AGIC 2012 Workshop
Leveraging Free RDBMS in ArcGIS

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Workshop Outline

- Part I – Introduction
  - Why RDBMS
  - Discussion on Obstacles for using RDBMS
  - Free RDBMS Supported in ArcGIS and License Requirements
  - Advantages of Native Geometry Type
  - Two-tiered and three-tiered connections
- Part II – SQL Server Express
- Part III – PostgreSQL

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File vs RDBMS: General

Item	File-based	RDBMS
IT Integration		√
Performance – table-scan	√	
Performance – index search		√
Security & Reliability		√
Portability	√	
Scalability		√
Multi-user Access		√
Cost	√	

File vs RDBMS: ArcGIS-specific

- Versioning
  - Long transactions and conflict resolution
- Network Modeling
- Data validation
  - topological, attribute, and connectivity rules
- Tracking of historic transactions
- Complex features
  - Annotations, dimensions, cadastral fabrics, and so forth
- Advanced symbology
- Replication

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Discussion

Obstacles for Using RDBMS

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ArcGIS for Server License & Database Access

- Capacity
  - Workgroup
    - supported db
    - limit on size/connections
  - Enterprise
    - no limit
- Edition
  - Basic - read-only access
  - Standard - read & write access
  - Advanced - read & write access
- References
  - http://www.esri.com/software/arcgis/arcgisserver/features/~/media/Files/Pdfs/library/brochures/pdfs/arcgis-server-functionality-

ArcGIS 10.1 for Server & Support for Databases

- With ArcGIS 10.1 Server Enterprise License
  - IBM® DB2®
  - IBM Informix® Dynamic Server
  - Microsoft® SQL Server®
  - Microsoft® SQL Azure®
  - Oracle®
  - Netezza
  - PostgreSQL
- With ArcGIS 10.1 Server Workgroup License
  - Microsoft® SQL Server® Express
- With ArcGIS Desktop/Engine License
  - Microsoft® SQL Server® Express

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SQL Server Express Limitations

License	ArcGIS for Desktop ArcGIS for Engine	ArcGIS for Server Workgroup
Distributed Installation	No	No
Max DB Size	4GB(?)	10 GB
Licensed cores	?	4
Max Number of Connections	3	10
Web Client Connections	N/A	Unlimited

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Spatial Storage Type Options

Database	Spatial Type Name	Type
PostgreSQL	Spatial type for PostgreSQL	ST_Geometry
	PostGIS	**Geometry**
SQL Server	**ArcSDE Compressed Binary**	**Image**
	Well-Known Binary (OGCWKB)	Image
	Microsoft SQL Server Geometry type	**Geometry**
	Microsoft SQL Server Geography type	Geography

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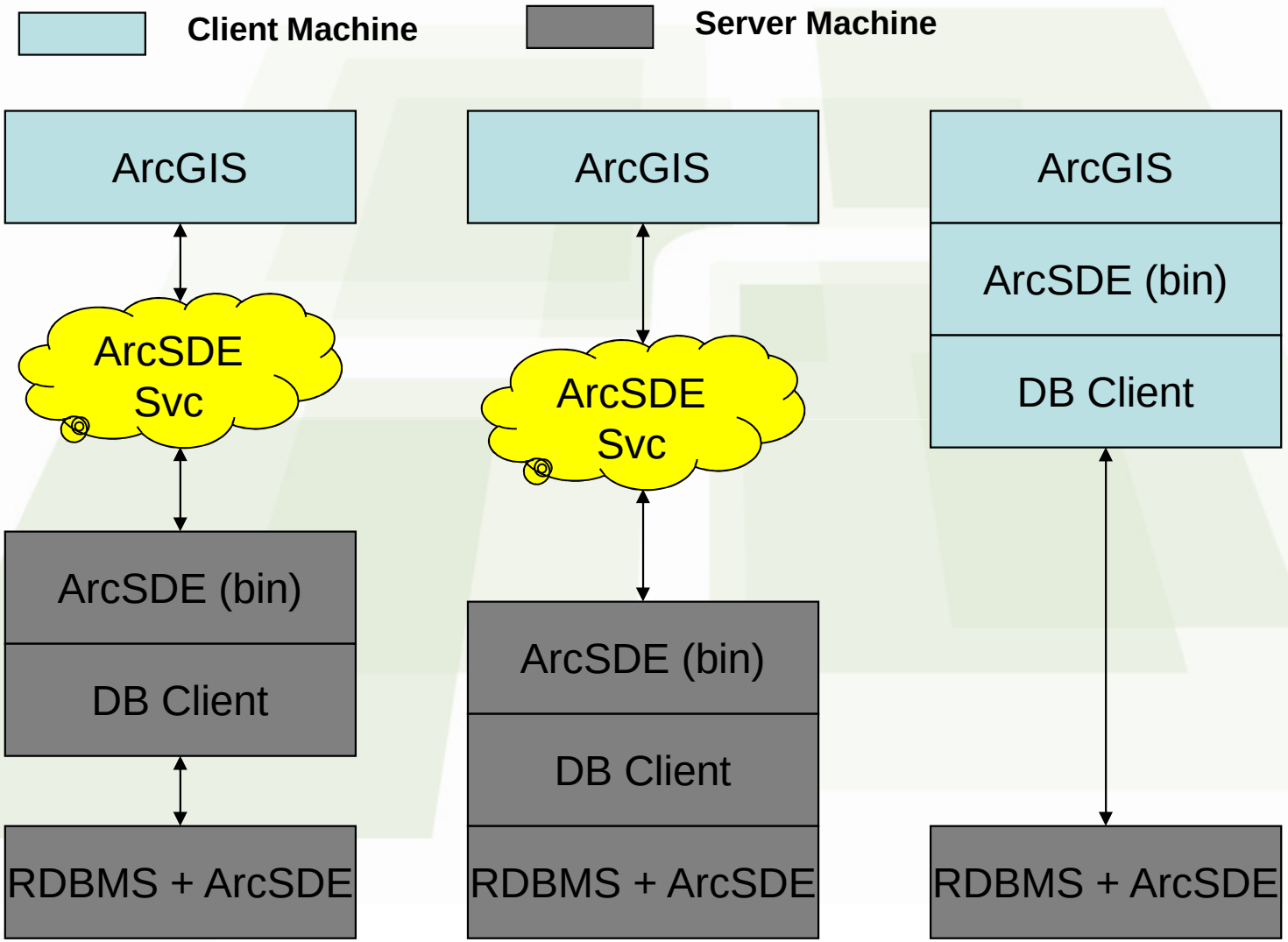
RDBMS Connection Options



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Part II ArcSDE for SQL Server Express -
Installation

