ArcGIS® 9

Using ArcLogistics

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About ArcLogistics

1

IN THIS CHAPTER

- **How can ArcLogistics help you?**
- **Getting additional help for ArcLogistics**

Welcome to ESRI® ArcLogistics™, software that helps you solve complex vehicle routing problems right on your desktop. Whether your organization uses a few *vehicles* or a large fleet, you can improve your customer service and efficiency with ArcLogistics.

ArcLogistics builds efficient *routes* by using the information you provide, such as the number and types of *orders* your vehicles can service, along with its built-in street network.

You don't have to be an expert with computers to use ArcLogistics. Because ArcLogistics includes a high-quality map database for *routing projects* in North America or Europe, all you really need is an understanding of your routing operations to get started.

In this book, you'll learn how to install street data, how to enter information about your vehicles and orders, how to build and edit routes, and how to print information and maps for your drivers.

This newest release of ArcLogistics represents a major product upgrade from previous versions. While the interface and routing business rules remain familar, ArcLogistics now includes routing logic for para-transit operations (small vans transporting passengers to and from specific addresses), and mixed pickup and delivery operations. It also includes an intuitive map interface that allows users to add your own geographic content and to use your own street data if available.

How can ArcLogistics help you?

Creating efficient routes

Building efficient routes involves balancing many, sometimes contradictory, factors. It can be difficult, sometimes impossible, to assign orders to vehicles and devise the best routes simply by looking at a list of stops and a map.

Before the advent of computerized systems, looking at maps and delivery times was a dispatcher's only option. This often meant making costly mistakes: choosing slower routes, miscalculating the time it took to get somewhere, meeting fewer *time windows*, and using more vehicles, labor, and fuel than necessary.

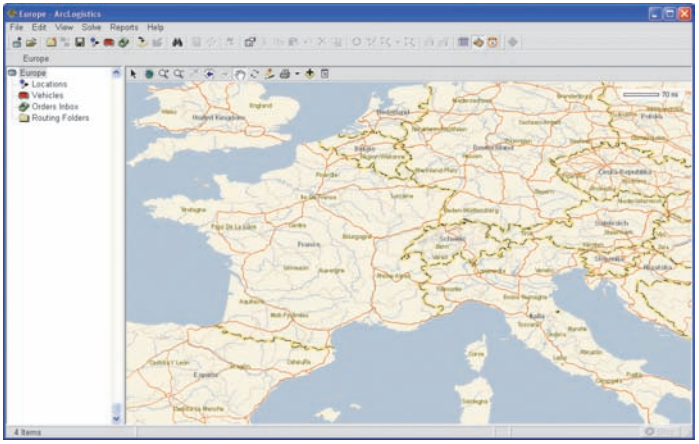
With ArcLogistics, you can:

- Provide on-time deliveries
- Honor volume and weight capacity of vehicles
- Minimize miles driven
- Reduce or eliminate overtime
- Balance driver workloads
- Schedule lunch times and breaks around orders
- Assign orders to specific vehicles or drivers
- Add last-minute orders to existing routes
- Assign drivers to certain neighborhoods
- Assign orders based on driver skills
- Assign orders based on vehicle type

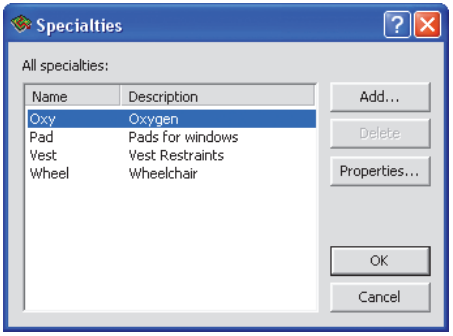
With just a little preparation on your part, ArcLogistics can schedule deliveries and pickups that improves effeciency, lowers costs, and delivers on-time performance.

How ArcLogistics can help

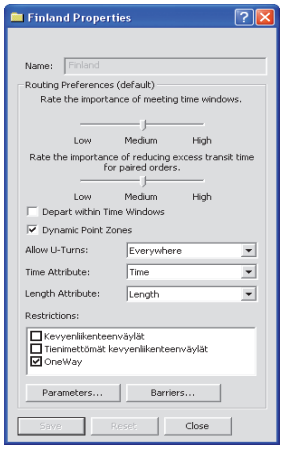
The easy-to-use ArcLogistics interface helps you work through the tasks needed to solve your routing problems.



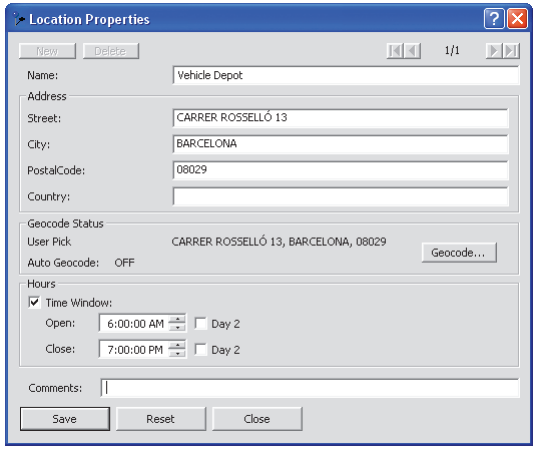
Utilize large street datasets for your routing project



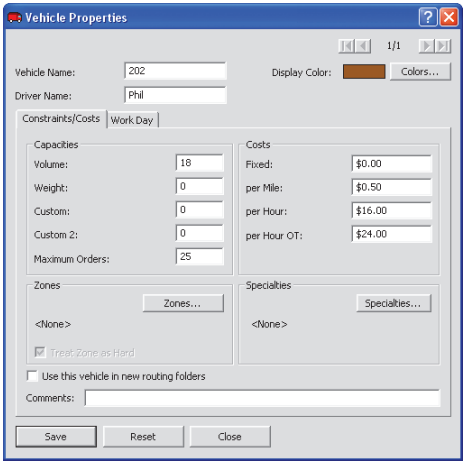
Use specialty codes for orders to place them on specific vehicles



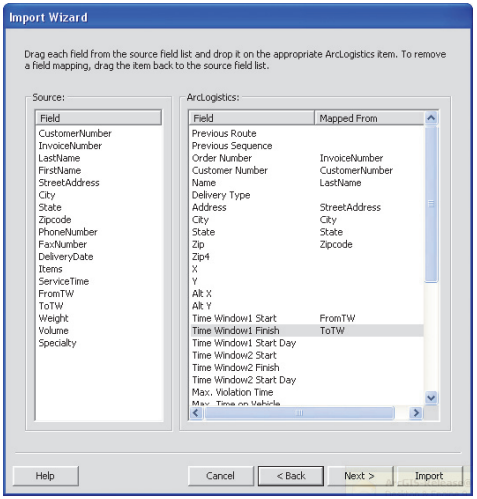
Chose your routing preferences including how important it is to meet time windows, U-Turn policies, and restriction information.



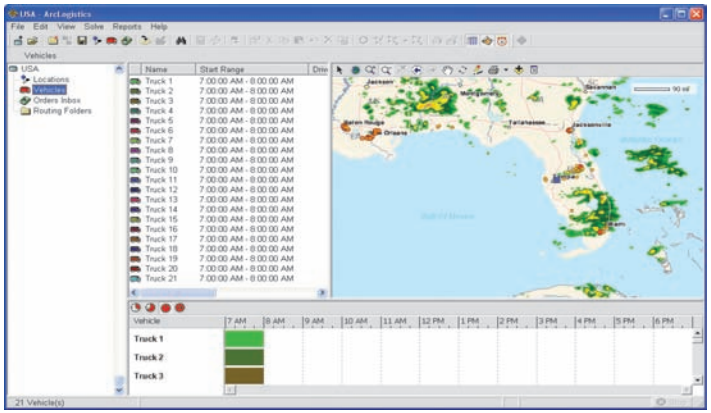
Create locations from where your fleet operates.



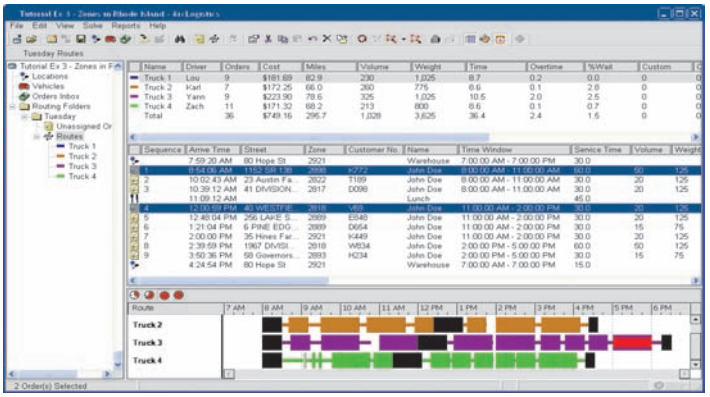
Specify vehicle characteristics including costs, capacities, start times, and area of operations.



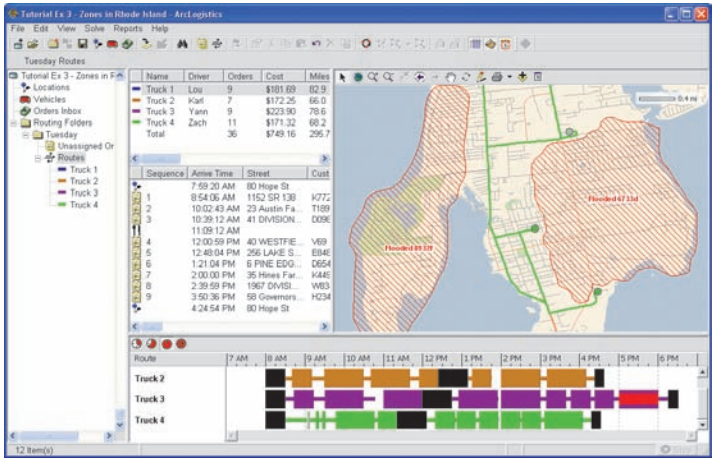
Import orders from a database.



View dynamic content, such as weather and traffic, to assist in routing decisions.

