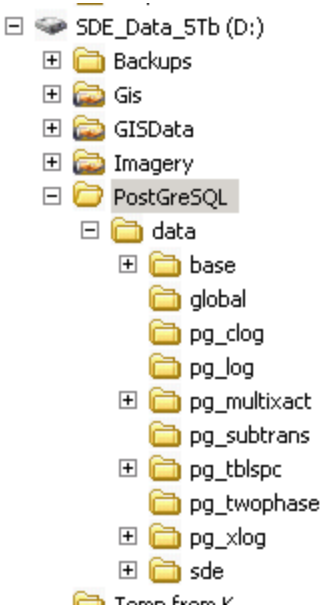
LOCAL INSTALLATION

C Drive (software)

D Drive (data)



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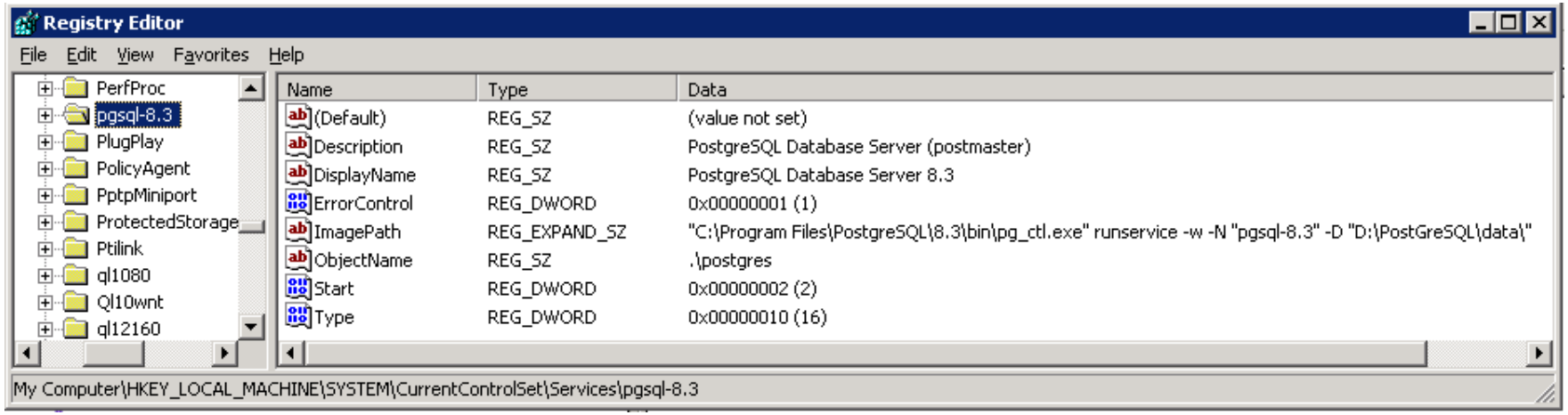
LOCAL INSTALLATION