- Software version & license
  - SQL Server Express 2008
  - ArcSDE for SQL Server Express10.0
    - ArcGIS for server Workgroup, or
    - ArcGIS for Desktop Standard/Advanced
  - ArcGIS Desktop 10.0 Standard/Advanced
- Installation sources
  - SQL Server Express 2008: ArcGIS Desktop 10.0 Disk
  - ArcSDE for SQL Server Express 10.0: ArcGIS Desktop 10.0 Disk
  - SQL Server Management Studio: http://www.microsoft.com/en-us/download/details.aspx?id=7593
- On local machine as administrator

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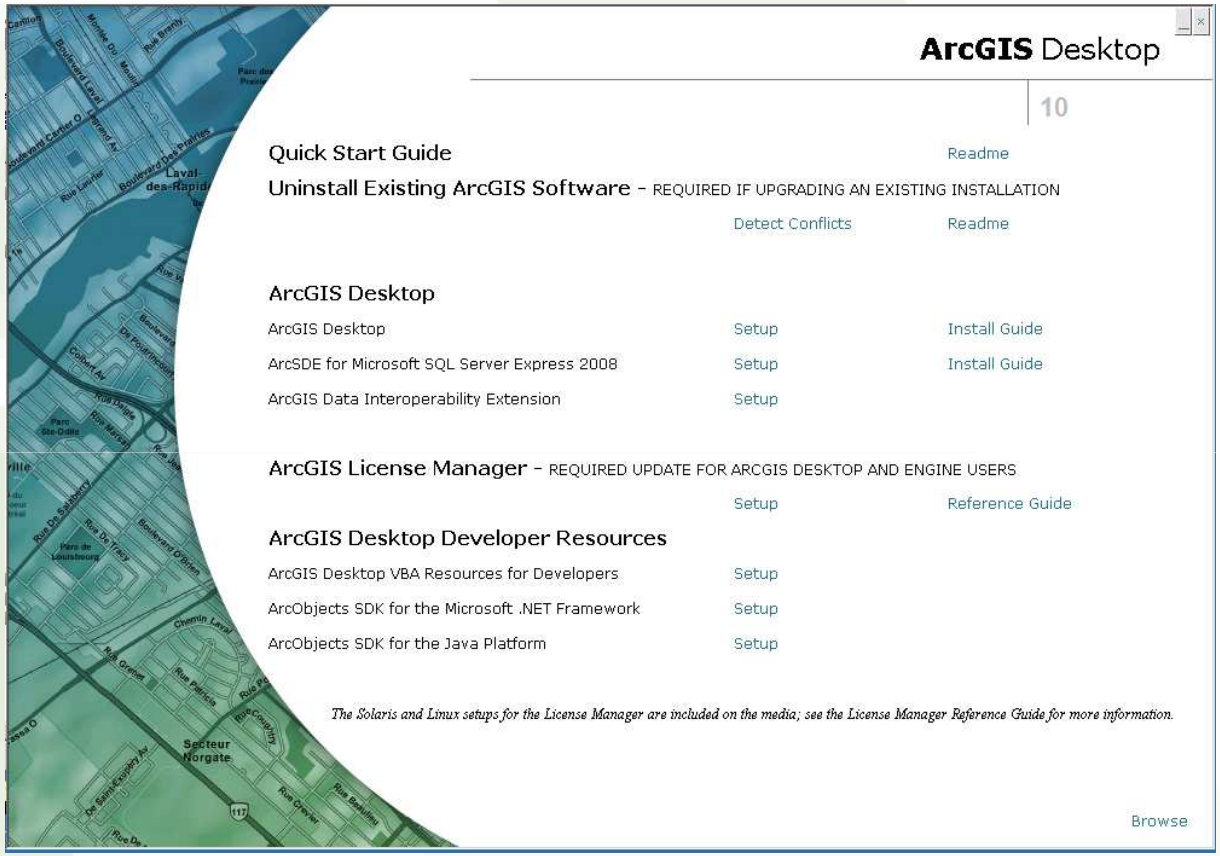
Installation from ArcGIS Desktop DVD

- References:

[Installing SQL Server Management Studio 2008]

[enable remote connections in SQL Server 2008]

[A quick tour of setting up and using database servers(SQL Server Express)]



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Part II ArcSDE for SQL Server Express -

Exercise I

- Enabling ArcSDE for geodatabase storage
- Connect to SQL Server in ArcCatelog
- Create geodatabase in ArcCatelog
- Data Manipulation in geodatabase