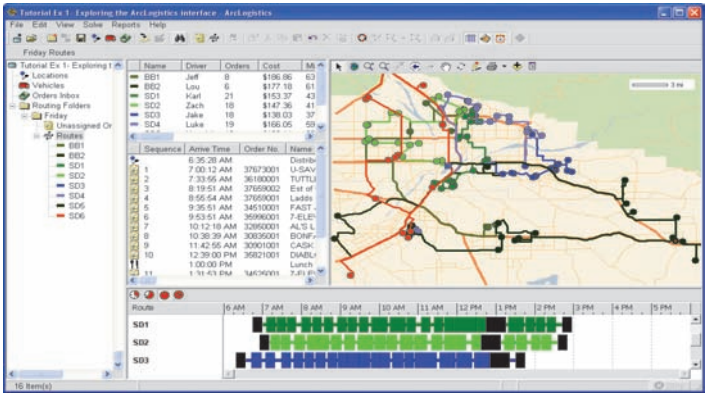


Change the visiting sequence within routes or between routes to customize workloads. Lock orders to routes or lock entire routes to preserve specific assignments.

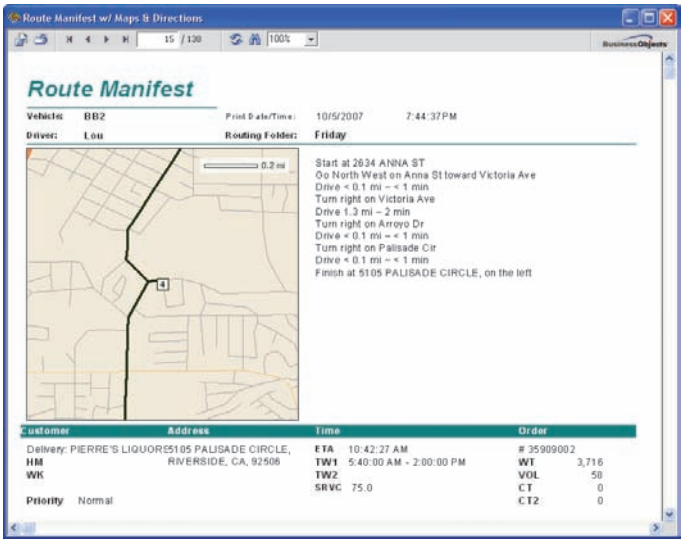


Utilize barriers and adjust speeds to create realistic routes.

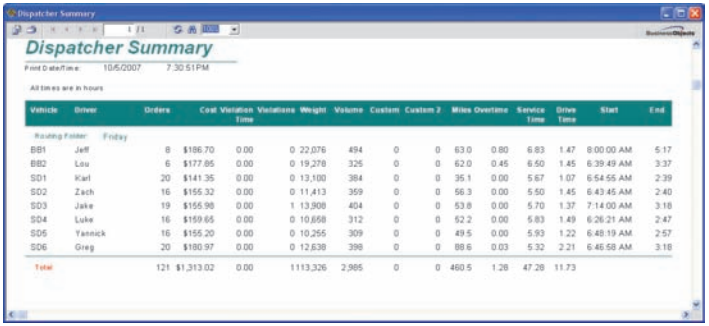
View load and unload times, travel times, wait times, service times, and lunch breaks along a timeline.



View completed routes in one easy to use interface.



Generate and print manifests for your drivers that include maps and directions.



Create reports showing mileage, delivery costs, travel times, service times, and time window violations.

Getting additional help for ArcLogistics

What to read next

A good place to begin learning about ArcLogistics is Chapter 2, the 'Quick-start tutorial'. This allows you jump right in and start using the software. You'll see how ArcLogistics solves several different routing problems. The tutorial is complete with sample data, so you can follow along step-by-step using your computer.

Chapter 3, 'ArcLogistics basics', provides an overview of how you work with the software. Read this chapter to get a good understanding of how you interact with ArcLogistics.

Chapters 4 through 13 provide step-by-step instructions for completeing each task that you need to perform when solving your routing problems. You can read through each of these chapters in sequence, or you can look up individual tasks when you need help.

Getting help online

In addition to the book, the ArcLogistics online help is a valuable resource for learning how to use the software. To learn how to use the online help, see 'Getting help' in Chapter 3 of this book.

Contacting ESRI

If you need to contact ESRI for technical support, refer to 'Obtaining technical support' in the 'Need more help?' section of the online help, or go to *http://support.esri.com/arclogistics*.

You can also visit ESRI on the web at *www.esri.com/arclogistics* for more information on ArcLogistics and other ESRI products and services.

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Quick-start tutorial

2

IN THIS CHAPTER

- **Exercise 1: Exploring the ArcLogistics interface**
- **Exercise 2: Furniture delivery routing in California**
- **Exercise 3: Zones in Rhode Island**
- **Exercise 4: Special needs school children routing in Rhode Island**
- **Exercise 5: Para-Transit routing with barriers in Ireland**

The best way to learn what ArcLogistics can do for you is to begin using it. The following five tutorial exercises will guide you through some basic ArcLogistics skills as you solve a typical day's routing problem in several different industries.

ArcLogistics organizes routing information within a routing project. To complete these tutorials, you'll use the provided sample routing projects along with their associated *street datasets* centered around Redlands, California, Rhode Island, and the Cork area in Ireland.

In the first exercise you'll step through the ArcLogistics interface to learn how routing information is organized and presented.

The second exercise draws from what you've learned in the first exercise and guides you through the steps that a furniture company's dispatcher would follow to solve a typical day's routing problem.

The third exercise introduces the concept of confining routes to geographic zones.

The fourth exercise introduces trips and solves a para-transit routing problem for special-needs school children using curb approach and specialties.

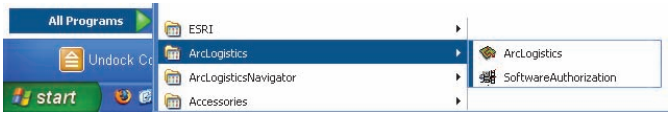
The fifth and final exercise is based in Ireland and is another para-transit routing problem. This exercise uses pairded orders and also demonstrates the use of barriers to block street segments.

Exercise 1: Exploring the ArcLogistics interface

In this exercise you'll learn how ArcLogistics organizes and presents routing information. The routing scenario is for a beverage distribution company based in Southern California.

Starting the ArcLogistics tutorial

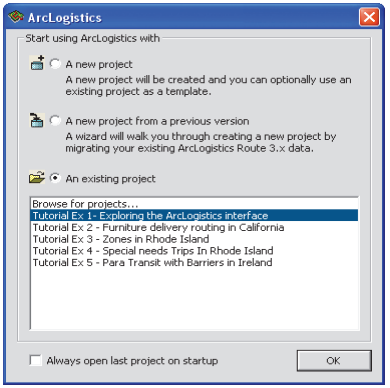
1. Click the Start button on the Windows taskbar.
2. Point to All Programs, point to ArcLogistics and click ArcLogistics.



ArcLogistics opens a dialog box that will offer three choices to start ArcLogistics: a new project, a new project from a previous version, or an existing project.

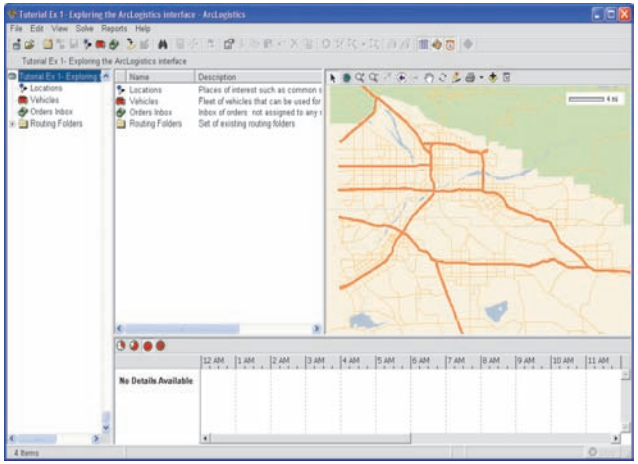
3. Check An existing project, then click Tutorial Ex 1 - Exploring the ArcLogistics interface. Click OK.

In the next task, you'll see how information is presented in the ArcLogistics interface.



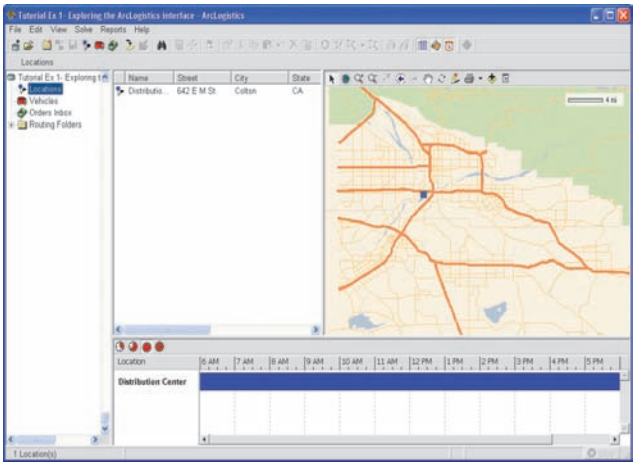
Stepping through the Tree View

On the left side of the ArcLogistics interface is the Tree View, which you use to navigate through your data. The Tree View contains a routing project, in this case named Tutorial Ex 1. A routing project is a storage space for all the information related to your routing operations. In your routing project there are four items that you work with: Locations, Vehicles, Orders Inbox, and Routing Folders. These four items are all listed in the Tree View. In addition to the Tree View, there are three other ArcLogistics views: the List View, the Map View, and the Time View. These additional views are tiled so that you can see the information in each of these simultaneously.



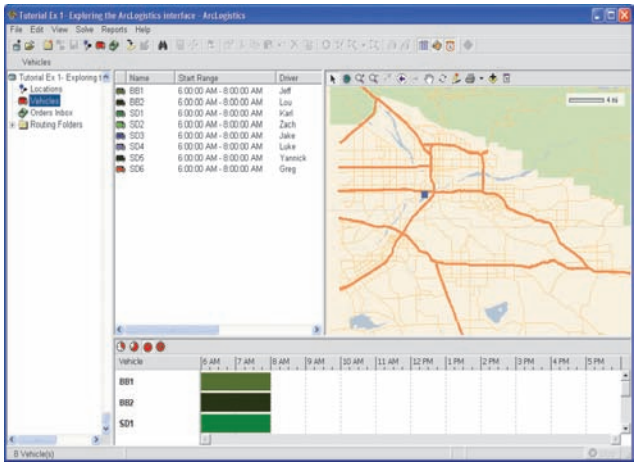
Since Tutorial Ex 1 - Exploring the ArcLogistics interface (the routing project folder) is active in the Tree View, the *List View* on the right displays details about each item in the Tutorial folder. The *Map View* shows an interactive street map for the routing project. The *Time View* currently shows no information since there is no time dimension for this item.

