Administering Your Microsoft SQL Server Geodatabase

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Presentation Topics

• **News since the last UC**

• **How do I …**
  - Configure SQL Server to support geodatabases?
  - Create geodatabases?
  - Control access to my data?
  - Choose a spatial data storage option?
  - Make sure that my data is safe?
  - Maintain good performance?
News

ArcGIS and Microsoft changes since last year
New at 10.2

Support for Z & M coordinates with Geography
  • SQL Server 2012 only

Connections to read-only geodatabases

Support for table and index partitioning
10.1 users

• SQL Server 2012
  - SQL Server 2012 Support Patch

• User names containing dot (.) or hyphen (-)
  - SQL Server User Names With Special Characters Patch

• Both patches require SP1
How do I…?

Common questions when working with SQL Server databases and geodatabases
How do I configure SQL Server to support geodatabases?
How do I configure SQL Server to support geodatabases?

- Install a supported version of SQL Server
  - Microsoft SQL Server database requirements for ArcGIS 10.1
- Must use a Case-Insensitive (CI) collation
- Can use Windows or Mixed-mode authentication
- SQL Server Browser not required
  - Must provide static TCP port on connection
What is the SQL Server Native Client?

- Microsoft stand-alone DLL
- Required for connections to SQL Server
- Install on every single client
- Must be same or newer version than SQL Server
- Microsoft ODBC Driver 11 for SQL Server
  - Support coming soon
Demo

SQL Server Native Client

Database Compatibility Level
How do I create geodatabases?
Databases and Geodatabases

- A **database** is a SQL Server object
  - There can be many per SQL Server instance

- A **geodatabase** is an ArcGIS construct hosted in a database
  - One allowed in each database

- Options for creating geodatabases
  - Use a GP tool to create a new geodatabase from scratch
  - Use a GP tool to create a new geodatabase in an existing database
Demo

Creating a geodatabase
Points to remember

• Use GP Tools to create geodatabases
  - Default size of 500MB data file & 125MB logfile

• More control over storage?
  - Use SQL Server tools to create database first

• Enable geodatabase tool
  - create a geodatabase in an existing database, without sysadmin privileges

• Do not rename a database that contains a geodatabase
How do I control access to my data?

Access to SQL Server objects are managed with permissions granted to logins, users and roles.
SQL Server Principals

• Logins = Authentication
  - Who is connecting?

• Users = Authorization
  - What can this person do in the database?

• Schemas = Containers
  - What are the logical groups of database objects that should be managed as whole
SQL Server Instance

Logins → Users
User-schema relationship

- For users that create data, ArcGIS requires that
  \texttt{user name = default schema name}
  - Not a SQL Server rule

- Users that are DBO all create data in the DBO schema

- Data readers & editors do not need a same-named schema
Limit Permissions for Most Users

- Admin
- Data Owners
- Data Editors
- Data Readers
Who is DBO?

Sysadmin fixed-server role members are DBO in every database.

Database owner is DBO in single database.

Db_owner role members are NOT DBO.

Have DBO-like permissions.
Demo

Managing Permissions
Points to remember

• Creating a user does not give access to data in the database
  - It must be granted by the data owner

• ArcGIS tools manage permissions on all parts of a feature class

• Creating a user with the Create User tool will grant permissions sufficient for creating data
How do I choose a spatial data storage option?
Three spatial data storage options

Similar characteristics

Esri SDEBINARY
- Esri type, original type used with SQL Server

Microsoft Geometry
- Planar spatial type, >= SQL Server 2008

Microsoft Geography
- Geodetic spatial type, >= SQL Server 2008

Access using T-SQL
Demo
Spatial data storage
Planar measurement
Spherical measurement
Points to remember

• Three storage types are available: SDEBINARY, **Geometry** and Geography

• In Geography, calculations are done using Great Ellipse line interpolation, while the others use Cartesian

• SQL Server manages spatial indexes on Geometry and Geography

• Microsoft spatial data types provide SQL access to spatial data
How do I make sure my data is safe?
BACKUP YOUR DATA NOW
Points to remember

Backups are the only way to reliably protect your data

1. Decide how much time you can afford to lose when disaster strikes and data must be restored
2. Create a restore plan that will achieve that goal
3. Create a backup plan that supports your restore plan
4. Implement your plan
5. Test your recovery plan regularly by using real backup media to restore to a system capable of being used in production
How can I maintain good performance?
Demo
Performance tuning
Related SQL Server presentations

• Microsoft SQL Server Special Interest Group
  - Today from noon until 1pm
  - Room 28A

• Working with Microsoft SQL Server Express Geodatabases
  - Demo Theatre – Geodatabase Management Island in Hall C
  - 4:00 – 4:30 pm
Thank you...

Please fill out the session evaluation

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