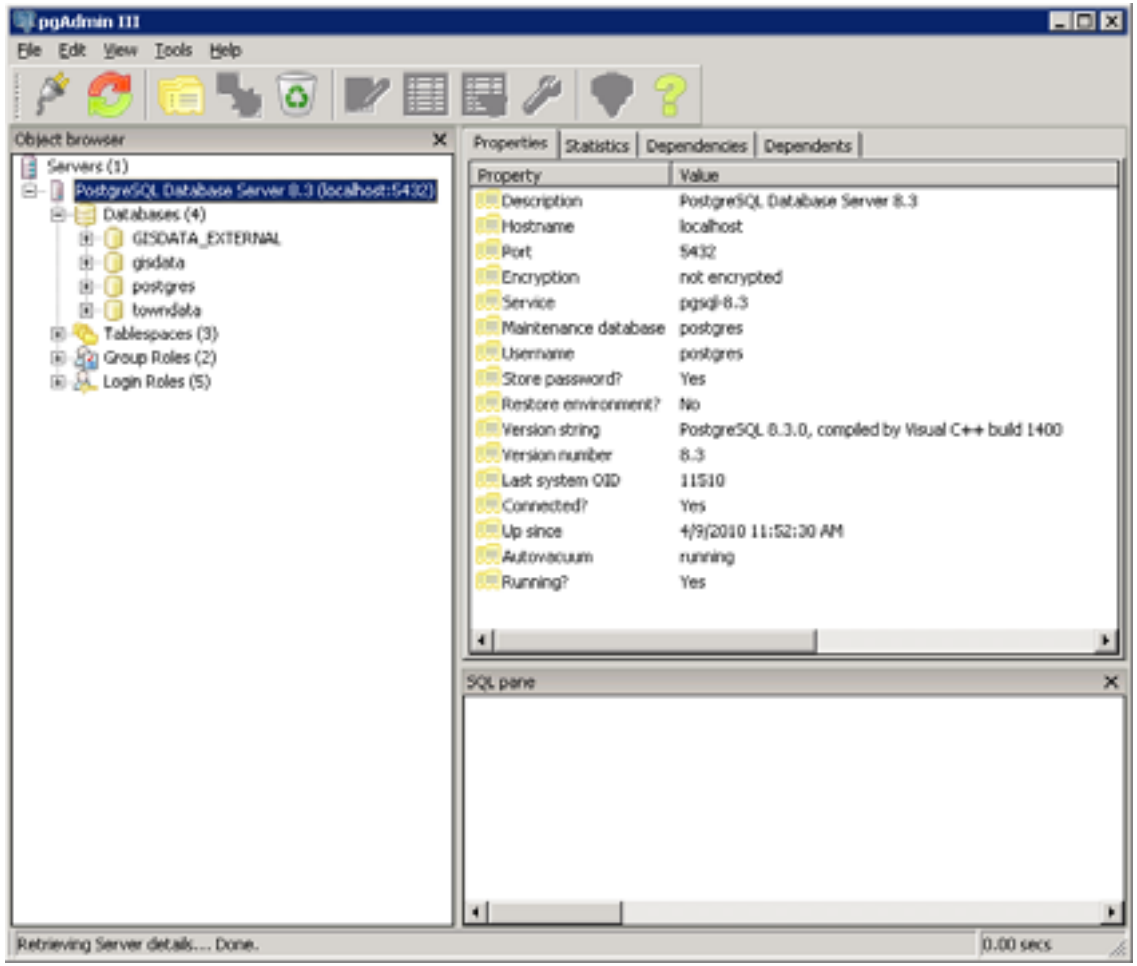
- Relocating the data to a different local drive (D:\data)
  - Stopped PostGreSQL within Windows Services
  - Change path in Registry Editor



  - 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

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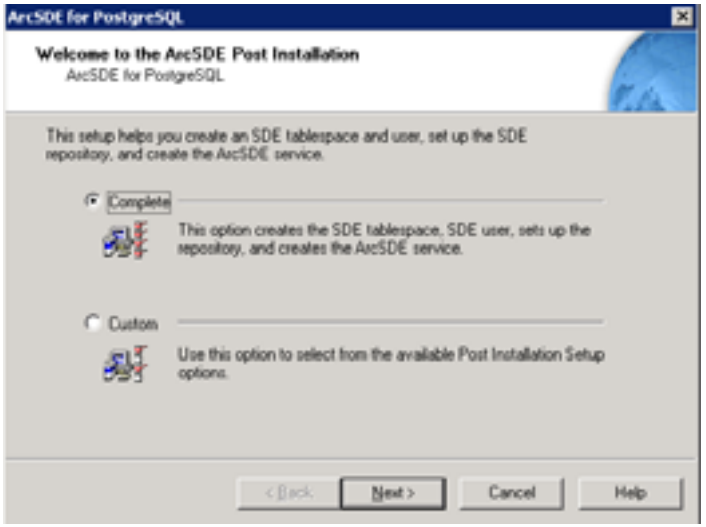
ARCSDE FOR POSTGRESQL