1. Click Locations in the Tree View.



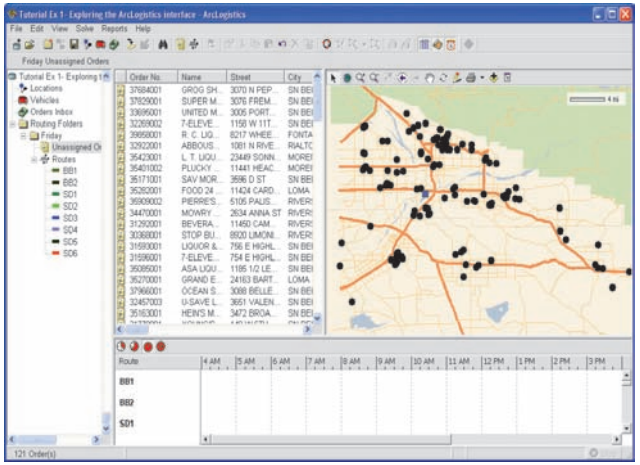
The details for the beverage distribution company's distribution center appear in the List View. The Map View shows the location of the distribution center, and the Time View shows the hours that the distribution center is open.

2. Click Vehicles in the Tree View.



Details about the beverage distribution company's delivery vehicles appear in the List View. The Time View shows the time range during which each vehicle can begin its route.

3. Click the + sign to the left of the Routing Folders folder to expand its contents.
4. Expand the routing folder for Friday. Notice that two additional items appear under the Friday routing folder: Unassigned Orders and Routes. Expand the Routes item to reveal the vehicles it contains.
5. Click Unassigned Orders in the Friday routing folder. The customer locations appear in the Map View. Scroll down the Time View and you will see the time windows for the orders.



6. Click the Routes item. The List View changes to reflect route information, including Cost, Distance, Orders, and more.

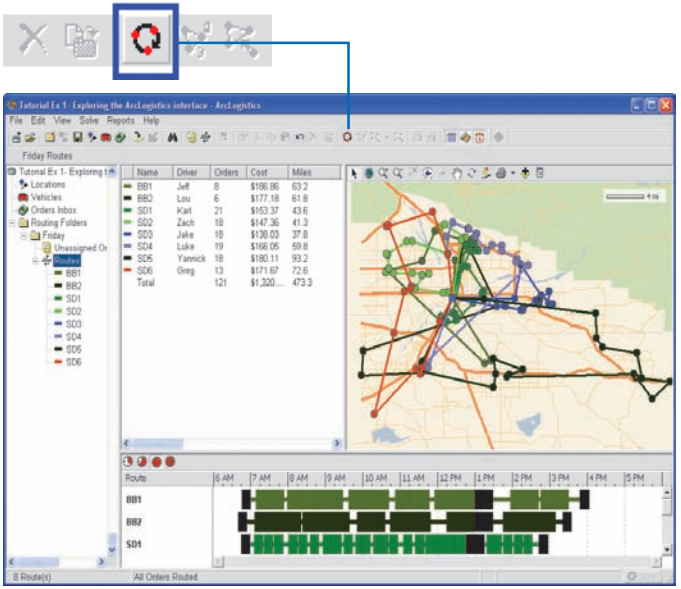
The List View

The List View lists the items contained in whatever item is active in the Tree View—for example, if the Vehicles item is active in the Tree View, then the List View lists all the vehicles that have been set up in the routing project.

If routing folder information is displayed in the List View, you can click it and the List View will open a second List View immediately below to display more detailed information about it.

You have already seen unassigned orders in the List View from Step 5, and routes information in the List View from Step 6. You will now build some routes and then examine the List Views.

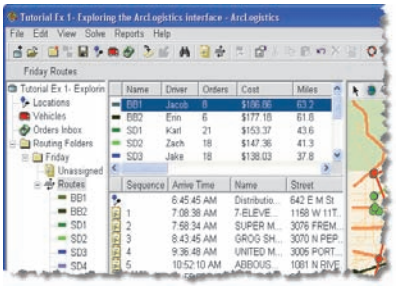
1. Click the Build Routes button on the Main toolbar. ArcLogistics allocates the orders to the routes and generates a routing solution.



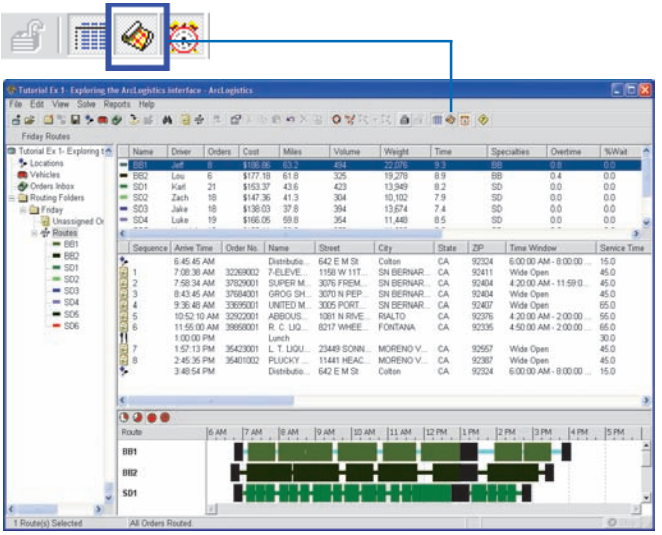
When the solution is generated you'll notice that the List View has been populated with route statistics, and both the Map View and Time View display the routes.

2. Click the route BB1 in the List View and you'll see a second List View open below the existing List View.

   This lower List View contains the route detail of all the stops the route will make including the estimated arrival time, sequence, and other details. (If you select route BB1 in the Tree View, you would see only the route detail in the List View.)



3. Click the Map View button on the Main toolbar. This hides the Map View and displays the remaining views.



The List View windows enlarge, allowing you to view more information in the List Views without having to scroll across.

4. Click and drag, in any direction, a column name in the List View.

This allows you to order the columns to your preference. You can also right-click the columns to hide or show them.

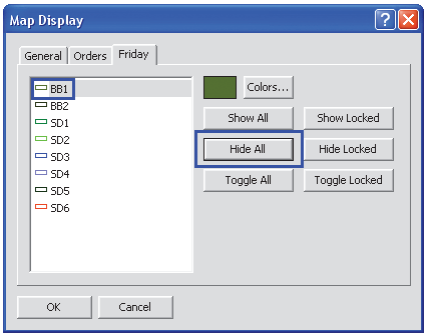
The Map View

The Map View displays a street map which allows you to geographically visualize all of your routing data. There are several standard map controls in the Map View which allows you to move around the map and to select routing information within the map

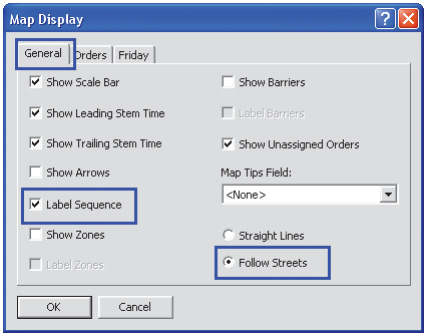
1. Click the Map View button on the Main toolbar to display the Map View again.
2. Click the Control Map Display button on the Map View.

The Map Display dialog box opens, where you can change how the routes and orders are displayed.

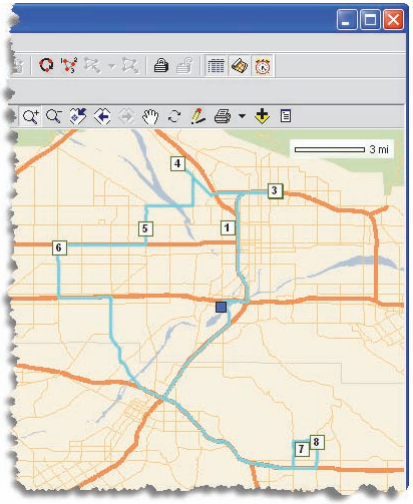
3. Click the Hide All button in the Friday tab, then click the hollow rectangle to the left of BB1. This displays only route BB1 in the Map View.



4. Click the General tab. This displays additional Map View options. Check Follow Streets and Label Sequence. Click OK.



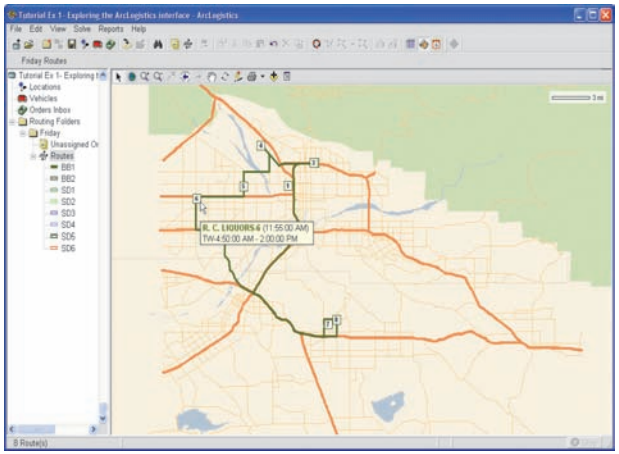
The Map View changes and only displays route BB1. The route follows the actual street network and each stop is labeled with the stop sequence. The route should be displayed in light blue, since it is still selected.



5. Click the List View button and the Time View button on the Main toolbar.

   This hides those views, leaving only the Map View displayed so you can examine the routes geographically in more detail.

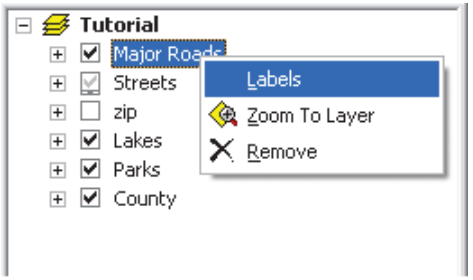
6. Point your mouse to stop number 6 on the route. Leave the cursor over the order for a moment. A map tip appears showing the name of the order, sequence, estimated time of arrival, and the time window.



