ArcGIS® 9

Using ArcGIS® StreetMap™

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StreetMap tutorial

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This tutorial introduces you to the ESRI® StreetMap™ extension to ArcGIS™. It will introduce you to the basic techniques for viewing StreetMap USA data, found on the Data and Maps DVD, using the StreetMap geocoding service and finding a route. Exercise 2 shows how you can convert the compressed StreetMap data to a shapefile or geodatabase feature class. Exercise 3 will show you how to create a geocoding service in an ArcSDE™ geodatabase. Exercise 4 shows how to use the Find Route function in StreetMap.

This tutorial assumes that you are already familiar with using ArcCatalog™ and ArcMap™. You should know how to copy data to a new location and add data to a map. If you're not familiar with geocoding, first complete the *Geocoding tutorial*. If you're new to GIS or feel you need to refresh your knowledge, please take some time to read *Getting Started with ArcGIS*. You might also work through the quick-start tutorials in *Using ArcCatalog* and *Using ArcMap*.

Exercise 1: Getting started with StreetMap

Before you begin, make sure that you have obtained a license to use the StreetMap extension. The StreetMap USA data and map document will be accessed from the Data and Maps/StreetMap USA DVD. You have the option to put the Data & Maps/StreetMap USA data DVD in your computer, copy the StreetMap USA data to your local hard drive, or find where the data from this DVD is located on the network.

Loading the StreetMap extension

The StreetMap extension is automatically installed with ArcGIS. The install loads the extension but not the StreetMap USA data, which can be accessed from the DVD or copied with its MXD to a local or network drive. Once installed, StreetMap must be licensed using the ArcGIS Desktop Administrator.

1. Start ArcMap, click a new empty map, then click Ok.
2. Click the Tools menu and click Extensions.
3. Check to ensure that StreetMap appears in the list of available extensions and that it is checked on, then click Close.
4. Click Tools, click Customize, and check StreetMap on the Toolbars tab.
5. Click Close.

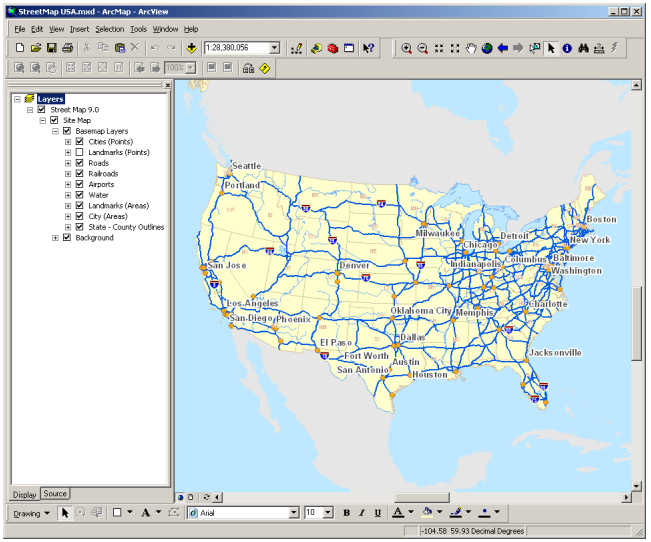
Opening the map for this tutorial

1. In ArcMap, click File, click Open, then navigate to StreetMap USA.mxd on the Data and Maps/StreetMap USA DVD. If the contents of the StreetMap USA folder were copied to your local hard drive or a drive on your network, you can also find the StreetMap USA.mxd there.

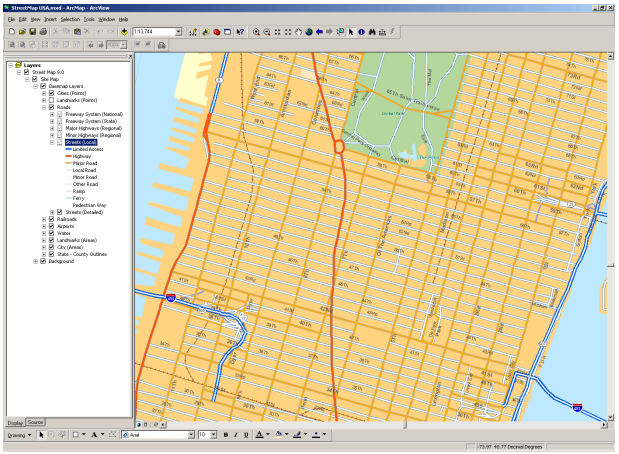
   The StreetMap extension must be enabled before you can access the StreetMap data on this DVD and before you can use the geocoding service.