- 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

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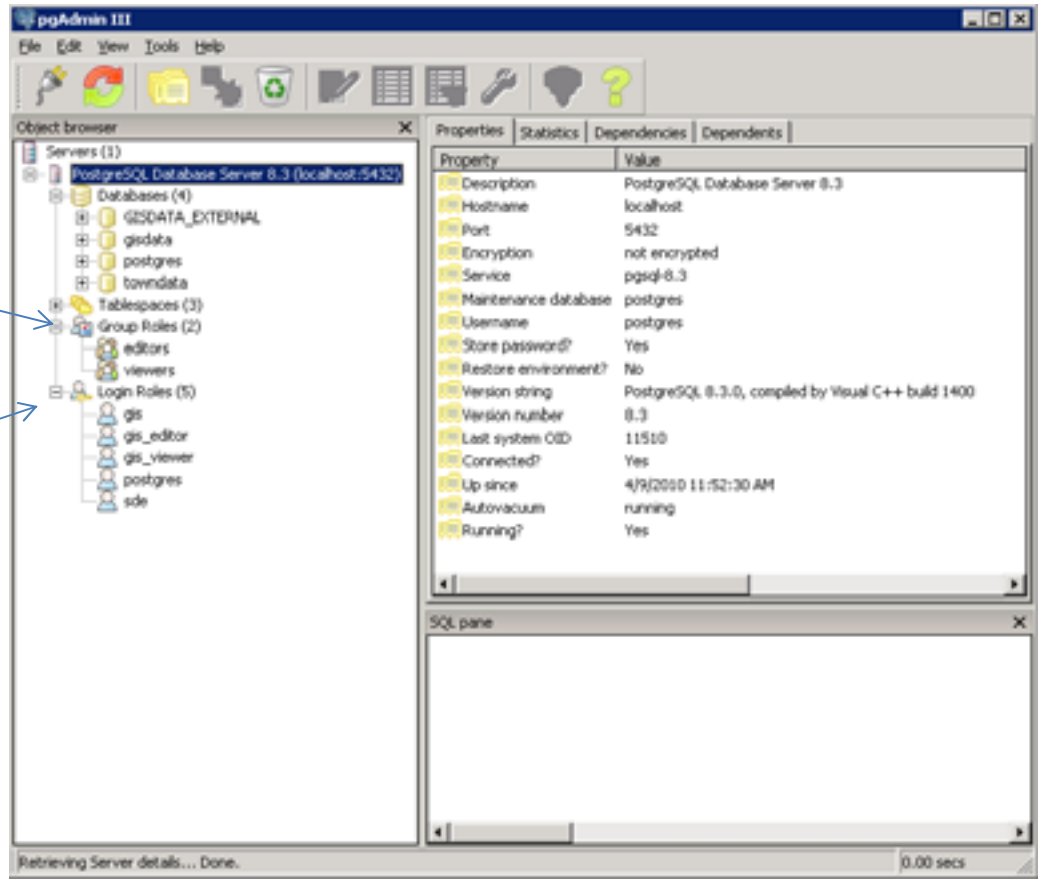
USER PERMISSIONS

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

Group Roles

Login Roles