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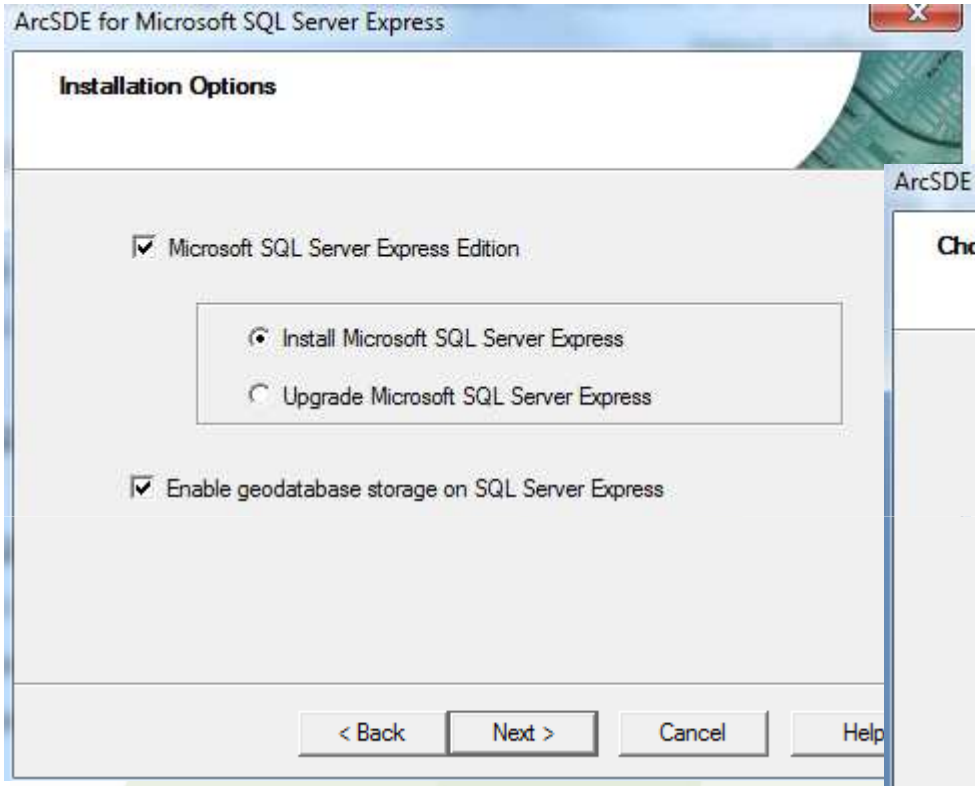
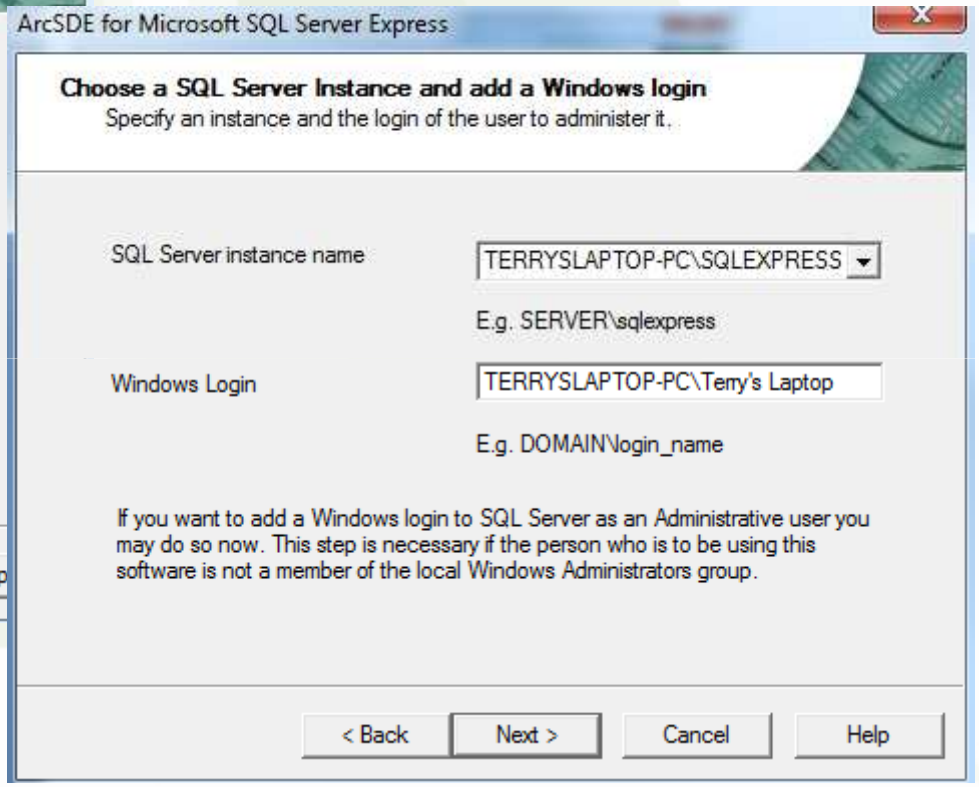
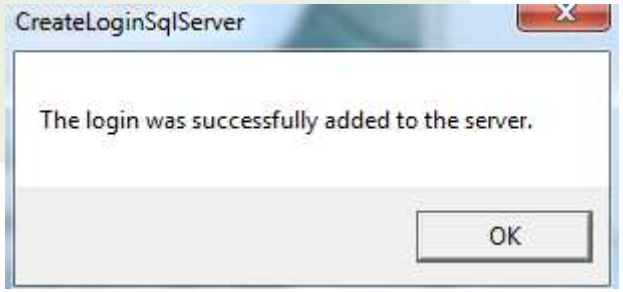
Exercise I
Enable geodatabase storage







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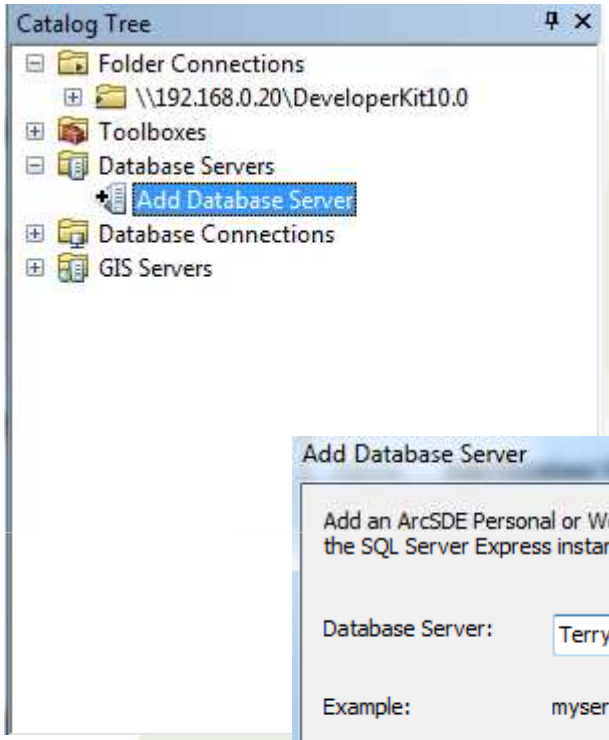
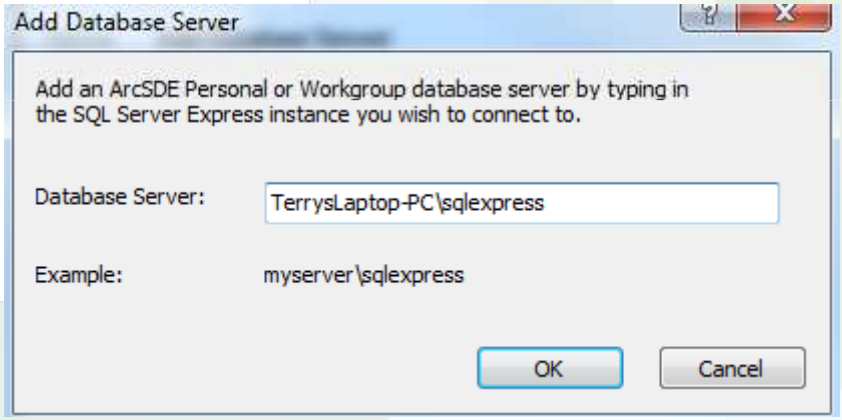
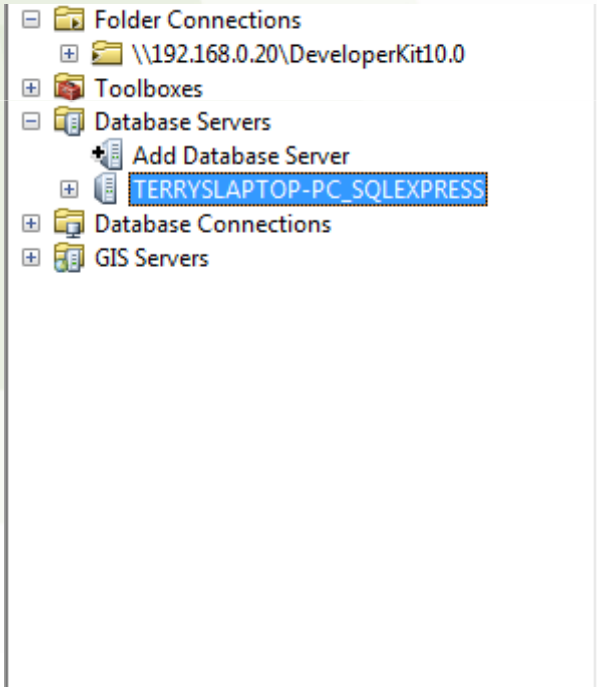
Exercise I
Connect to Database Server