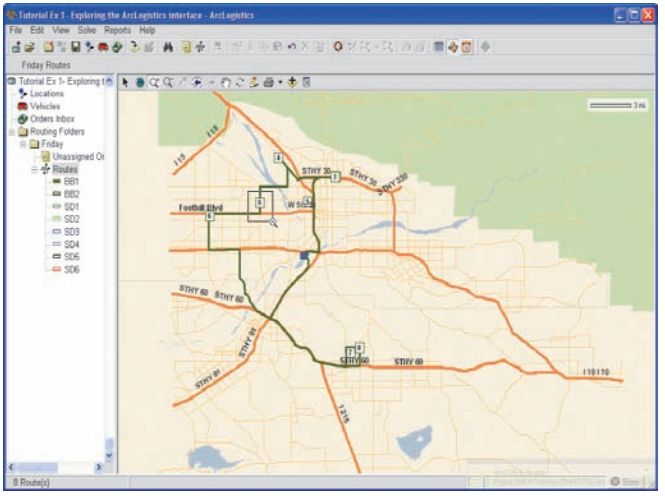
7. Click the On/Off TOC button in the Map View.

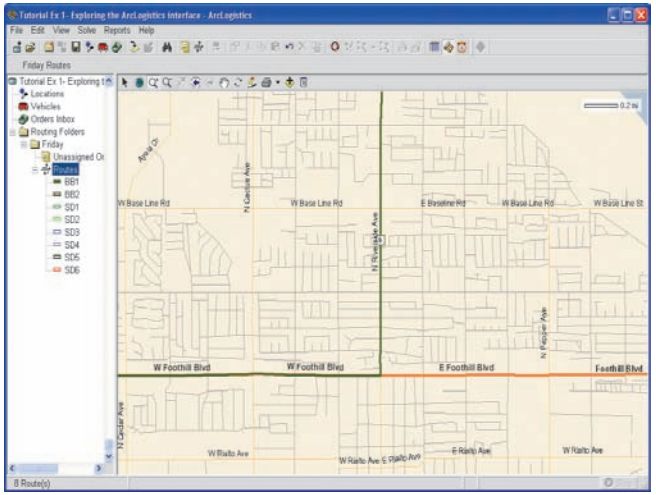
   The table of contents displays in the Map View. Turn on the street labels and zoom in to a stop to validate the route.

8. Right-click the Major Roads layer and click Labels.
9. Repeat this step for the Streets layer.



10. Click the On/Off TOC button in the Map View to hide the table of contents.
11. Click the Zoom In button on the Map View and draw a box around stop number 5.





This zooms in to the stop so you can see the surrounding street detail. Notice how the path of the route follows the streets.

The Time View

The Time View shows the items that are in the active folder of the Tree View along a timeline. You will now examine routes in the Time View.

1. Click Time View on the Main toolbar.

The Time View in ArcLogistics displays in addition to the Map View which is already displayed

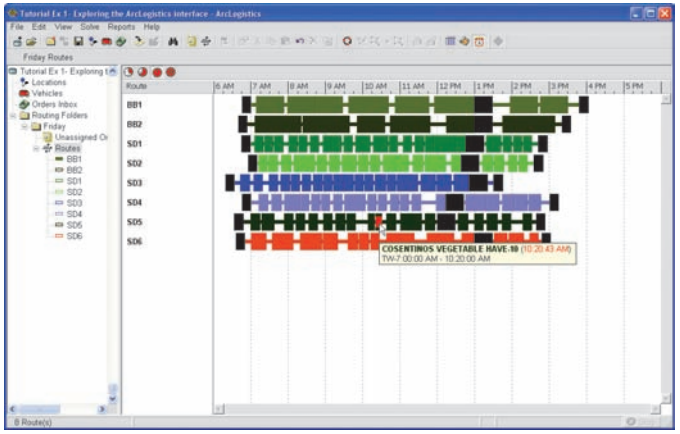
2. Click Map View on the Main toolbar to hide it.

The Time View will be the only view visible. All eight routes are visible in the Time View.

3. Click the 12 Hour View Button.

This changes the scale of the Time View, allowing you to see the entire route along the timeline.

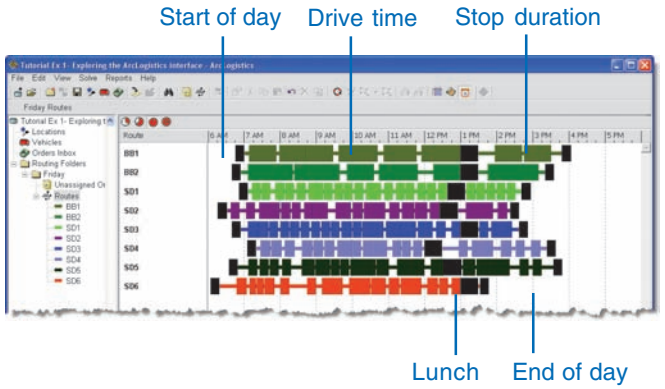
4. Point your mouse to any stop on a route that is colored in red. Leave the cursor over the order for a moment. A map tip displays, showing the name of the order, sequence, estimated time of arrival, and the time window.



Stops colored red in the Time View symbolize an estimated late arrival time—for example, a time window may be between 7AM and 9:30AM and the estimated time of arrival is 9:34 AM (i.e., 4 minutes past, the time window closes).

If your Windows Regional and Language Options settings have time displayed to include seconds, you will see the estimated arrival time in the map tip as 9:00:11 AM. If your windows Regional and Language Options settings have time displayed as hours and minutes, only the map tip will display the estimated arrival time as 9:00 AM.

The black blocks and the beginning and end of the routes represent time at the distribution center, and black blocks in the middle of the day represent lunch. The long horizontal lines represent actual drive time, and the solid route colored blocks represent the time at each stop.



Reports

Finally, you'll create a route manifest with maps and directions for your route. ArcLogistics comes with a set of report templates that you can print for entire routing folders or for individual routes.

First, though, you will reset the Views to some of the original settings.

1. Click Map View on the Main tolbar, then click List View.

   This makes all Views visible in ArcLogistics.

2. Click the Zoom to Full Extent button on the Map View toolbar.

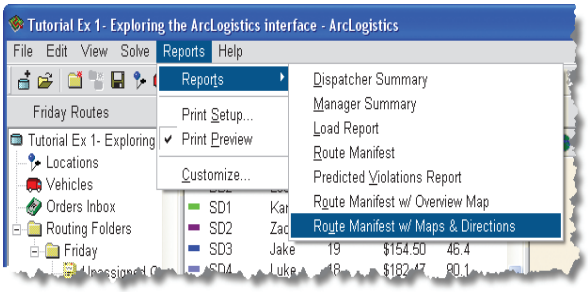
   The Map View zooms out to display the entire area of the street data.

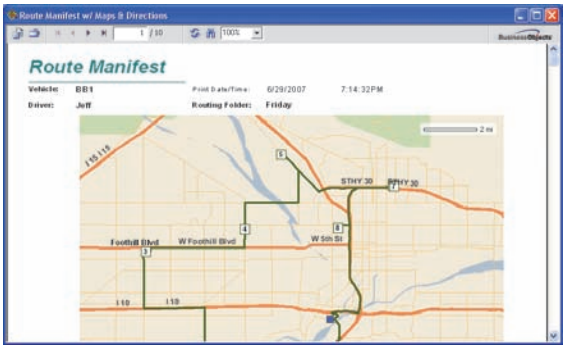
3. Click Control Map Display on the Map View toolbar.
4. Click Show All in the Friday tab.
5. Click the General tab. Check the Straight Lines option and uncheck Label Sequence.

   The map draws faster with these settings.

6. Select OK.
7. Click route BB1 in the List View.

8. Click the Reports drop-down menu, point to Reports, click Route Manifest w/Maps & Directions.





ArcLogistics generates a report for the route and displays it in a report window. Selecting one or more routes before selecting the report creates reports for only these routes.

9. Click Go to Next Page to view the pages of the report.

10. Click Print if you want to print the report to examine it more closely on paper.

11. Close the Print Preview window.

Closing ArcLogistics

You can now close ArcLogistics without saving your work.

1. Click the File menu and click Exit. You will be prompted to save your work. Click No.

Now that you've seen how the ArcLogistics interface is organized and have examined a route, you're ready to continue to the next exercise.

Exercise 2: Furniture delivery routing in California

In this exercise, you'll solve a typical day's routing problem for a small furniture company.

1. Start ArcLogistics and select Tutorial Ex 2 - Furniture delivery routing in California on the Startup screen.
2. Alternatively, if ArcLogistics is already started, select Open Project on the Main toolbar, click Tutorial Ex 2 - Furniture delivery routing in California, then click OK.

Adding a specialty

A specialty is a code used to define what types of vehicles can service an order.

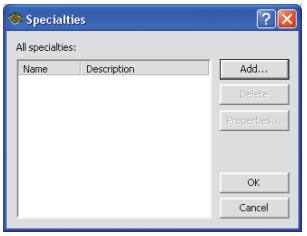
One of the specialty furniture items that your company sells and installs is grandfather clocks. Installing grandfather clocks requires special tools and skills and is therefore a critical consideration when building your routes. Any time a delivery includes a grandfather clock, you flag the order with a code named Clock. The specialty of Clock ensures that the appropriate vehicle and driver is used for these orders.

You need to add clock as a *specialty* to the routing project so that ArcLogistics can consider this information when building routes.

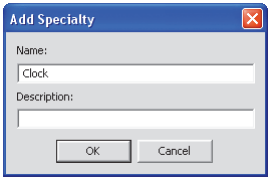
1. Click File on the Main toolbar and click Specialties.

   The Specialties dialog box displays.

2. Click Add.



3. Type "Clock" for the specialty name and click OK.



4. Click OK to dismiss the Specialties dialog box.

Adding a vehicle

You have four delivery vehicles, including one you lease for busy days. Three of your four vehicles are already added to the routing project. On this particular day, you need to add the leased vehicle so that it is available for routing.

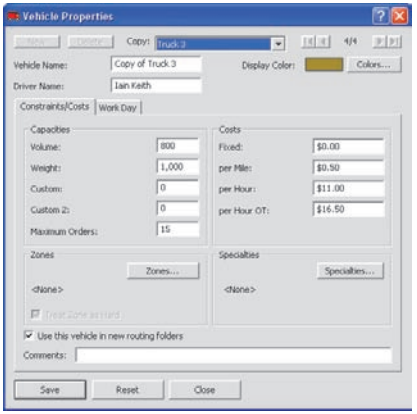
1. Click Vehicles in the Tree View.