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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)

LESSON LEARNED: PERMISSIONS

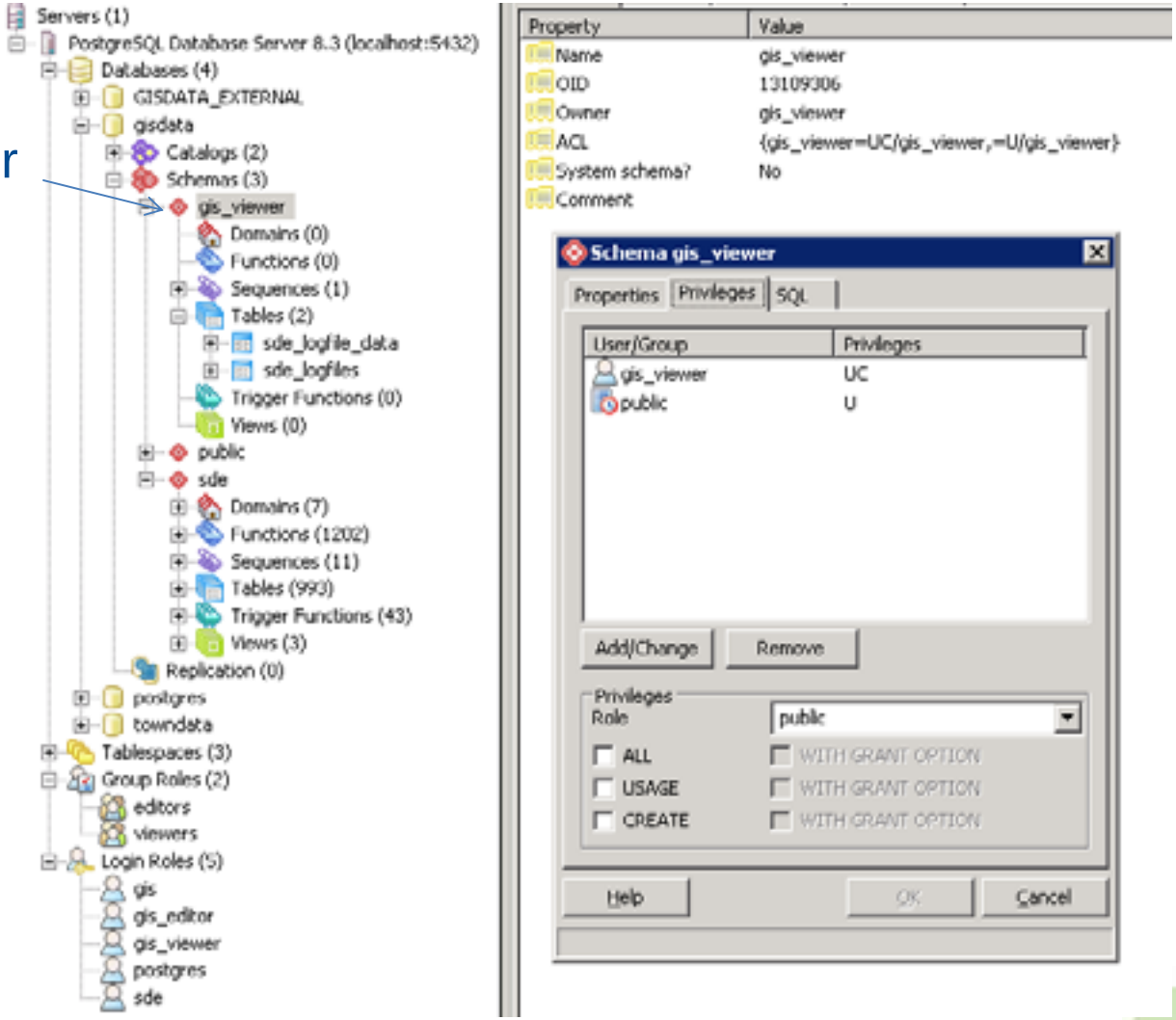
Solution: Shared Log files are used with the read-only gis_viewer account which limits the record selection based on the default configuration.