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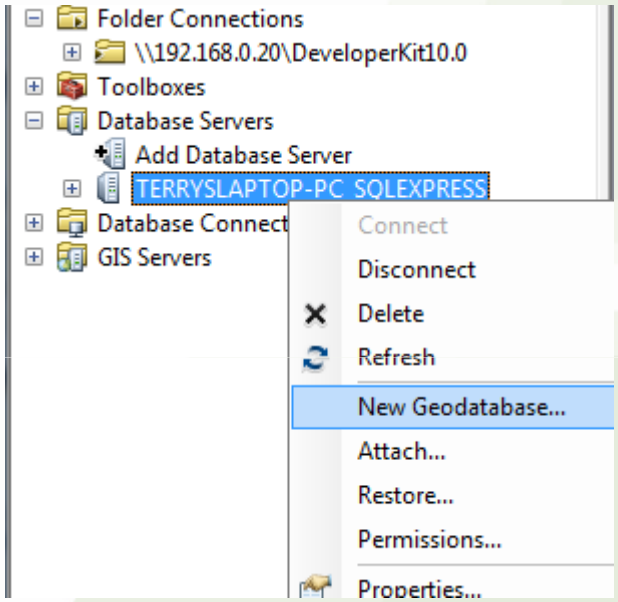
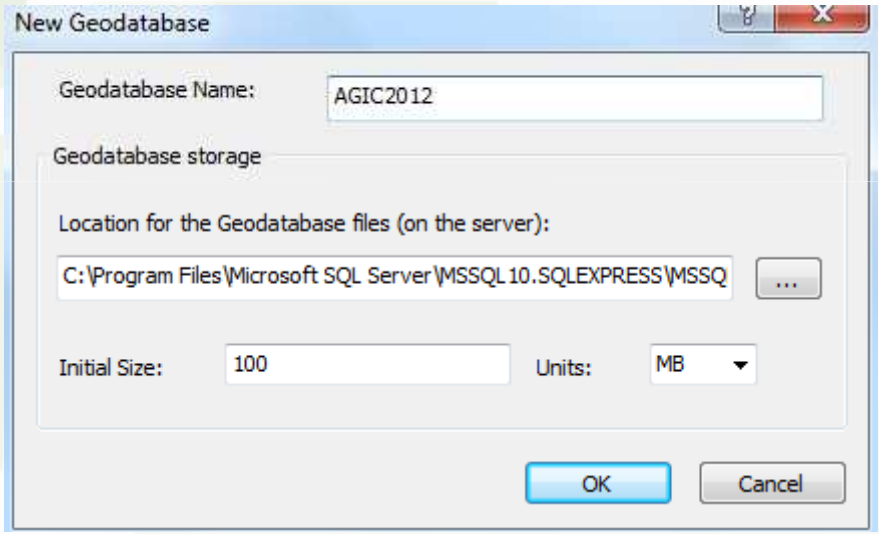
Exercise I
Create Geodatabase





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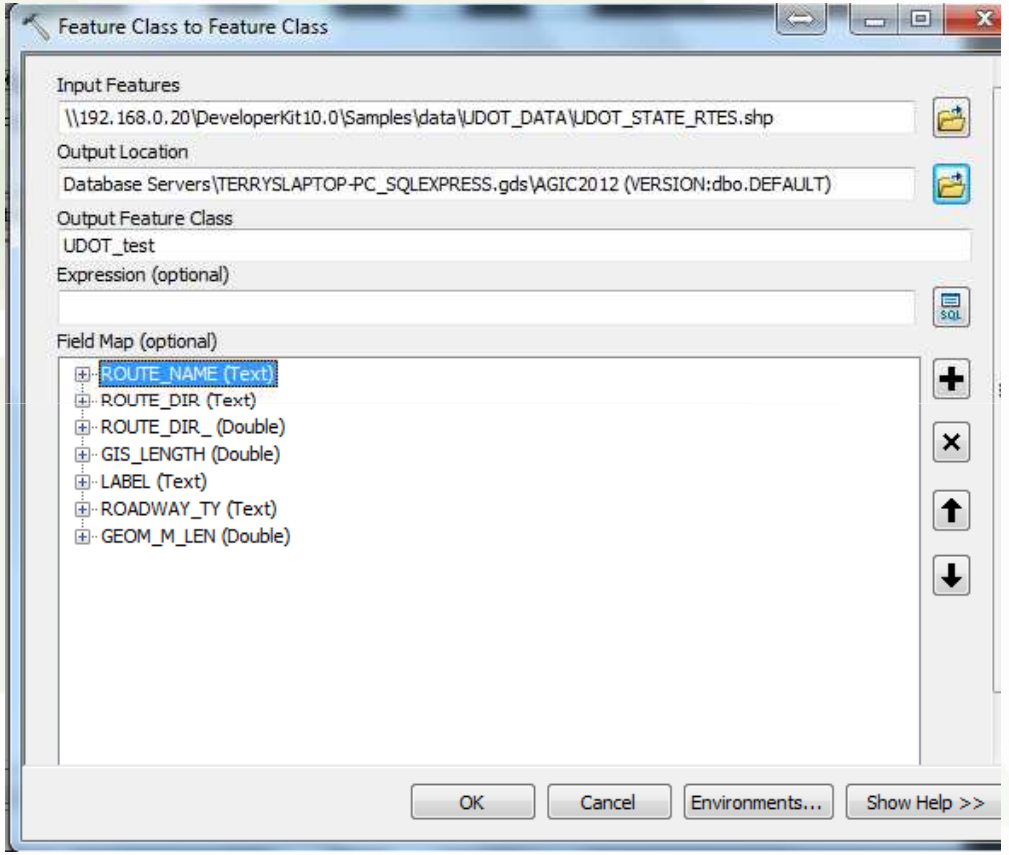
Exercise I
Data Handling

