Types of Geodatabases at ArcGIS 9.2

Transcript

Hello, and welcome to the ESRI instructional podcast series. My name is Derek Law, and I work at ESRI's main office in Redlands, California. I specialize in geodata management and ArcSDE technology. In this podcast, I will talk about the three types of geodatabases available at ArcGIS 9.2. This podcast is a second in a group of podcasts on the geodatabase. It is intended for ArcGIS Desktop users, ArcGIS Server users, and GIS managers who want to learn about the different types of geodatabases and their capabilities. This may help in determining which would be best suited for the needs of a specific GIS application project.

ArcGIS 9.2 is a significant release for the geodatabase in terms of both implementation and functionality. At this release, the geodatabase now provides users with a more comprehensive and extensible framework to build a GIS system on. This enables you to easily leverage those capabilities for different-sized projects. Selecting the appropriate type of geodatabase to use for a GIS application will depend on the requirements of the specific project.

The three types of geodatabases at ArcGIS 9.2, in ascending order of functionality and capacity, are the Microsoft Access-based personal geodatabase, the file geodatabase, and the scalable geodatabase, which is also commonly called an ArcSDE geodatabase. It is available at three different levels: personal, workgroup, and enterprise. I will discuss each type of geodatabase in ascending order.

The Microsoft Access-based personal geodatabase has been available since the initial release of ArcGIS 8.0. It is designed for a single user working with smaller GIS datasets and its structure is implemented within a single Microsoft Access file with a maximum size capacity of 2 gigabytes. It does not support multiuser editing, versioning, or historical archiving, but it can be used as a child geodatabase in check-out/check-in geodatabase replication workflows. In other words, disconnected editing scenarios. Access-based personal geodatabases are available with all license levels of ArcGIS Desktop, and ESRI will continue to fully support them for the foreseeable future.

The file geodatabase is new at ArcGIS 9.2 and is also designed primarily for a single user working with small- to medium-sized GIS datasets. It is implemented as a collection of binary files in a file system and has no size capacity limit. By default, each table in a file geodatabase can store up to 1 terabyte of data. However, this can be changed so that a table can store up to 256 terabytes, if desired. Vector data stored within a file geodatabase can optionally be

compressed into a read-only format, reducing the memory footprint utilized by its storage and improving geodatabase performance. You can uncompress the vector data to make it editable at any time. It is also possible to have more than one editor in the file geodatabase at the same time, provided they are editing in different tables, feature classes, or feature datasets. File geodatabases do not support versioning or historical archiving, but they can be used as child geodatabases in check-out/check-in geodatabase replication workflows. They are available with all license levels of ArcGIS Desktop, and ESRI recommends that users who will be starting new GIS projects for their own local use should use file geodatabases over Access-based personal geodatabases because they offer more functionality and better performance.

Scalable geodatabases are also commonly called ArcSDE geodatabases because they use ArcSDE technology as part of their implementation. They are available at three different levels: personal, workgroup, and enterprise. It is the size capacity and number of possible concurrent users that vary with each of the three different levels. All three levels are implemented within relational database management system (or DBMS) software, support a multiuser editing environment, and include additional geodatabase functionality such as access permission control for individual datasets, versioning, check-out/check-in, one-way and two-way geodatabase replication, and historical archiving.

The first level is the personal geodatabase, also called personal ArcSDE, and is new at ArcGIS 9.2. It is designed for a single user who requires the functionality of a geodatabase with ArcSDE technology. It is implemented within Microsoft SQL Server 2005 Express, and all of the setup parameters for ArcSDE are preconfigured for you, making it easy to install and use out of the box. Geodatabase and DBMS management, such as defining users and their data access permissions, is performed entirely within ArcCatalog. They have a maximum size limit of 4 gigabytes and support up to three simultaneous users: one editor and two viewers. They are available with the ArcEditor and ArcInfo levels of ArcGIS Desktop.

The second level is the workgroup geodatabase, also called Workgroup ArcSDE, and is also new at ArcGIS 9.2. It is designed for the small- to medium-sized departmental application scenario. It is also implemented within Microsoft SQL Server 2005 Express, has a maximum size limit of 4 gigabytes, and uses ArcCatalog for setup and management. The difference between the workgroup and personal levels is that workgroup supports up to 10 concurrent users, all of which

can be editors. Workgroup geodatabases are available with the ArcGIS Server for workgroups-level software.

Lastly, the enterprise geodatabase, also called Enterprise ArcSDE, is the most robust of all the geodatabases. This is the traditional ArcSDE geodatabase that was available prior to ArcGIS 9.2. It is designed for large-scale enterprise application scenarios and can be implemented within four different DBMSs including IBM DB2, IBM Informix, Microsoft SQL Server, and Oracle. Enterprise geodatabases can be scaled to any size and support any number of users, running on computers of any size and configuration. They are set up and maintained with a combination of both DBMS software and ArcCatalog and are typically administered and managed by a dedicated database administrator, or DBA. They are included as part of ArcGIS Server for enterprise-level software.

A quick note on data integration: All three types of geodatabases are designed to support the full geodatabase information model. Therefore, GIS datasets can be easily transferred between the various geodatabase types using the migration tools included with ArcGIS Desktop, such as copy/paste and import/export. You can start a GIS project using an Access-based personal geodatabase or file geodatabase, then, later in your workflow, you can easily migrate to any of the three levels of scalable geodatabases.

To summarize, at ArcGIS 9.2, there are three types of geodatabases. In increasing order of capacity and functionality, they are the Microsoft Access-based personal geodatabase, the file geodatabase, and the scalable geodatabase, which is also commonly called an ArcSDE geodatabase. It is available at three levels: personal, workgroup, and enterprise. GIS datasets can be easily transferred between the different geodatabase types using migration tools within ArcGIS Desktop. The three types of geodatabases available allow organizations to have a scalable data architecture that works across their single user systems up into their large enterprise systems.

For more information on the different types of geodatabases available at ArcGIS 9.2, you can go to ESRI's main Web site, www.esri.com/geodatabase. Another resource is the ESRI support site, support.esri.com. On the left side of the main landing page, there are shortcut links to the ArcGIS online help documentation. Thank you for listening, and stay tuned for future podcasts.