   In the List View, ArcLogistics displays the three vehicles that are already in the routing project.

2. Right-click Vehicles in the Tree View and click New Vehicle.

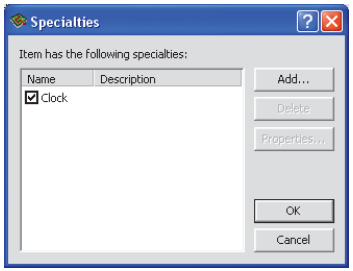
   The Vehicle Properties dialog box displays.

3. Click the Copy drop-down menu and choose Truck 3.

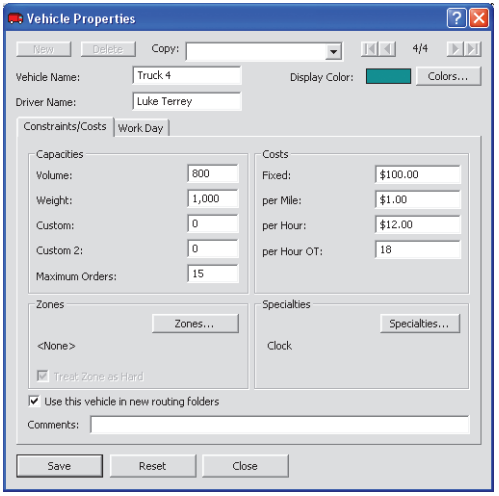


ArcLogistics adds a truck called Copy of Truck 3.

4. Change the name of the vehicle to Truck 4.
5. For the driver name, enter Luke Terrey.
6. Change the fixed cost to $100.00 and the per mile cost to $1.00 to factor in the cost of the lease.
7. Change the cost per hour to $12.00 and per-hour OT to $18.00.
8. Click Specialties. The Specialties dialog box displays.
9. Check the clock specialty and click OK.



10. Click Save on the Vehicle Properties dialog box.



11. Click Close to dismiss the dialog box.

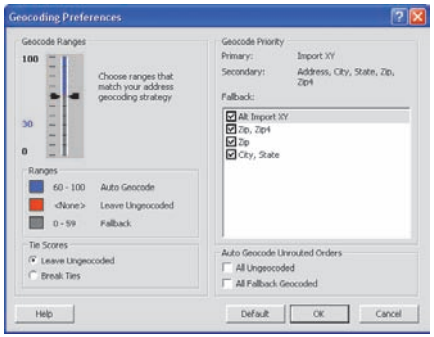
    The new vehicle is added to the List View. Now that all your vehicles are properly set up, you can import the orders that you need delivered tomorrow.

Importing orders

Tomorrow's orders are in a *Microsoft Access database*, which you'll import into ArcLogistics.

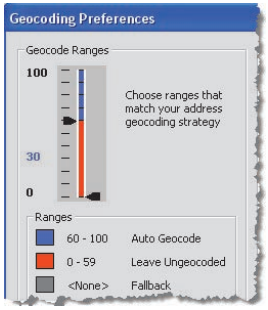
When ArcLogistics imports orders, the address of each order is geocoded. *Geocoding* involves assigning a position on the street network to the order. In the case of a furniture company, it's very important that drivers are sent to the exact position on the street network. To check how the Geocoding Preferences are set, open the Geocoding Preferences dialog box.

1. Click File from the Main toolbar and click Geocoding Preferences. The dialog box displays.



The default geocoding preferences allow addresses to be geocoded using fallback methods—for example, if a street address cannot be found in the street data, the order can be geocoded automatically to the center of the address' postal code. You need to send your drivers to the exact house to deliver the furniture. If any of the orders' addresses cannot be located automatically, you'll want to find them yourself using your knowledge of the local area.

2. Click the arrow to the right of the Geocode Ranges slider and drag it down to zero (0) to disallow geocoding to a fallback position. Click OK.



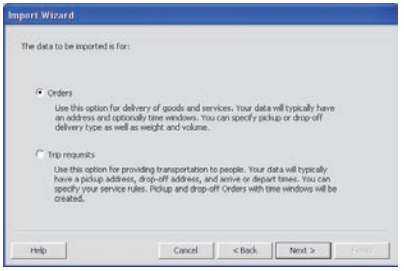
Any address that doesn't get a score of at least 60 will remain ungeocoded. Now you're ready to import the orders for tomorrow's date, October 28.

3. Click Import Orders on the Main toolbar.

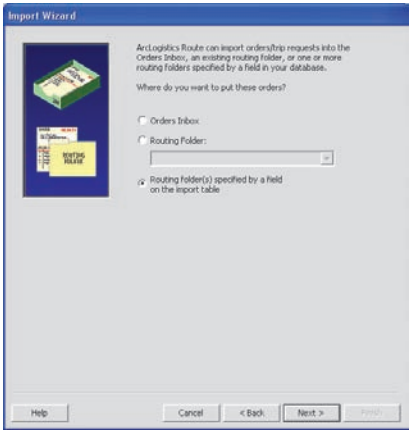
4. ArcLogistics displays the order Import Wizard. For Import Profile click <new import profile> and click Next. (If you have not saved any import profiles the first screen of the Import Wizard will not offer any Import Profiles to choose from. Click Next.)

You'll now import Orders.

5. Check Orders as the data to be imported, then click Next.

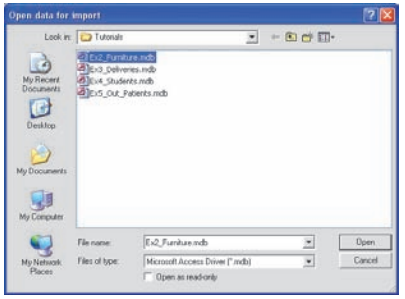


6. One of the fields in your orders database is delivery Date. Check the third option, then click Next.



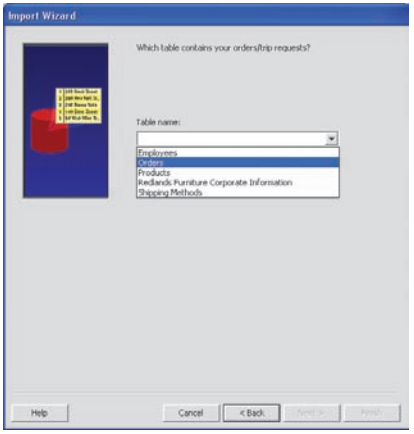
7. Check Use a data file directly. Click next.

8. Click Browse and navigate to the tutorials directory at C:\Documents and Settings\All Users\Documents\ESRI\ArcLogistics\Tutorials. Click Ex2_Furniture.mdb, then click Open.



9. The filename and path appear on the Import Wizard if using Microsoft® Vista, navigate to OS Disk C:\Users\Public\Public Documents\ESRI\ArcLogistics\Tutorials. Click Next.

10. Click the drop-down arrow and click Orders from the list of tables in the database. Click Next.



11. Click a field on the left.While holding down your mouse button, drag it to a field on the right. This tells ArcLogistics how to read the fields in the orders table. Match the fields as follows, then click Next:

    [Routing Folder] = DeliveryDate

    Order Number = InvoiceNumber

    Customer Number = CustomerNumber

    Name = LastName

    Street = StreetAddress

    City = City

    State = State

    Zip = Zipcode

    Time Window1 Start = FromTW

    Time Window1 Finish = ToTW

    Service Time = ServiceTime

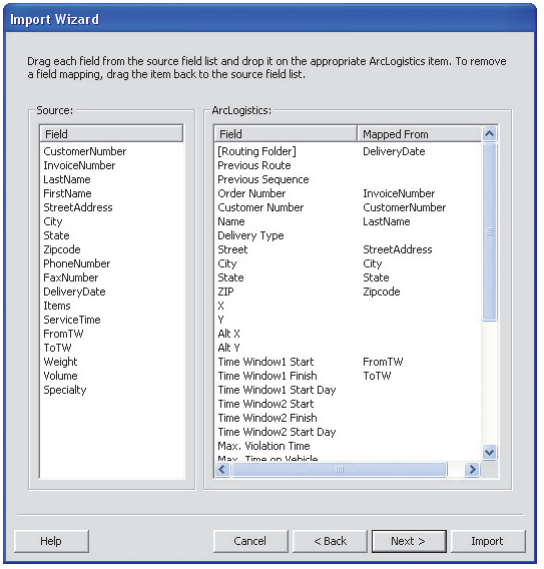
    Volume = Volume

    Weight = Weight

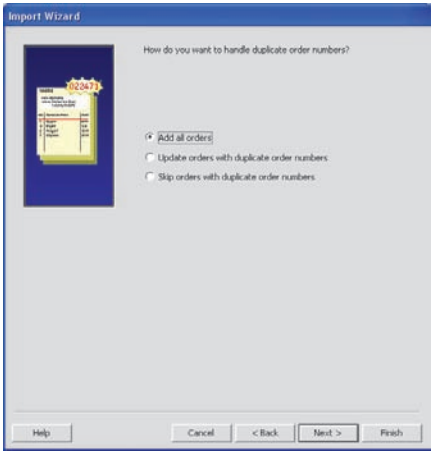
    Specialties = Specialty

    Phone (H) = PhoneNumber

    Phone (W) = FaxNumber



12. Check Add all orders. Click Next.

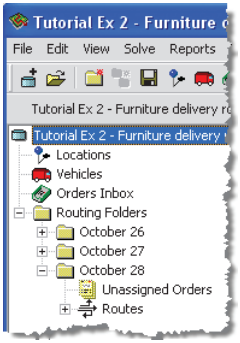


13. Type Tutorial Ex 2 as the name of your profile. To save this profile, make sure the checkbox is checked. Click Import.

14. Click Finish once all orders have been imported.

    Since you mapped your DeliveryDate field to the ArcLogistics [RoutingFolder] field, ArcLogistics adds a routing folder for October 28 to the routing project and imports the new orders into its Unassigned Orders folder. If the import table had contained orders with other dates, additional routing folders would have been created.

15. Expand the Routing Folders folder in the Tree View, then expand the October 28 routing folder. The contents of the routing folder appear.



16. Click Unassigned Orders to list the orders you've just imported. These are the orders you will route for October 28.

17. Scroll to the right in the List View until you see the Specialties field. Click the heading of the Specialties field twice. The orders are sorted by the Specialties field and you'll notice there are two orders that have the Clock specialty.