- Import Shapefile to geodatabase
- Create new feature class in geodatabase
- Use feature class



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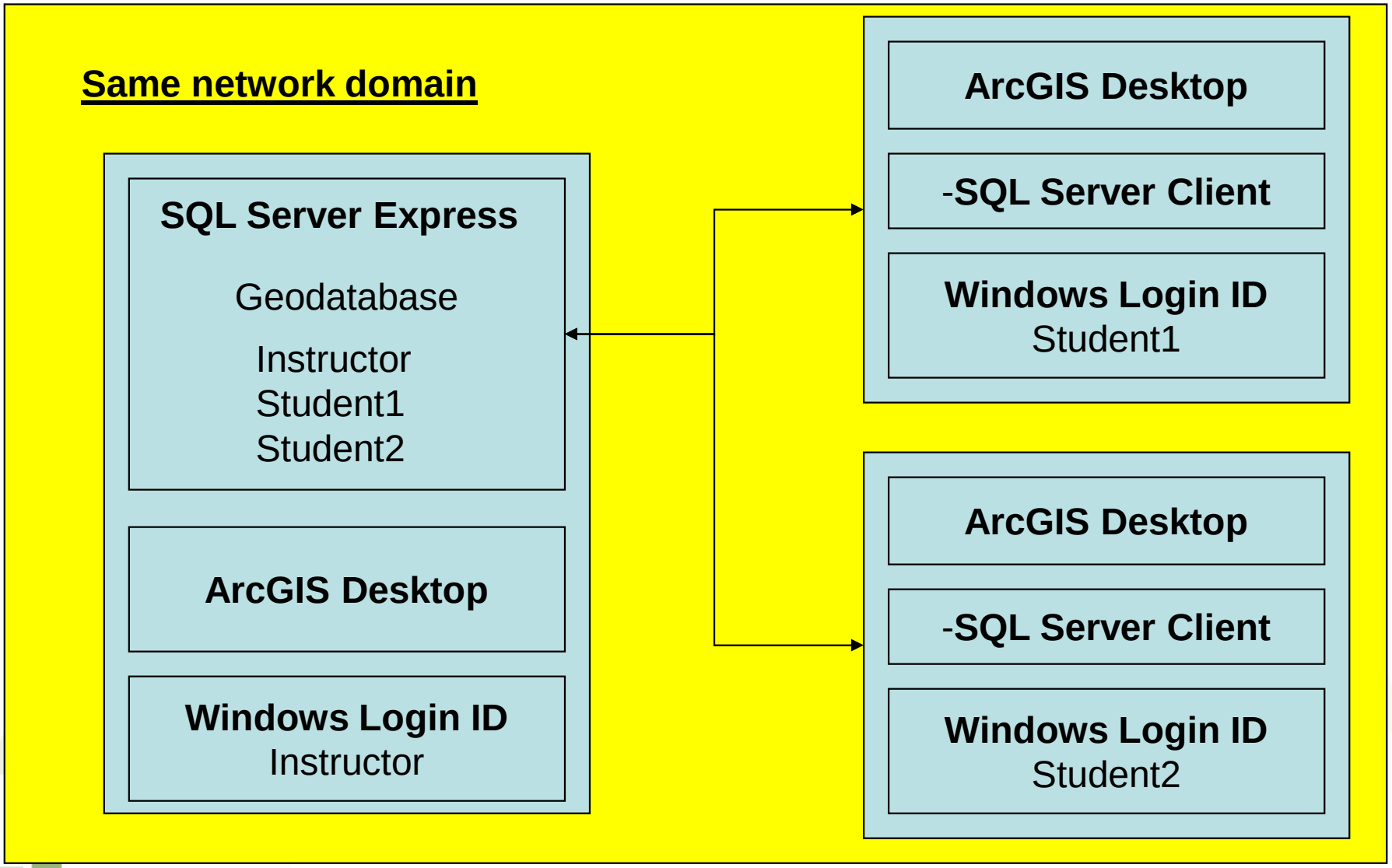
Exercise I

Geodatabase Sharing Illustration



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Share Geodatabase

- Requirements
  - Client and server computers should be in the same domain
  - SQL Server Native Client installed on client computers
  - Grant user access to the SQL Server Express using windows authentication
  - Grant user with DBO role
- Connection from ArcCatalog using Database Server connection

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Lab II – Using SQL Server's Native Geometry Type

- Change default storage type through DBTUNE setting
- Creating a feature class via import/load
- View data type
- Query feature class in SQL
- Using query layer in ArcMap

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Part III ArcSDE for PostgreSQL

- Software version & license
  - PostgreSQL 8.3(PostGIS 1.3.6)
  - ArcSDE for PostgreSQL 10.0
    - ArcGIS for server Enterprise license
  - ArcGIS Desktop 10.0
    - Standard/Advanced license
- Installation source
  - PostgreSQL 8.3(PostGIS 1.3.6): ArcSDE10.0 Disk
  - ArcSDE for PostgreSQL 10.0: ArcSDE 10.0 Disk
- On server machine as administrator