2. Double-click the StreetMap USA map document.

   The map opens in ArcMap. You can use the map template or group layer to create your own map at a later time.



The map contains a group layer named StreetMap 9.0. This layer provides different levels of detail at different map scales. Each of the layers appear when the map's scale falls within the appropriate range for that layer. For example, the Local Streets layer in the Roads category appears on the map when the map's scale is larger than 1:200,000.



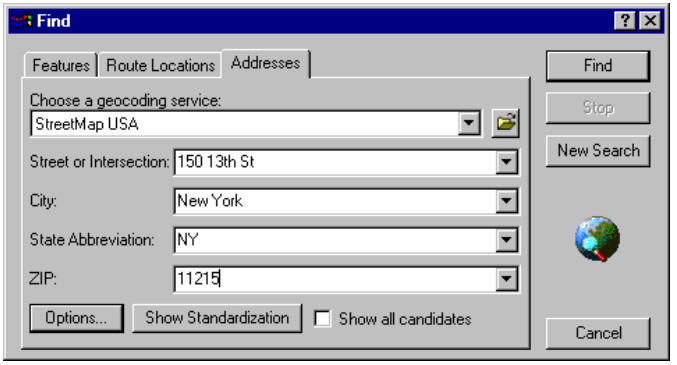
Try zooming in and out or setting the map to different scales. Click the plus sign next to a layer category to see the individual layers it contains. Layers that aren't currently drawn on the map have gray check boxes. Look at a layer's properties to see the map scale at which it appears and the data that it references. If you zoom to an area with a map scale of 1:20,000 or larger, the detail streets are drawn in thick double lines. If you're an advanced user, you can alter the cartographic appearance by using the data frame-based Advanced Drawing option. It can be accessed by right-clicking the data frame or by clicking Layers in the table of contents.

Finding an address interactively

You can use the StreetMap USA geocoding service to locate addresses with the StreetMap data.

1. Click the Find button on the Tools toolbar in ArcMap.

2. In the Find dialog box, click the Addresses tab.



   The StreetMap USA geocoding service is available to you. This geocoding service resides on the Data & Maps/ StreetMap USA DVD-ROM.

3. Type a valid U.S. street or intersection address containing the street, city, state abbreviation, and a 5-digit ZIP Code.

4. Click Find.

   The candidates appear in the list below the Find dialog box.

5. Right-click the top candidate in the list and click Add as Graphic(s) to Map.

   A graphic point representing the address's location appears on the map. Your map's scale will remain the same. If a large area is displayed on the map, right-click the top candidate again and click Zoom to Candidate(s) and Flash. The map will zoom to the Local level; this gives you a better look at where the address is located.

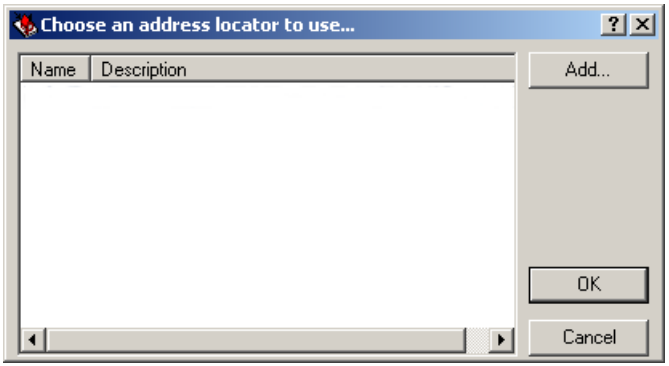
6. Click Cancel.

Geocoding addresses in a table

If you have a table that contains address information, you can geocode all of its addresses at once.

1. In ArcMap, click Tools, point to Geocoding, then click Geocode Addresses.

   The Choose an address locator to use dialog box appears. It lists the geocoding services that are available in your local Address Locator Manager.

