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

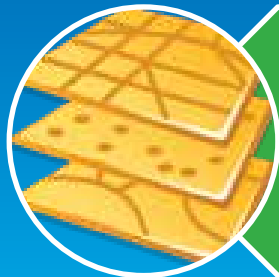**ArcGIS and Microsoft changes since last year**

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
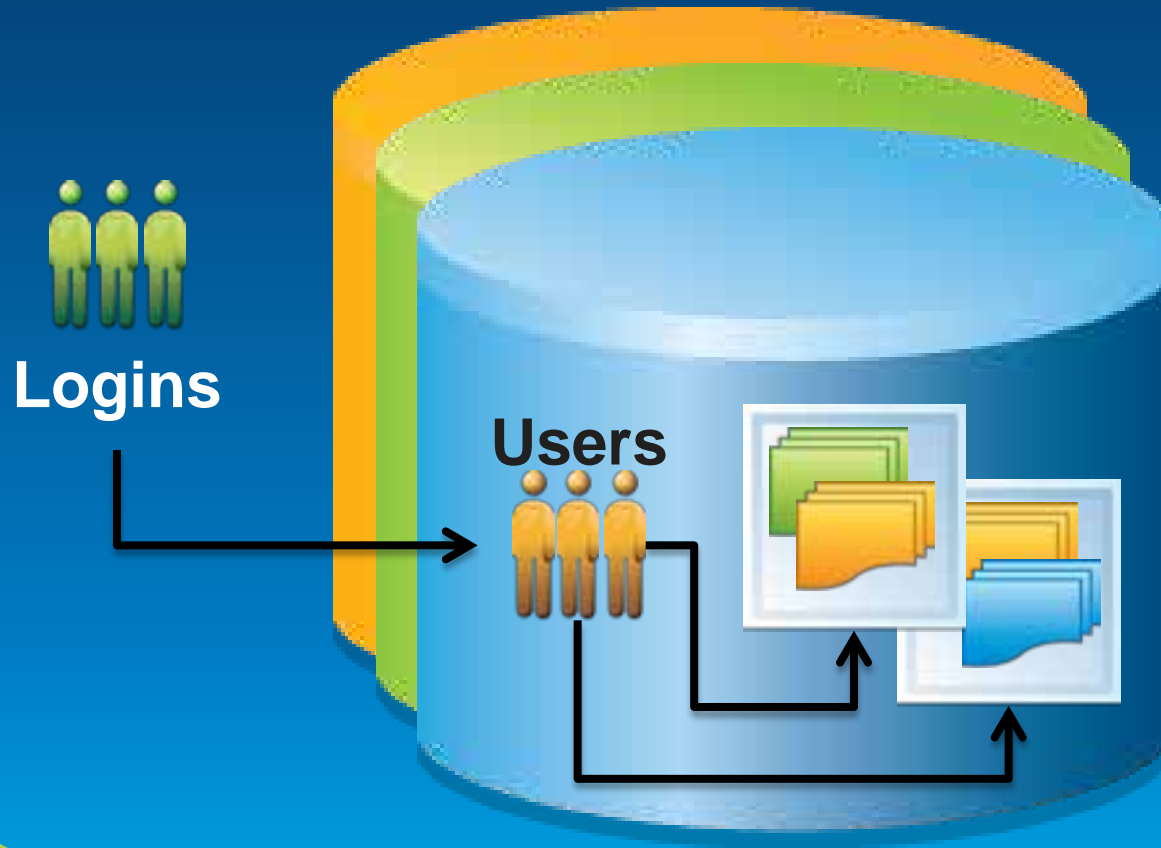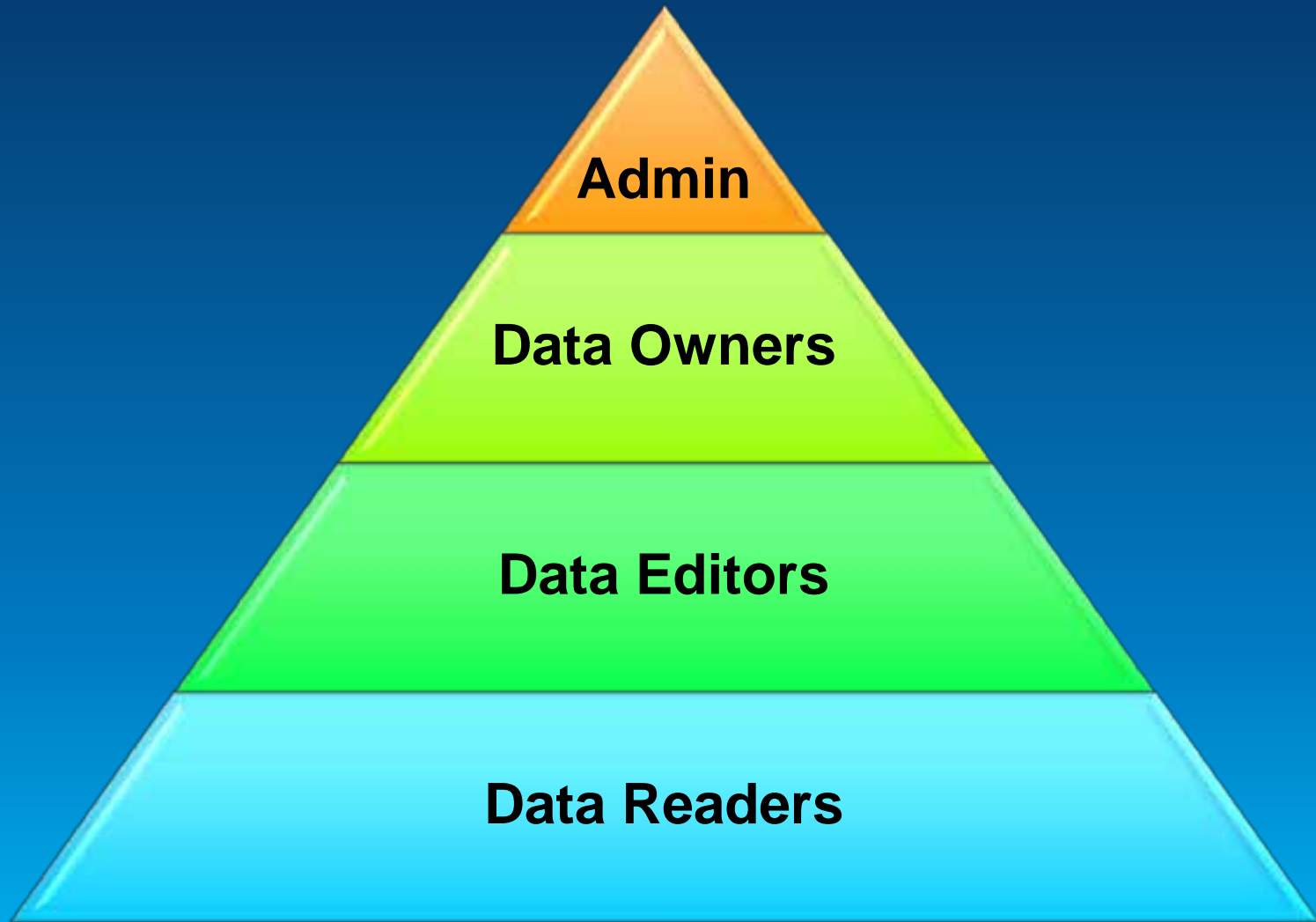
User-schema relationship