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Installation

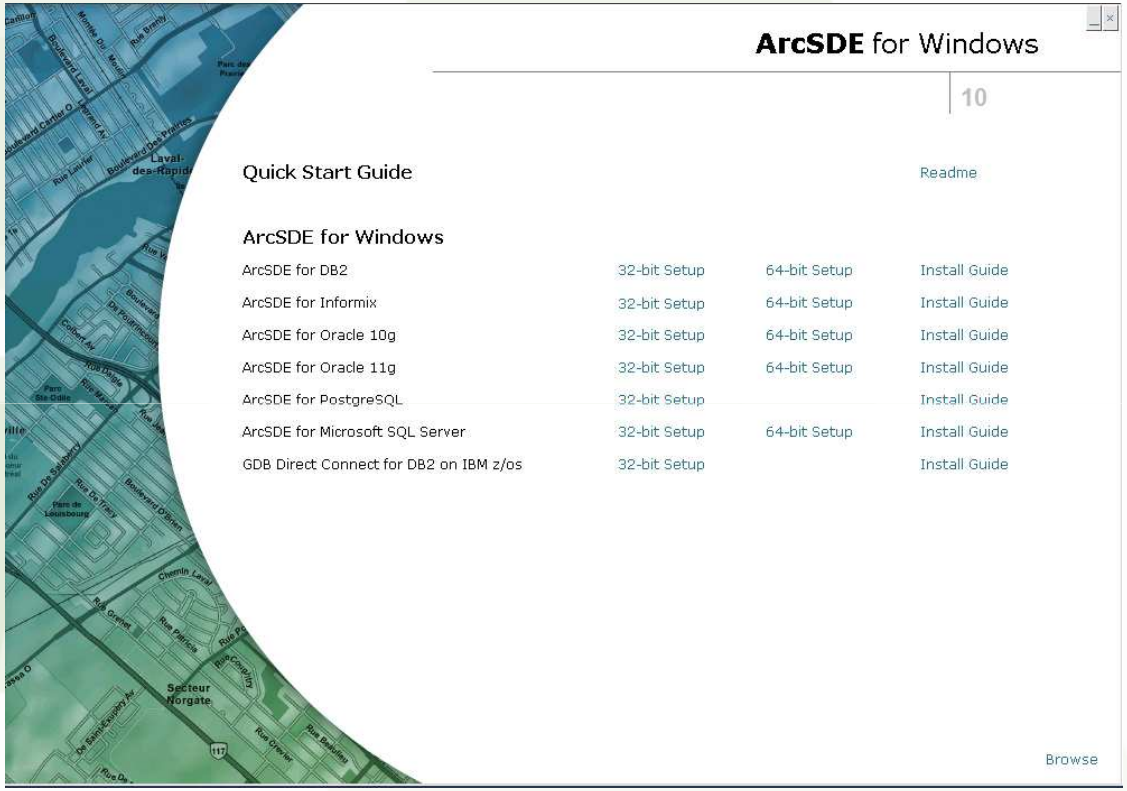
- References

ArcSDE for PostgreSQL Installation Guide

Configure pg_hba.conf file

Understand PostgreSQL Schema

Using the PostGIS geometry type



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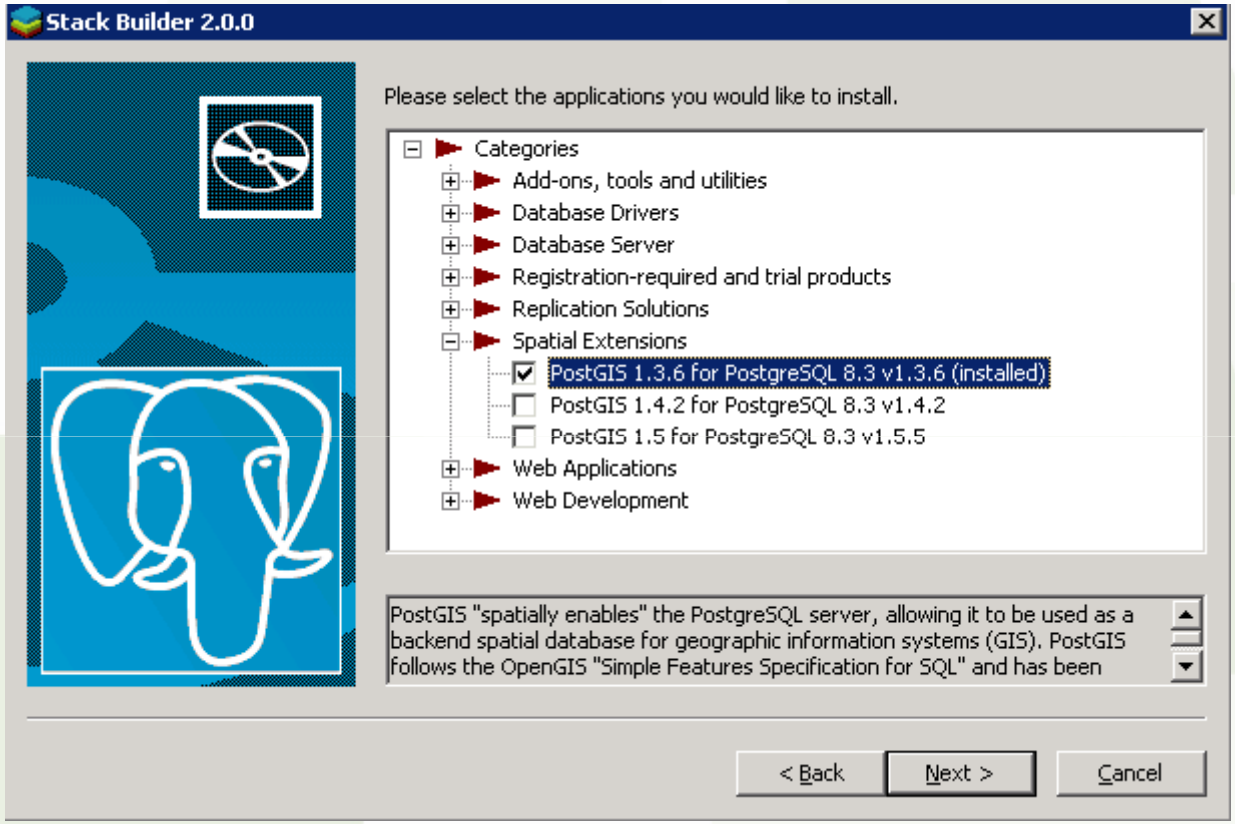
Installation



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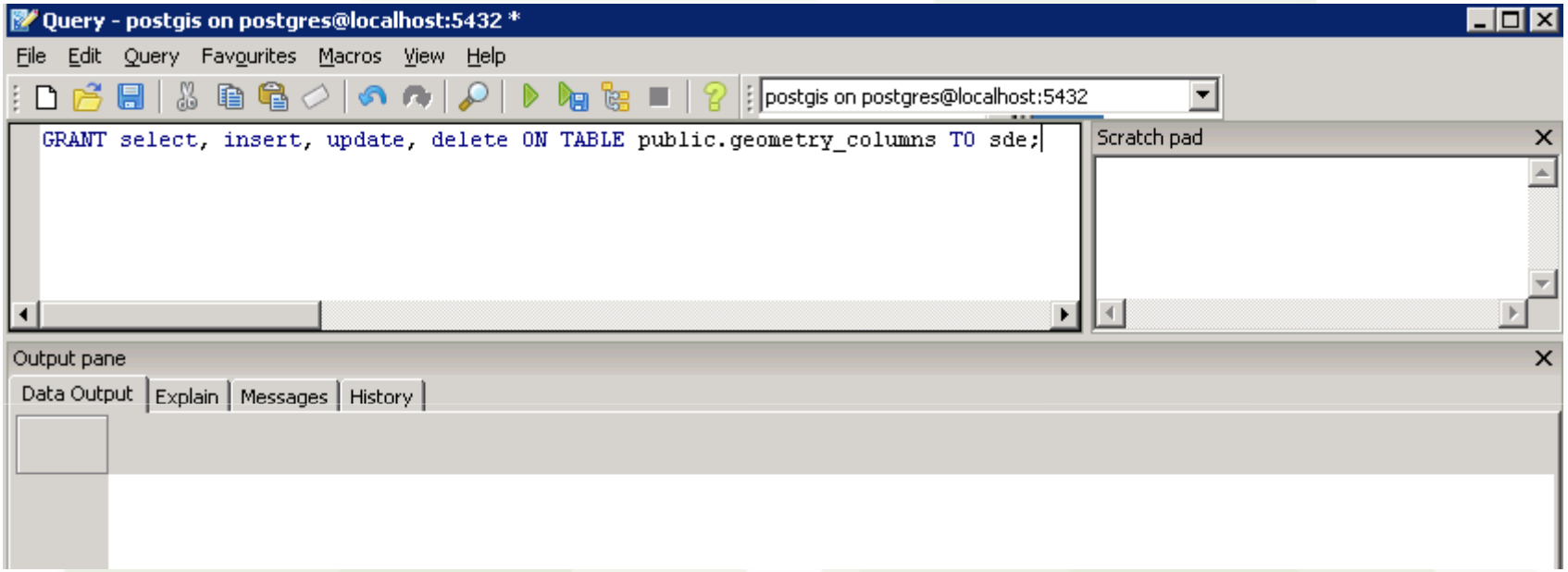
Installation



