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Introduction to Query Layers

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Outline

- **What is a query layer?**
- **Creating and working with query layers**
- **ArcGIS Desktop and Query Layers**
- **ArcGIS Server and Query Layers**
- **Why should developers care about Query Layers?**

What is a Query Layer?

- **New at ArcGIS 10**
- A layer or stand alone table defined by a SQL query
- Provides direct, read-only access to spatial data independent of where it is stored
- Allows information stored in a database to be easily integrated with ArcGIS
- Data does not need to be registered with the geodatabase

What does this mean to a developer?

- **You now have a simple method to integrate data from databases**
- **Can now use the full power of SQL to define feature layers**
 - **Joins, Spatial Types, Aggregation, Field Derivation**
 - **Basically if you can do it with SQL you can do it with Query Layers**
- **Can work directly with a database**
- **Can now do more with your Geodatabase datasets**

Working with query layers

- **Query layers behave like any other feature layer or table**
 - Set symbology and display properties
 - Use as input in GIS analysis (e.g., geoprocessing)
 - Save as a layer package
 - Published as part of the map document → map services
 - Read only
- **Query executed when the layer is displayed or used**
 - Allows for the latest information to be visible → very useful for dynamic information

Prerequisites for working with query layers

- Database release and spatial types must be supported by ArcGIS
- **SQL*Server**
 - geography, geometry
- **Oracle**
 - st_geometry, sdo_geometry
- **PostgreSQL**
 - st_geometry, PostGIS
- **DB2**
 - st_geometry
- **Informix**
 - st_geometry

Prerequisites for working with query layers

- Result of a query must conform to the ArcGIS Data Model
 - Single shape field, entity type, spatial reference, field types
- Can still access tables that do not use this data model



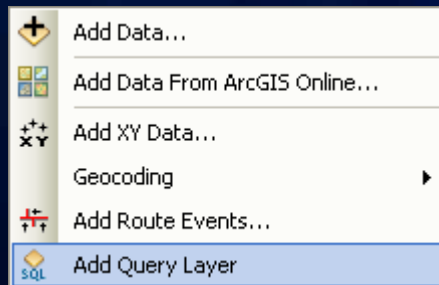
```
SELECT name, city, shapepoint FROM hospitals
```



name	city	ShapePoint	ShapePolygon
Legacy Emanuel	Portland	0x32010000010C60B8018...	0x32010000010C60B80180DE...
Physicians Hospital	Portland	0x32010000010C60B801A...	0x32010000010C60B801A051...
Legacy Good Samaritan	Portland	0x32010000010C60B8010...	0x32010000010C60B80100FB...
Providence Portland	Portland	0x32010000010C60B801A...	0x32010000010C60B801A0E5...
Tuality Community	Hillsboro	0x32010000010C60B8010...	0x32010000010C60B80100A5...
Tuality Forest Grove	Forest Grove	0x32010000010C60B8018...	0x32010000010C60B8018080...
Providence St Vincent	Portland	0x32010000010C60B8010...	0x32010000010C60B8010036...

ArcGIS Desktop and Query Layers

- Query Layers can be created in ArcMap



The 'New Query Layer' dialog box is shown. It has a title bar with a question mark and a close button. The 'Connection' dropdown is set to 'Sourcedata'. Below it, the 'List of Tables' and 'Columns' sections are visible. The 'List of Tables' table has columns 'Name', 'Type', and 'Nullable'. The 'Columns' table has columns 'Name', 'Type', and 'Nullable'. The 'Name' field is set to '911 Calls'. The 'Query' field contains the SQL statement: `SELECT * FROM sourcedata.demo.NEWYORK911CALLS`. At the bottom, there is a checkbox for 'Show Advanced Options' and a 'Validate' button. The bottom of the dialog has '< Back', 'Finish', and 'Cancel' buttons.

Name	Type	Nullable
CallTime	Date	Yes
CID	Long Integer	Yes
OBJECTID	Long Integer	No
SHAPE	Geometry	Yes