18. Click Zoom to Full Extent on the Map View toolbar so that you can see all the orders.

19. In the October 28 routing folder, expand the Routes item to show its contents. There are four empty routes, one for each vehicle.

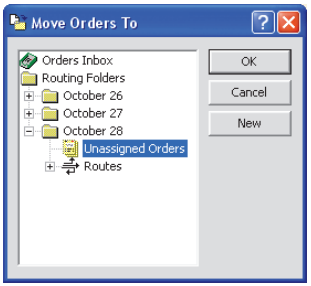
Next, you'll move unserviced orders from previous days to the October 28 routing folder.

Moving orders from the Orders Inbox to the October 28 routing folder

In addition to the orders you just imported, you'd also like to try to schedule the two orders you have in the Orders Inbox. These were left over from the previous days routes. In this task you will move these orders to the October 28 routing folder.

1. Click Orders Inbox in the Tree View.
2. Click the Edit menu and click Select All.
3. Click Move Orders on the Main toolbar. The Move Orders To dialog box displays.

4. Expand the October 28 routing folder. Click Unassigned Orders and click OK.

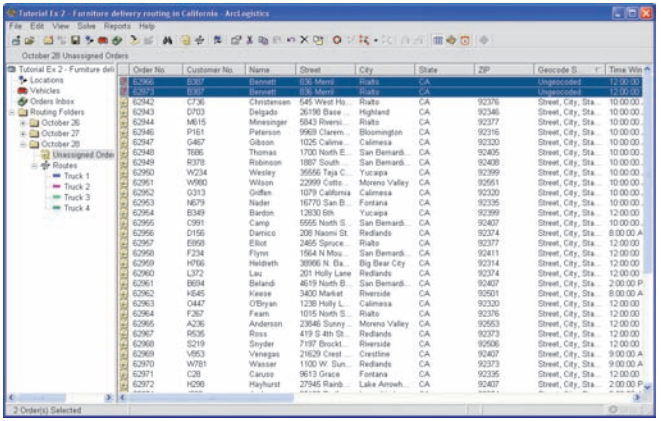


ArcLogistics moves the orders to the Unassigned Orders folder in the October 28 routing folder.

Manually geocoding addresses

Now that you have the orders that you want to route in the October 28 routing folder, you should make sure that all orders are geocoded (positioned correctly on the street network). ArcLogistics attempts to geocode all orders as accurately as possible. In some cases, certain addresses may need to be geocoded manually.

1. Click the Unassigned Orders item for October 28 in the Tree View. Click the Edit menu and click Select All Ungeocoded. The status bar in the lower-left corner of the application window indicates that there are two orders selected.
2. So that you can see the ungeocoded orders in the List View, click Time View and click Map View to hide them. Click the heading of the Geocode Status field twice to sort the List View in descending order.



Notice that the two ungeocoded orders are for the same customer, as indicated by the customer number, name, and address.

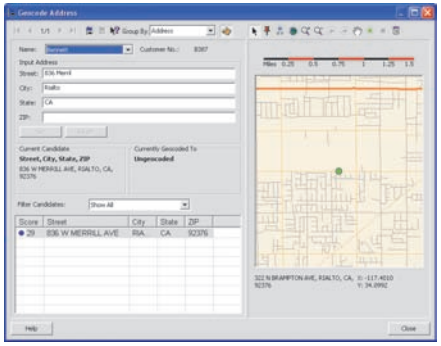
3. Click Geocode Address on the Main toolbar to goecode the address for these orders.

4. The two orders are loaded into the Geocode Address dialog box. Click the Group By drop-down arrow and click Address.

   The two orders are grouped so that you only have to geocode the address once.

The candidate in the list of candidates received a score of 29. There are several factors that caused this address to receive such a low score. First, the street name Merrill is spelled incorrectly. Second, the street prefix W and the suffix Ave are missing from the street address. Finally, the postal code is missing from the input address.

5. Turn on the street labels to view them if you like. Click On/Off TOC on the Geocode Address toolbar, then right-click Streets and click Labels.



6. Type the missing "l" at the end of the street name so that Merrill is spelled correctly. Click Set.

   The candidate score has now increased to 50.

7. Type "92376" in the Zip field. Click Set.

   The candidate score has increased to 69.

8. Type "Ave" after the street name Merrill. Click Set.

   The candidate score has increased to 82. You decide that this candidate is the correct position on the street network.

9. Click Geocode to assign the position of the current candidate to the two orders. Click Close to close the Geocode Address dialog box.

10. Click Map View on the Main toolbar, then click Time View. This displays all three views again.

Now you're ready to build routes.

Building routes

In this task, you'll build the routes for October 28.

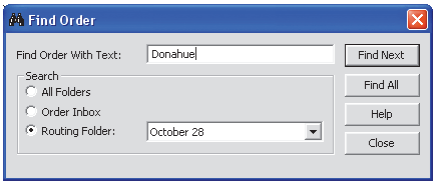
You know there's an order for Mrs. Donahue you'd like to place on Truck 1, since Rich, its driver, has delivered to this customer before. After assigning Mrs. Donahue's order, you'll let ArcLogistics assign the remaining orders to routes.

1. Click Unassigned orders for October 28 in the Tree View to display the orders in the List View.

2. On the Main toolbar, click Find Order.

The Find Order dialog box displays.

3. Type “Donahue” in the text box.
4. Click Routing Folder, then click October 28 from the drop-down menu.
5. Click Find Next. ArcLogistics selects the order. Click Close.



6. Click the order for Mrs. Donahue in the List View; hold down the mouse button, and drag and drop it on the route named Truck 1 in the October 28 routing folder in the Tree View.

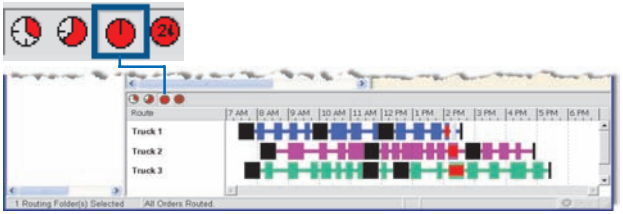
   ArcLogistics moves the order from the unassigned order list to the route for Truck 1, then initializes each of the routes. This may take a few moments.
7. Click Truck 1 in the Tree View. ArcLogistics lists the orders on Truck 1.
8. Click the order for Mrs. Donahue and click Lock. This keeps the order on Truck 1 when you build routes.

9. Click Build Routes to automatically assign the remaining orders to routes.

Displaying the routes

1. Click the Routing Folders folder in the Tree View. The List View shows statistics for each routing folder.
2. Click the Routes item in the October 28 routing folder in the Tree View. The List View shows statistics for each route.
3. Click the route for Truck 1 in the List View. A second List View displays the stops, in order, that the vehicle is scheduled to make along the route. Any scheduled orders with violated time windows are represented with a red order icon.
4. Click Truck 4 in the List View. Scroll to the right on the List View and notice that both orders with the clock specialty were automatically assigned to Truck 4.

   The Map View displays routes as straight lines between each order. Orders with red centers violate time windows.
5. Click the 12 Hour View on the Time View.



The routes are displayed along a twelve hour time line.

6. Hover the cursor over the time window violation for Truck 3 and you’ll see it is over 2 hours late.

Adjusting the importance of time windows

When ArcLogistics builds routes, it takes into account many variables, including vehicle capacities, the number of orders, and specialties. While doing this it considers how you rate the importance of meeting time windows.

Since you're quite concerned about meeting time windows, even though it may cost more, adjust the time window importance rating property of the routing folder.

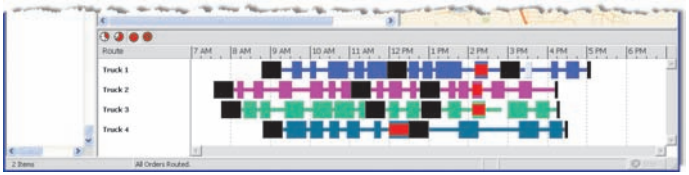
1. Click the October 28 routing folder in the Tree View, then click Properties.

   The routing folder's properties dialog box displays.

2. Click the top slider. Hold down the mouse button and drag it to the right to set the importance rating to High.
3. Click Save and click Close.

4. Click Build Routes again. ArcLogistics builds the routes again, but while doing so, puts more emphasis on meeting time windows.

Examine the Time View for all four routes and you'll notice that although there is now one more time window violation, each one is only for a few minutes.



5. Because you're happy with the results, you'll set this routing preference as the default setting for the routing project. To do so, click Tutorial Ex 2 item at the top of the Tree View, then click the Properties button.

   The routing project's properties dialog box displays.

6. Click the slider and drag it to the right to set the importance rating to High.
7. Click Save then Close. All new routing folders created in the routing project retains the preferences you've set.

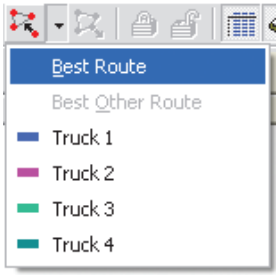
Making edits to the routes

With ArcLogistics there are many ways to edit your routes. This task describes only a few of them. For more information, refer to 'Building Routes' in Chapter 12.

Reschedule an order by changing its time window

1. Click October 28 in the Tree View. In the Time View, select any order and click Unassign Orders.

   ArcLogistics removes the order from the route and places it below the last route in the Time View. You may need to scroll down in the Time View to see it.
2. Click Properties on the Main toolbar to see its properties (the order should still be selected). Change the time window to a time of the day when the vehicles are more accessible, such as 4 PM to 6 PM.
3. Click Save, then click Close to close the dialog box.
4. Click the arrow to the immediate right of Assign Orders to a Route on the Main toolbar and click Best Route.



   ArcLogistics moves the order onto the route that best meets your routing preferences without disturbing your other routes.

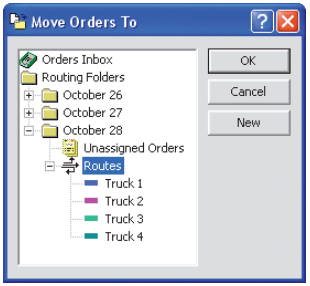
Moving an order to the Orders Inbox to set it aside

1. Click an order in the Map View or List View, and while holding down your mouse button, drag it to the Orders Inbox in the Tree View.
2. Release the mouse button. ArcLogistics moves the order into the Orders Inbox.