- **For users that create data, ArcGIS requires that**
  user name = default schema name
  - **Not a SQL Server rule**

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

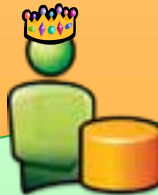- **Data readers & editors do not need a same-named schema**

Limit Permissions for Most Users

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
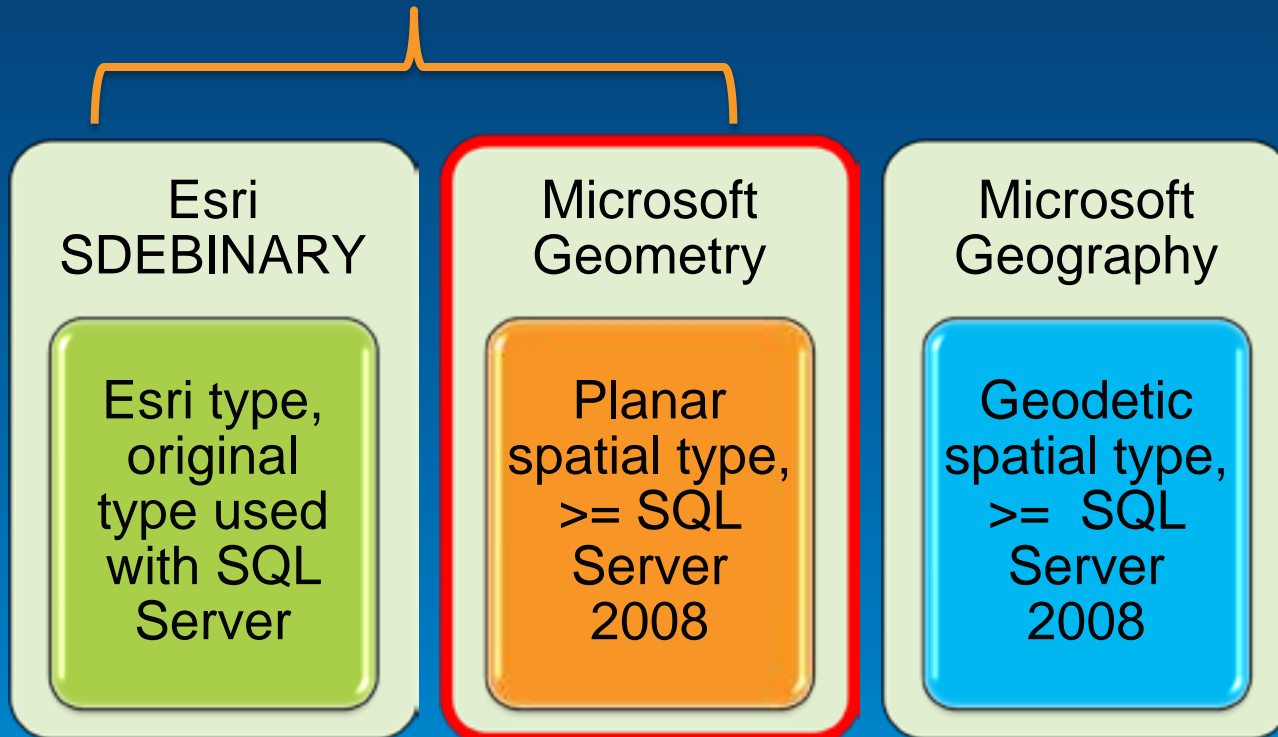
Points to remember

- **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	Microsoft Geometry	Microsoft Geography
Esri type, original type used with SQL Server	Planar spatial type, >= SQL Server 2008	Geodetic spatial type, >= SQL Server 2008

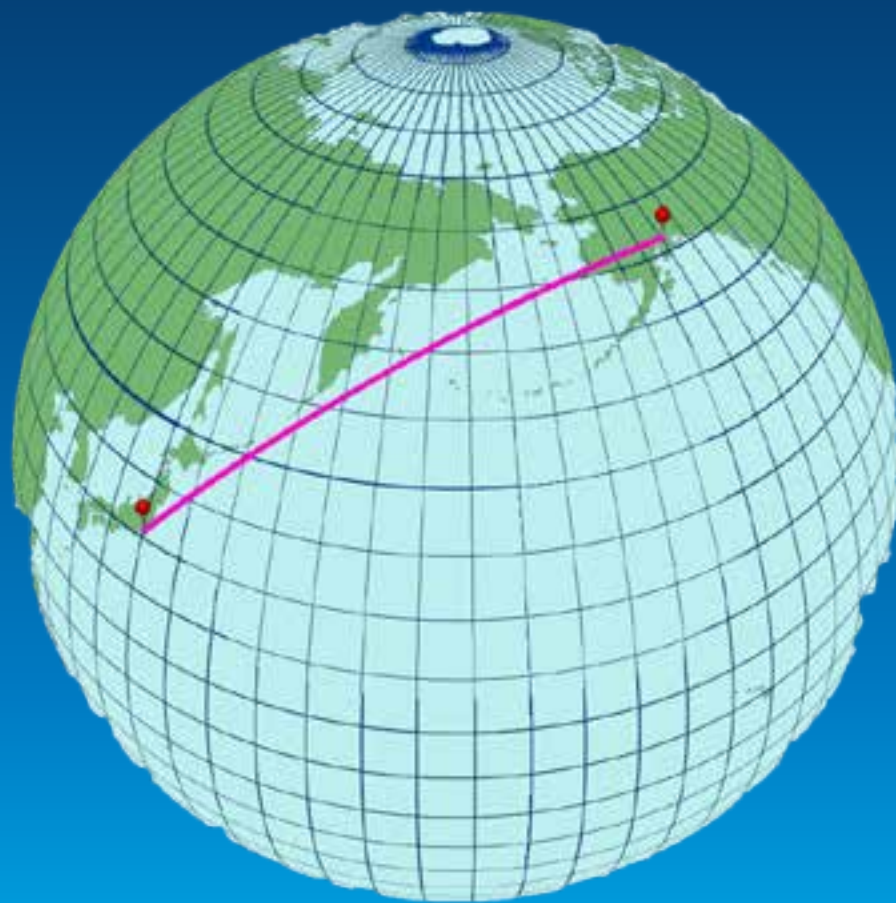**Access using T-SQL**

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. <u>**Test your recovery plan regularly by using real backup media to restore to a system capable of being used in production**</u>

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

Offering ID: 1197

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