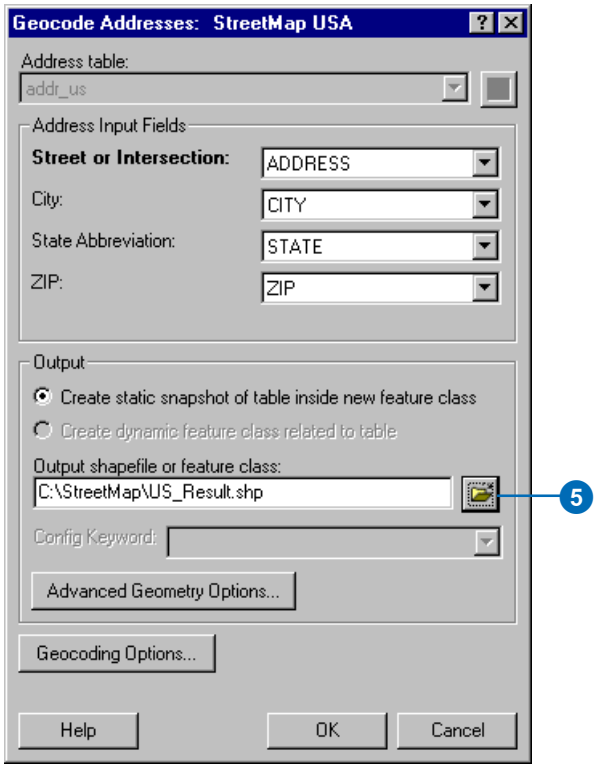


2. If no locator is present, click Add to browse for a locator.

3. In the Add Address Locator dialog box, navigate to the Data & Maps/StreetMap USA DVD–ROM. The StreetMap USA geocoding service can be found in the ArcGIS\StreetMap USA\Streets folder. Click the file, click Add, then click OK to continue.

4. Browse to locate the table of addresses you want to geocode on the map.

5. In the Geocode Addresses: StreetMap USA dialog box, click the Browse button to define the Output shapefile or feature class.



6. In the Saving Data dialog box, navigate to your copy of the StreetMap folder. In the Name text box, type "US_Result". Click Save.

   A new point shapefile named US_Result will be created in the StreetMap folder. The point features generated by the geocoding process will be saved in that shapefile. If you prefer, the geocoding results can be saved in a new geodatabase feature class.

7. Click OK to geocode the table of addresses.

   When the table finishes geocoding, the Review/Rematch Addresses dialog will appear. You can rematch the resulting features later if you wish.

8. Click Done.

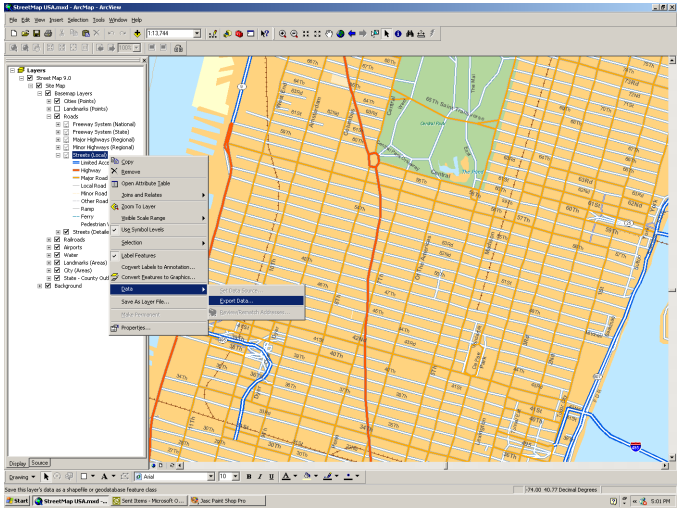
   The geocoded points are added as a layer in your table of contents and to your map.

Exercise 2: Exporting StreetMap data

While you can use the street data directly from the CD, you may prefer to convert some of the compressed street data to a local shapefile or geodatabase feature class on your computer. You can export the StreetMap data using ArcMap.

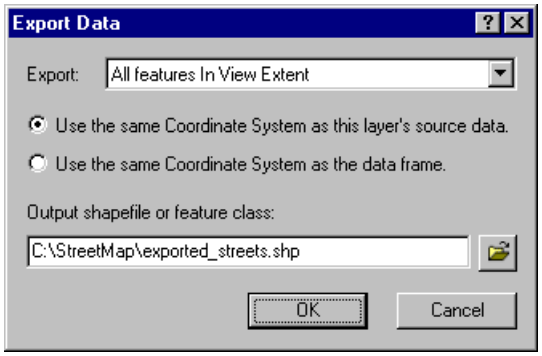
Converting compressed street data using ArcMap

1. In ArcMap, zoom to a local area on the map or set the map's scale to 50,000 or larger with the scale box on the Standard toolbar.
2. Right-click the Local Streets (Roads) layer in the map's table of contents, point to Data, then click Export Data.