Name: 911 Calls

Query: `SELECT * FROM sourcedata.demo.NEWYORK911CALLS`

☐ Show Advanced Options

Validate

< Back Finish Cancel

DeKalb County Board of Health

Fulton County Dept. of Health and Wellness/District 3, Unit 2: G

Desktop and Query Layers



Programmatic Access through ArcObjects

- Programming Pattern

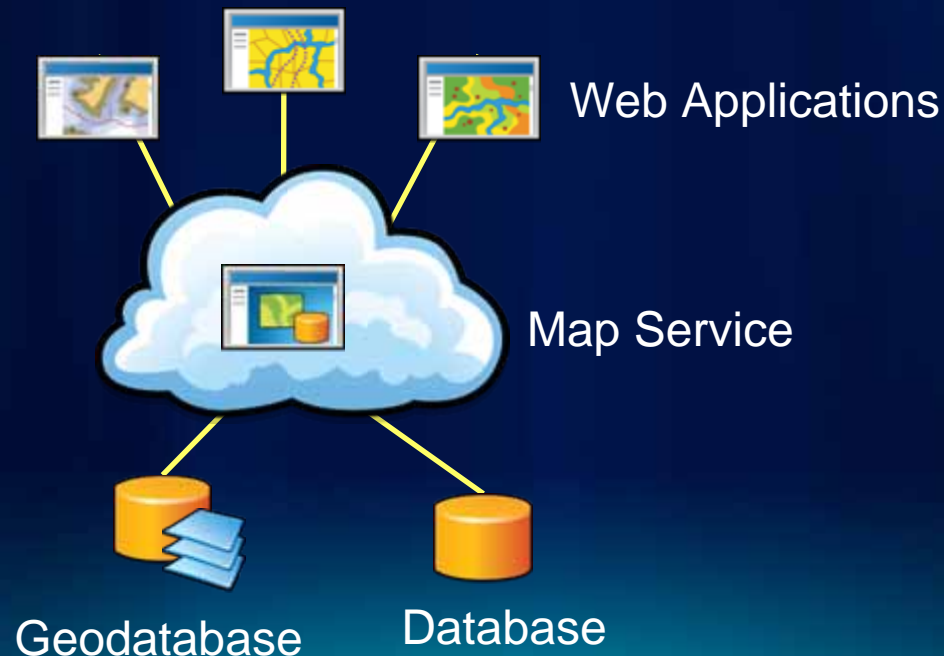
1. Create a `SQLWorkspaceFactory`
2. Connect to a `ISqlWorkspace`
3. Create `IQueryDefinition` by passing in a SQL query
4. Create a `IFeatureClass`, `ITable` or `ICursor` from the `IQueryDefinition`

Demo: Access through ArcObjects

- **Connecting to a database**
- **Enumerating the tables**
- **Exploring the columns**
- **Creating a feature class**
- **Creating a cursor**
- **Importing database tables into geodatabase feature classes**

ArcGIS Server and Query Layers

- **Work as any other layer**
 - If published as a Map Service can be used in ArcGIS Server
- **Consumed as MapServiceLayer or FeatureLayer**

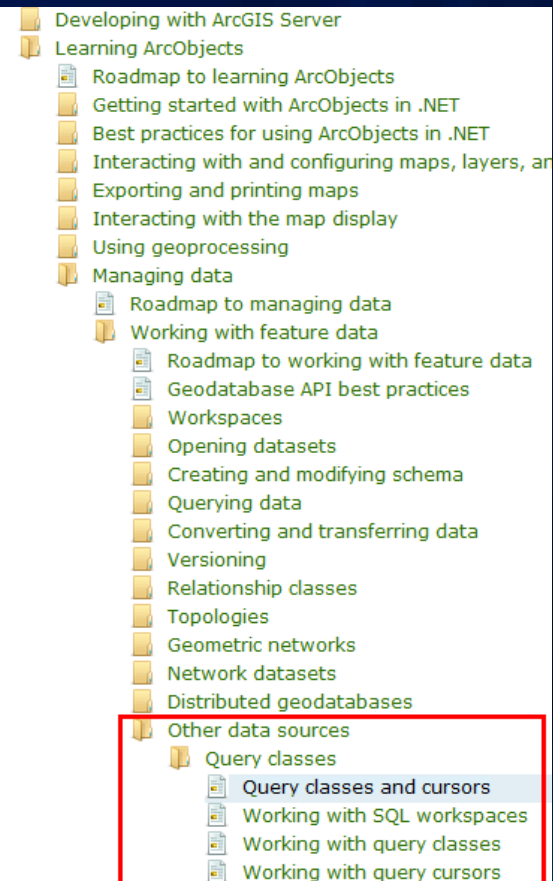


ArcGIS Server and query layers

- **Query layers provide easier access to spatial data**
- **Maps containing query layers can be published as Web services to enable access to databases over the Web**
- **Enables web application developers to access and retrieve data from databases much easier by using native SQL on the server**

Developer Resources

- Four specific How To articles in ArcGIS SDK



Summary

- **Query layers: a layer defined by a SQL query**
- **Provide direct, read-only access to database data**
 - Does not have to be a geodatabase
- **Leverages native SQL within the database**
- **Behaves like any other layer in ArcMap**
- **Can be published in an ArcGIS Server map service**



Questions



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