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.

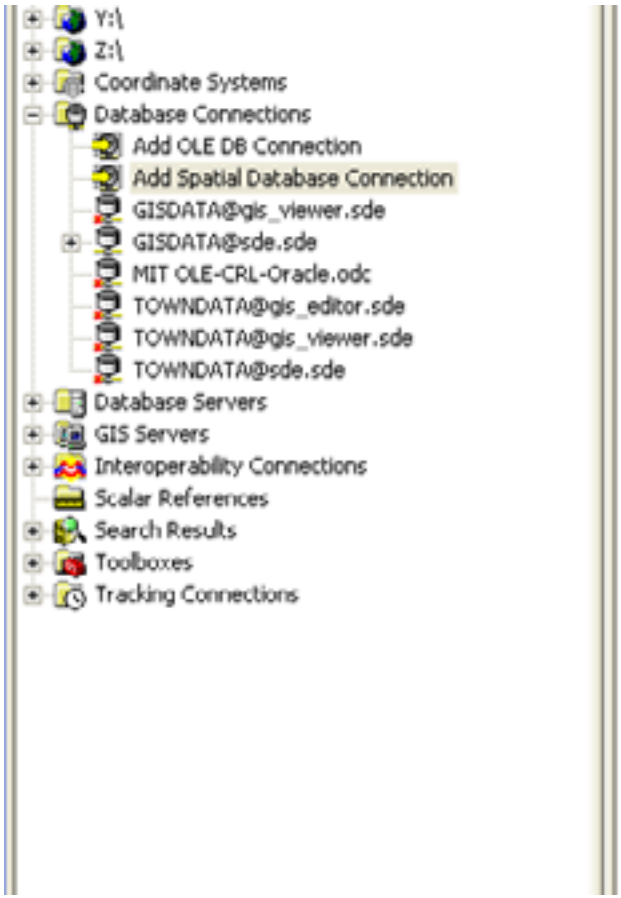
LESSON LEARNED: PERMISSIONS

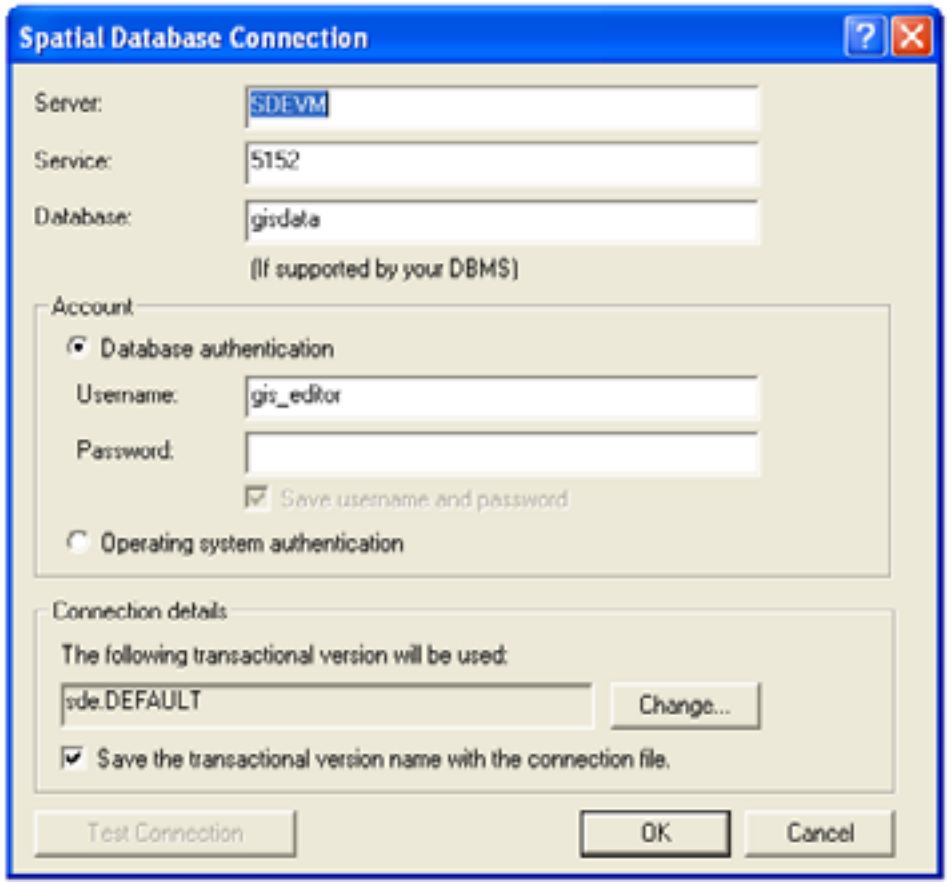
gis_viewer schema



LOADING DATA

- Spatial data loaded into PostGreSQL thru ArcCatalog





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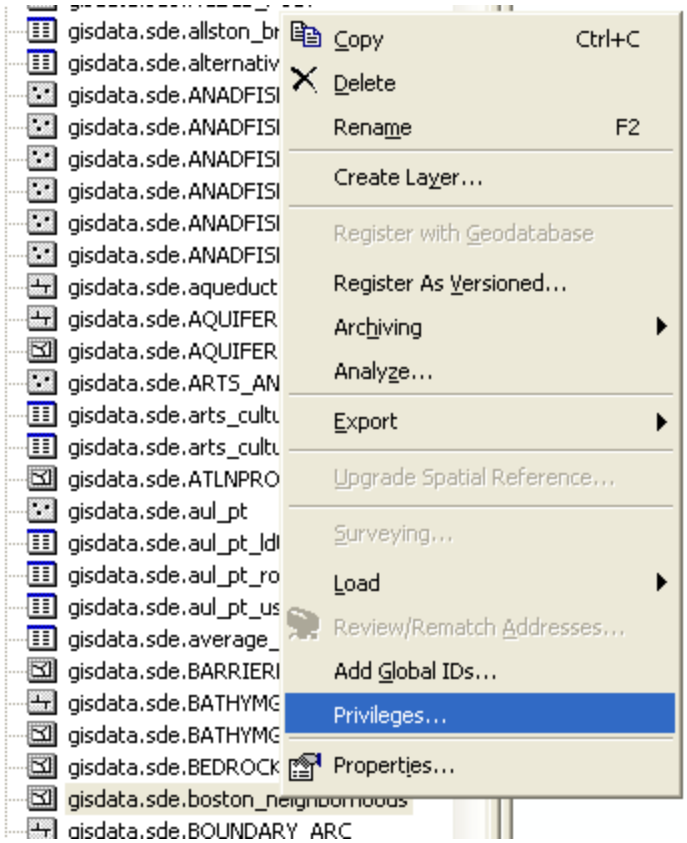