   The Export Data dialog box appears.

3. Click the Export dropdown arrow, then click All features In View Extent.



   If you chose to export All features instead, all street features in the United States would be exported.

4. Click the Browse button to define the Output shapefile or feature class. Navigate to your copy of the StreetMap folder. In the Name text box, type a name such as "exported_streets" for the new shapefile that will be created. Click Save.

   If you prefer, the exported data can be saved to a new geodatabase feature class. If the exported data will be saved to disk, make sure there is enough space available to store the results. For example, if the map scale is 1:50,000 or larger, 5 to 10 MB of space should be sufficient.

5. Click OK to export the data.

Be aware that even if you are not viewing the contents of the streets in the Local Streets (Roads) layer on the map, all features associated with this layer that fall within the view's extent will be exported.

When a very large number of features are exported, it will require a long period of time to convert the data, and unexpected system errors may occur due to insufficient disk space. If this happens, click Cancel in the Export Progress dialog box to halt the process.

Exercise 3: Geocoding on an ArcSDE server

If ArcInfo™ or ArcEditor™ is installed on your computer, and if you have access to an ArcSDE geodatabase, you can complete this exercise. ArcView® users will not be able to complete this exercise.

Make sure the spatial database administrator has installed and set up the StreetMap extension to the ArcSDE server. The data from the Data & Maps/StreetMap USA DVD–ROM should be accessible from the server. To accomplish this, the administrator should create an environment variable named ESRI_US_STREETS_DIR in the /etc/dbinit.sde file under the database installation folder. This variable must contain the path to the directory that contains the US Streets data—for example, ESRI_US_STREETS_DIR=/streetmap/data/streets. Consult the ArcSDE install guide for more details.

Once it has been set up correctly, you will be able to create geocoding services in your spatial database and share them with others in your organization. When you use those services, the ArcSDE server will do the work of matching addresses to geographic locations.

Do not use the StreetMap USA geocoding service in the Data & Maps/StreetMap USA DVD–ROM. It can only be used for client-side geocoding. You need to create a new one in the ArcSDE server.

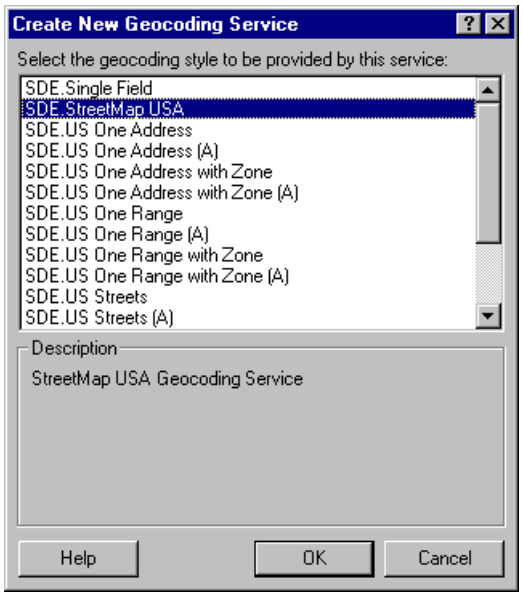
1. In ArcCatalog, create a database connection that accesses the ArcSDE server that you will use for geocoding.

   Within the geodatabase you'll see the server's Geocoding Services folder.

2. Double-click Create New Geocoding Service in the server's Geocoding Services folder.

   The Create New Geocoding Service dialog box appears.

3. Click SDE.StreetMap USA, then click OK.



The New SDE.StreetMap USA Geocoding Service dialog box appears.

4. In the Name text box, replace the default name “New Geocoding Service” with the name “StreetMap USA”.
5. Click OK.

   The new geocoding service appears in the server’s Geocoding Services folder. As with the geocoding services created on your computer, ArcSDE geocoding services will be prefaced by the username you used to access the geodatabase.

Now you can repeat the task you completed in the first exercise (geocoding the addresses in the addr_us dBASE table). This time, use the ArcSDE geocoding service.