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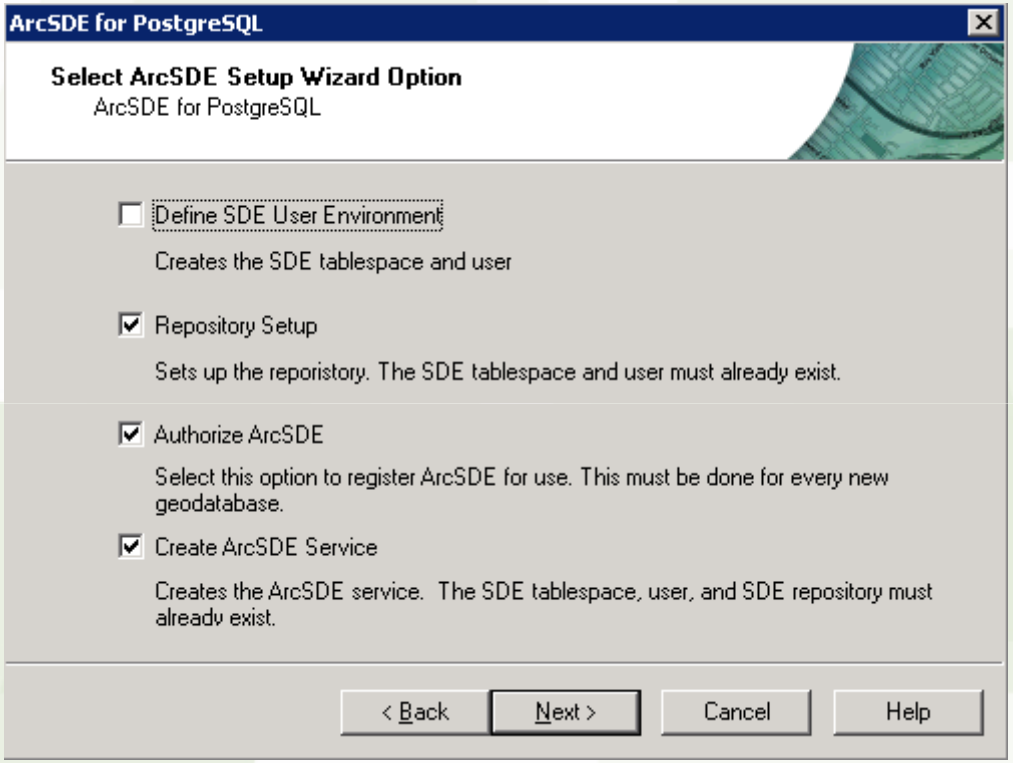
Installation



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Exercise III

- Connecting to PosgreSQL in ArcCatalog
  - Direct connection (two tiered)
  - Service connection (three-tiered)
- Data Manipulation in Geodatabase

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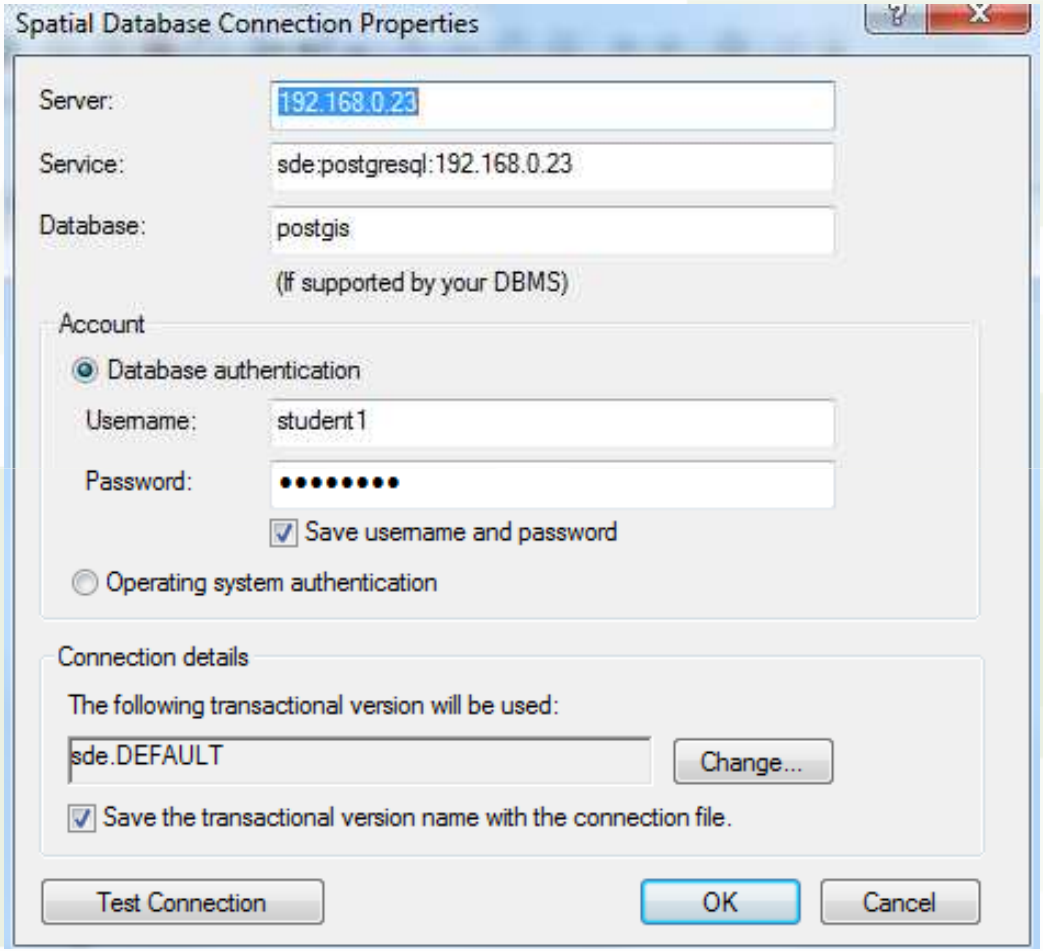
Exercise III
Two-tier Connection