Reschedule an order by moving it into another routing folder

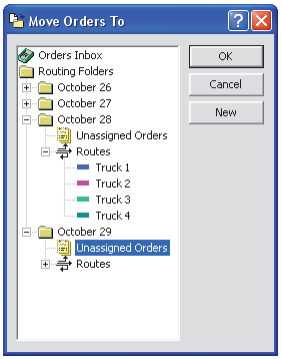
1. Click an order in any of the views, then click Move Orders on the Main toolbar.

   The Move Orders dialog box displays.



2. Click New and type "October 29" for the name of the routing folder.
3. Expand the October 29 routing folder.

4. Click Unassigned Orders and click OK.



The order moves to the Unassigned Orders folder for October 29. You can schedule this order tomorrow.

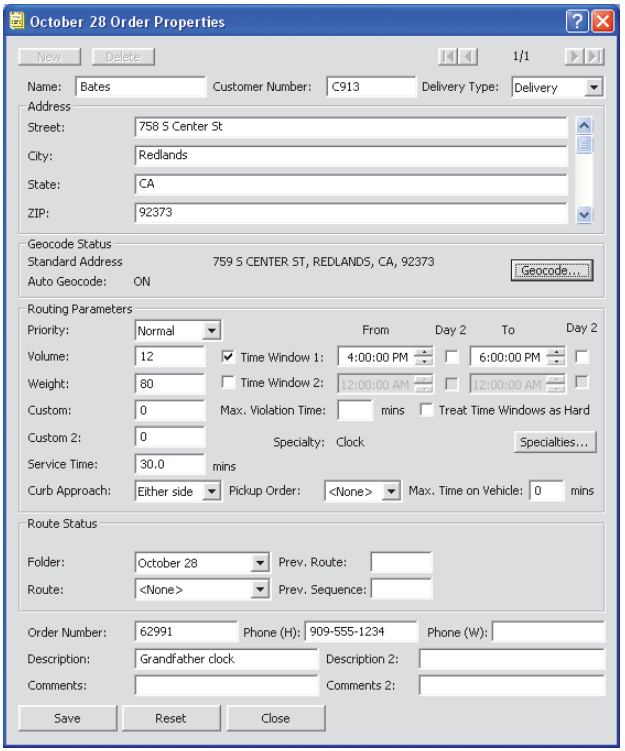
Adding a last-minute order

You've just been interrupted by Pascale from the sales department who hands you a last-minute order. The order happens to be for a grandfather clock. Make sure this order has a clock Specialty.

1. Right-click Unassigned Orders in the October 28 routing folder and click New Order.

   The Order Properties dialog box displays.

2. Enter values specified on the image below.



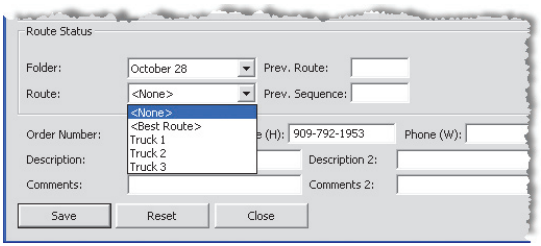
3. Click Specialties.

   The Specialties dialog box appears.

4. Check the Clock specialty.

5. Click OK.

6. Since you're satisfied with your existing routes, you'll assign this order to a route without rebuilding all routes. In the Route Status frame, click the drop-down box labeled Route and click <Best Route>.

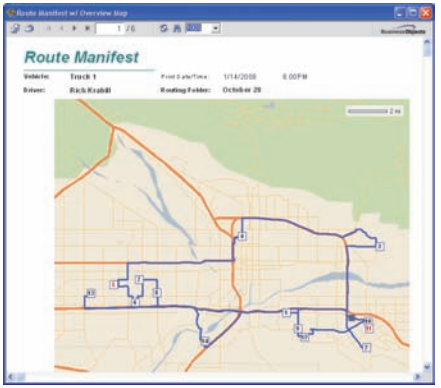


7. Click Save. ArcLogistics moves the order onto the best route. This is Truck 4, which is the only route with the Clock option as a specialty.
8. Click Close to dismiss the Order Properties dialog box.

Printing a route manifest

Now that you have finished building the routes for October 28, you'll generate and print a route manifest to provide the drivers so they'll have an overview map and details for each order on the route.

1. Click the route for Truck 1 in the October 28 routing folder.
2. Click the reports menu, point to Reports and click Route Manifest w/Overview Map. ArcLogistics generates and displays the report. This will take a few moments.
3. Click the Print button to print the manifest. Click the Close button if you do not wish to print it.



Saving and exiting ArcLogistics

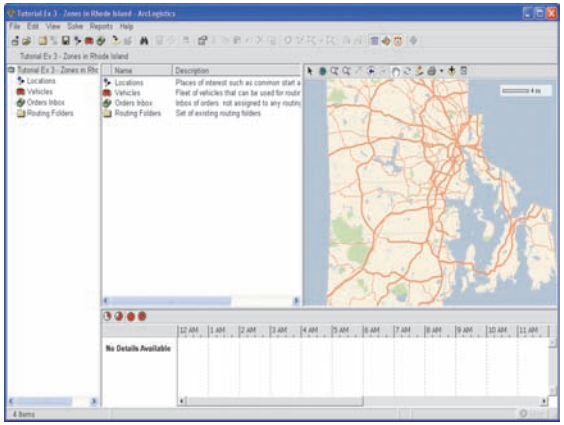
1. Click the File menu and click Save, if you wish to save your work.
2. Click the File menu and click Exit.

Congratulations! You have now finished Exercise 2 of the tutorials and should have a good understanding of how to use ArcLogistics. The following exercises will build on your knowledge and introduce new concepts and functionality in different routing scenarios.

Exercise 3: Zones in Rhode Island

In this exercise you'll be solving a small routing problem for delivering home appliances in Rhode Island. The exercise has been set up so that some of your routing problem has already been defined within ArcLogistics, including your locations and vehicles. Your organization has been using geographic territories to define the delivery areas for drivers. In this exercise you will experiment with using the existing driver territory zones and removing them.

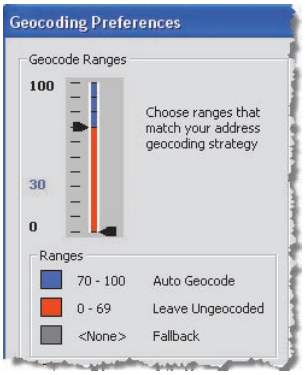
1. Open ArcLogistics and the routing project Tutorial Ex 3 - Zones in Rhode Island.



Examining the existing routing information

In this step you will examine the pre-set routing information to understand the business rules that have been set up for for this exercise.

1. Click File then click Geocoding Preferences. Notice that the Auto Geocode range is 70–100 and Leave Ungeocoded is set for everything below 70. Click OK.



2. Select Locations in the Tree View.

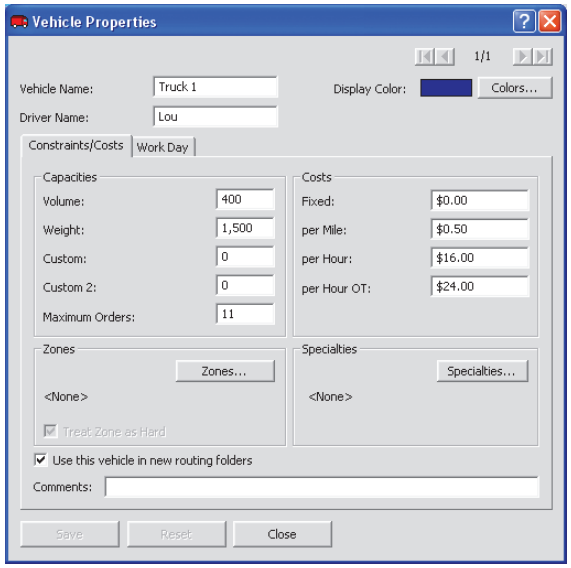
   One location has been set up: a warehouse at 80 Hope St, 02921. This is where your vehicles will start and end their routes. The List View displays the postal code of the warehouse in a column named Zone. This is a function of the specific geocoding properties of the street dataset and has nothing to do with the geographic zones you are about to use.

3. Select Vehicles in the Tree View.

   All four vehicles will be seen in the List View and Time View, including their start time ranges.

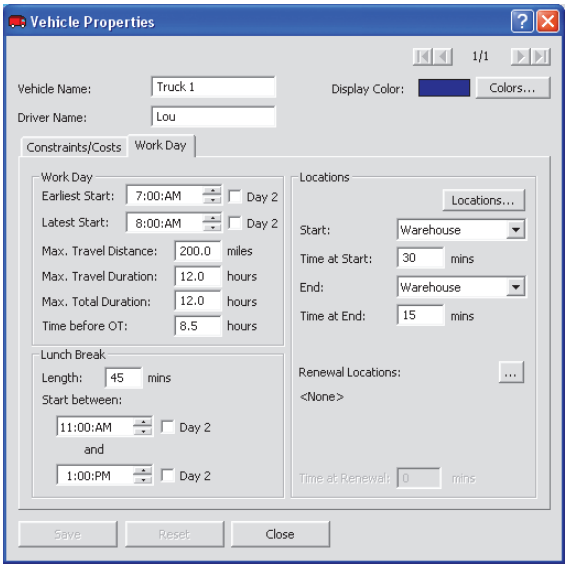
4. Right-click the first vehicle and then select Properties so you can examine some of its operating rules.

This vehicle has a volume capacity of 400, a weight capacity of 1,500, and it has 11 as the maximum amount of stops it can make. It also has a per mile cost of $0.50, a per hour cost of $16.00, and per hour overtime cost of $24.00.



4. Click the vehicle's Work Day tab to examine more work rules. When you have finished, click Close.

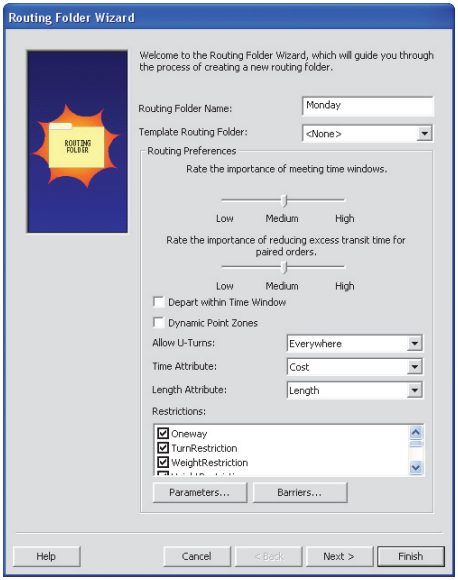
The vehicle cannot start the workday before 7:00 AM, nor can it start any later than 8:00 AM. The maximum total duration of the route is 12 hours, and it takes a 45 minute lunch break between 11:00 AM and 1:00 PM. The vehicle also has to start and finish the day at the warehouse.