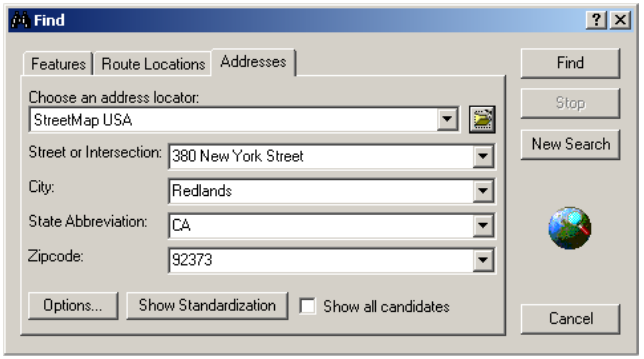
Exercise 4: Finding a route

The Find Route wizard lets you find routes between points using a variety of methods. You can find an optimized route, which is the most efficient travel route between the points you select, or you can find a route from point to point based on an order you select. You can set the points, or stops, by clicking the map with your mouse, by adding them from a layer, or by geocoding them. In this exercise, you will learn how to use the Find Route wizard.

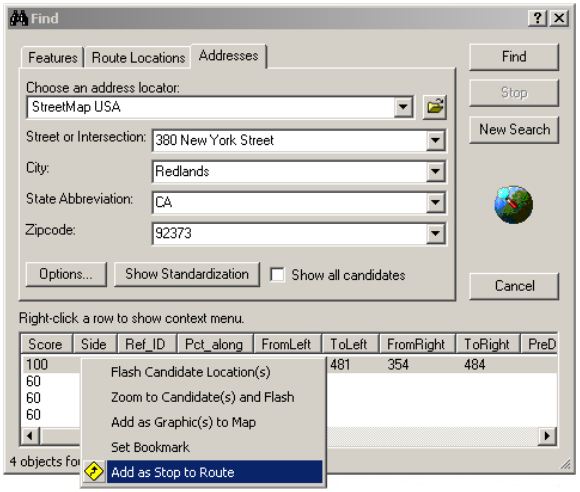
1. In ArcMap, open StreetMap USA.mxd and zoom to Southern California.
2. Click the StreetMap Find Route button.
3. Click the Define Stops tab and click the Add Stop button.

The ArcMap Find dialog box appears.

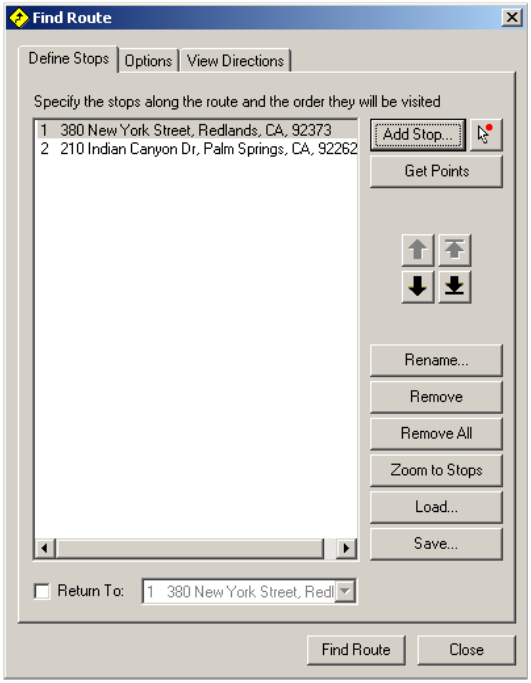
4. Click the Addresses tab and click the StreetMap USA address locator. This address locator is found in the \ArcGIS\StreetMap USA\Streets folder.
5. Type 380 New York Street in the Street or Intersection field.
6. Type Redlands in the City text box.
7. Type CA in the State Abbreviation text box.
8. Type 92373 in the Zipcode text box.



9. Click the Find button.
10. Right-click the found location and click Add as Stop to Route. You can also use this context menu to zoom to the point on the map or to add the point as a map graphic. The highest-scoring found location appears on top.



11. Repeat these steps, this time using the address “210 Indian Canyon Dr., Palm Springs, CA, 92262”.
12. Optionally, add other stops to the list and click Cancel on the Find dialog box when finished.



13. Click Find Route.

    The wizard calculates the route for you and draws it on the map.
14. Click the View Directions tab to see detailed directions for your route that includes distance in miles.