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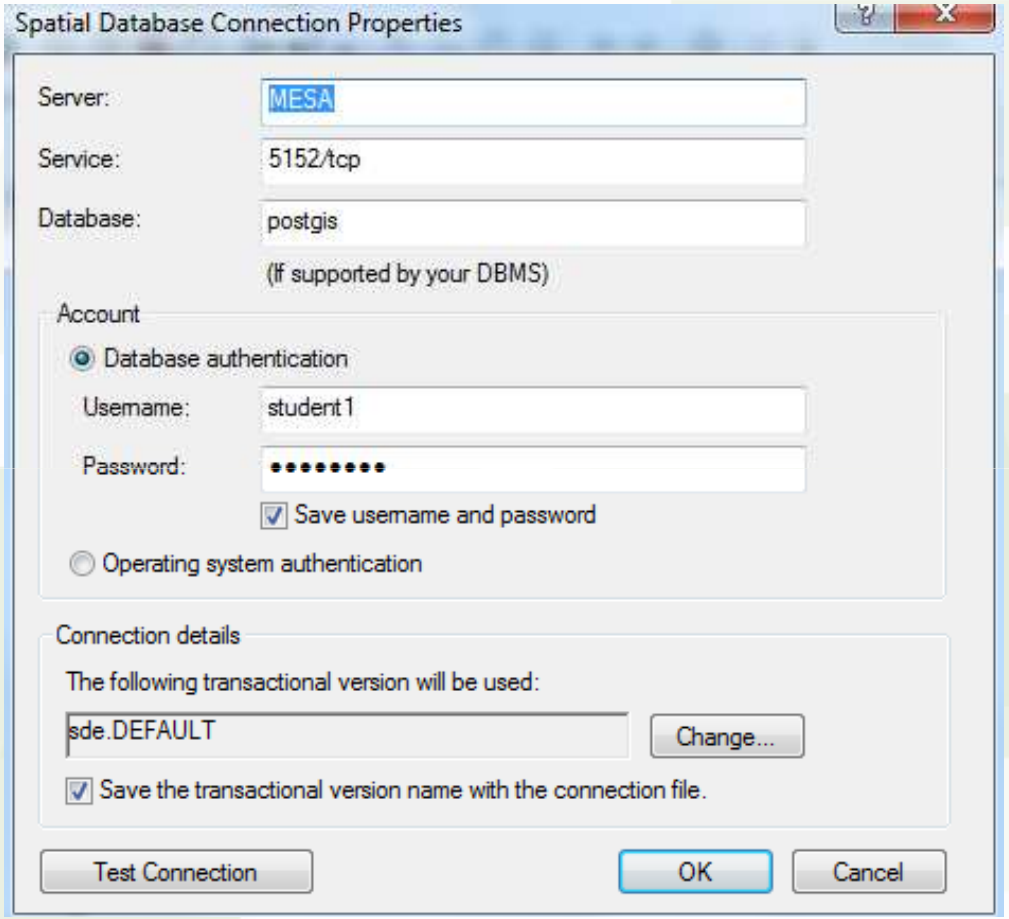
Exercise III
Three-tier Connection



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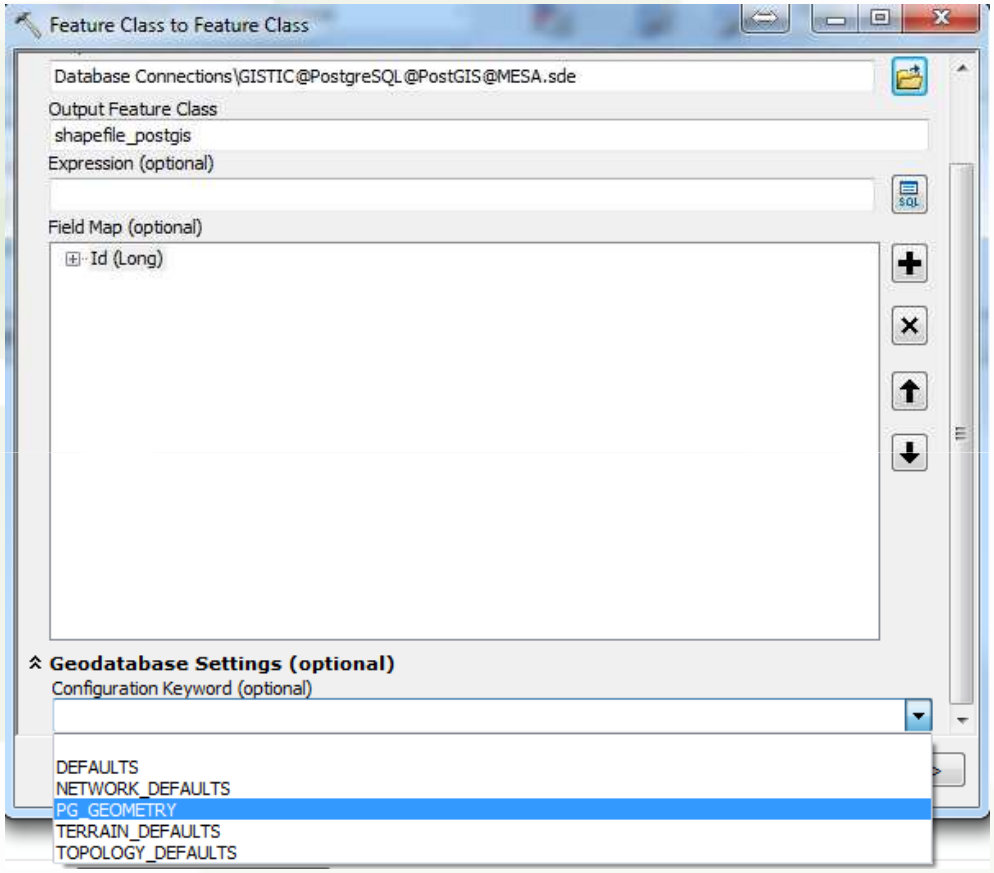
Exercise - Data Manipulation

- Import Shapefile to geodatabase
- Create new feature class in geodatabase
- Export feature class to SQL Server Geodatabase



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