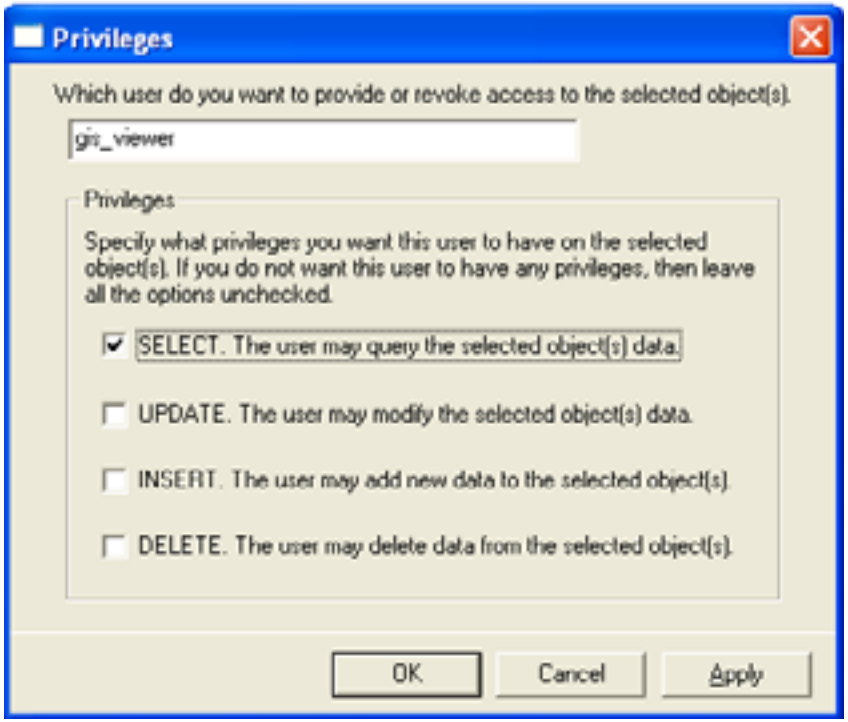

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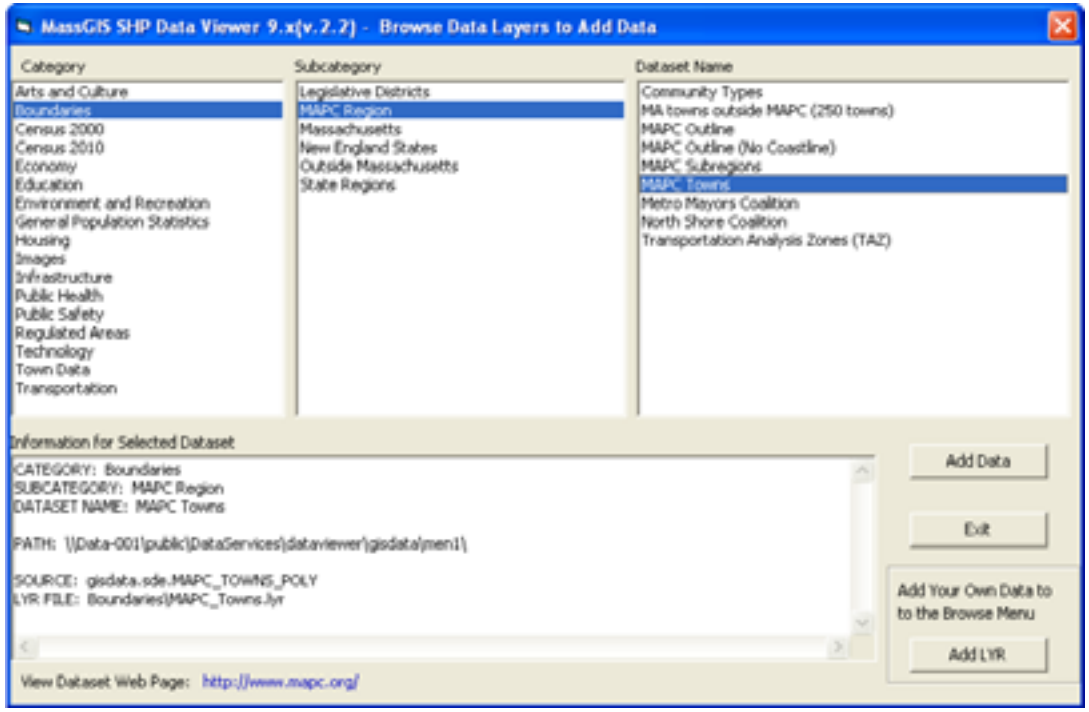
USING THE DATABASE

- 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.



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

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THANK YOU!

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