Creating a routing folder

Your routing project has Locations and Vehicles set up, but no routing folders in which to do any routing. In the previous exercise you automatically created a routing folder during the import of some orders. In this exercise you will manually create a routing folder and then import your orders.

1. Click New Routing Folder on the Main toolbar. Type "Monday" for the Routing Folder Name. Click Finish.



A routing folder called Monday will be created in the Tree View.

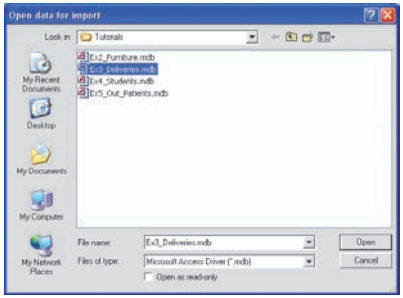
Importing orders

Now you'll import a set of 38 orders to be routed.

1. Click Import on the Main toolbar. This opens the Import Wizard dialog box. Make sure <new import profile> is the Import Profile. Click Next.

2. Confirm that Orders is selected and click Next.
3. Make sure Monday is selected in the Routing Folder option. Click Next.
4. Check Use a data file directly. Click Next.
5. Browse to the orders file you wish to import. This file is found at C:\Documents and Settings\All Users\Documents\ESRI\ArcLogistics\Tutorials. Click Ex3_Deliveries.mdb, then click Open.

   Navigate to OS Disk C:\Users\Public\Public Documents\ESRI\ArcLogistics\Tutorials\ Ex3_Deliveries.mdb, if using Microsoft® Vista.



   The file is an Access database that contains 36 orders. Click Open, then click Next.
6. Click Monday Deliveries as the Table name. Click Next.
7. Match the source fields in the Thursday Deliveries table to the fields in ArcLogistics. Map the fields as follows:

   Customer Number = CustomerNumber

   Name = Name

   Street = Street

Zone = Postal

Time Window 1 Start = FromTime1Str

Time Window 1 Finish = ToTime1Str

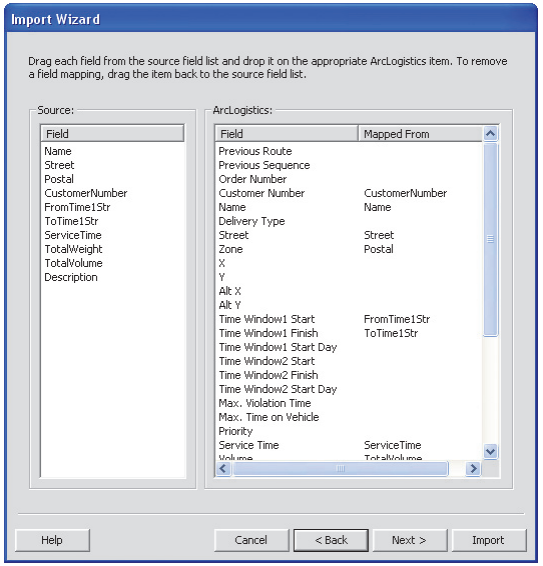
SerrviceTime = Service Time

Volume = Total Volume

Weight = Total Weight

Description = Description

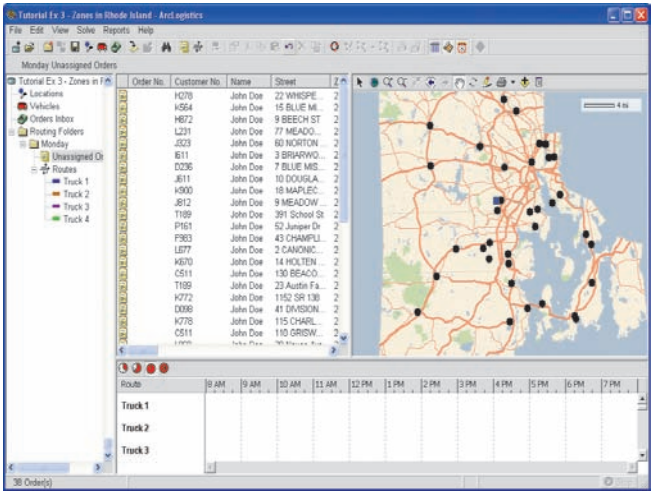
8. Click Next.



9. Type “Tutorial Ex 3” for the Import Profile Name. Click Import.

10. Import all orders. Click Finish.

11. Click Unassigned Orders in the Monday routing folder.

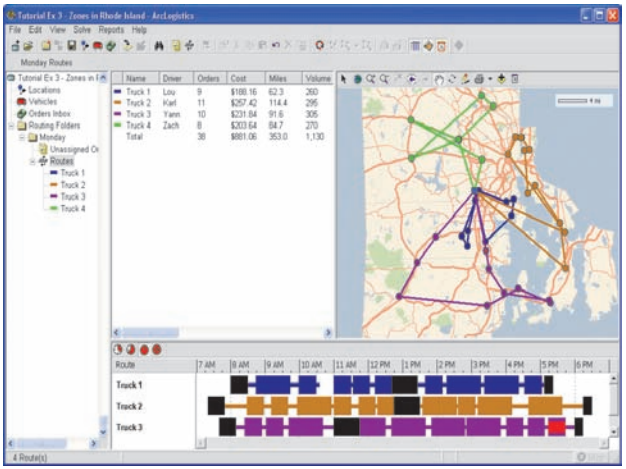


This populates the List View with all of the orders to be routed. You can also see the geographic distribution of these orders. The orders contain properties that adhere to several basic business rules which will affect the routes, including time windows, service time, weight, and volume. Scroll across the List View to examine these business rules.

Building routes

Now build routes in the Monday routing folder.

1. Click Routes in the Monday routing folder.
2. Click Build Routes on the Main toolbar.



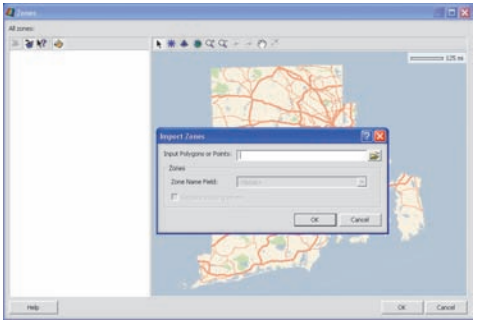
ArcLogistics creates a solution and presents the results, allowing you to see the total cost and mileage for each route.

Zones

Zones are geographic map features that are associated with vehicles in order to send that vehicle into a preferred area. Zones are very useful when your operation has fixed routes with distinct geographic boundaries, or for when you want to favor routes to specific areas based on your own business logic. The zones in this tutorial are polygon areas representing driver territories where each driver is assigned to a specific zone.

1. Click File, then click Zones.

   The Zones dialog box opens.

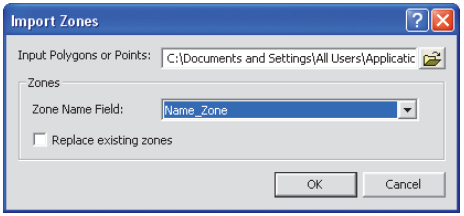


2. Click Import Zones.

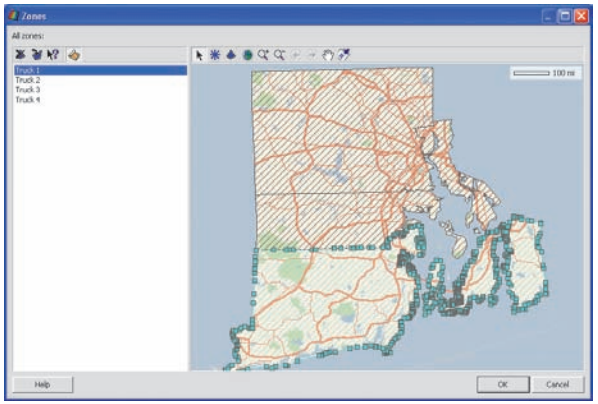
3. Browse to and click the Zones.shp file at C:\Documents and Settings\AllUsers\Documents\ESRI\ArcLogistics\Tutorials. Click Zones.shp, then click Open.

   Navigate to OS Disk (C):\ProgramData\ESRI\ArcLogistics\Tutorials\ Zones.shp, then click Open if using Microsoft Vista.

4. Select Name_Zone for Zone Name Field, then click OK.



5. Select Truck 1. You'll see the zone displayed on the map. Click OK to close the dialog box.



Creating a new routing folder

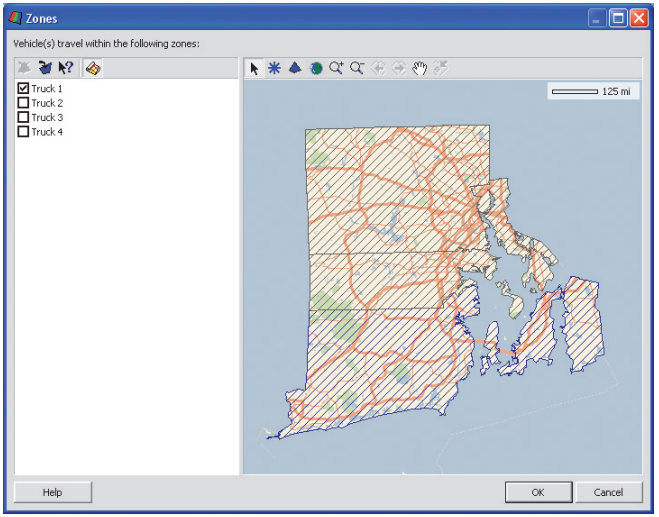
1. Click New Routing Folder on the Main toolbar. Type "Monday Hard Zones" for the Routing Folder name. Click Finish.

   A routing folder called Monday Hard Zones is created and appears in the Tree View.

Assigning zones to routes

You'll assign the zones to your vehicles to see how the routes look if the vehicles remain in their zones. You'll assign the zones to the vehicles that are in the routing folder so the main vehicles database is not affected. If you wanted to assign zones to the vehicles for all future routing folders you would do this in the main vehicles folder in the Tree View.

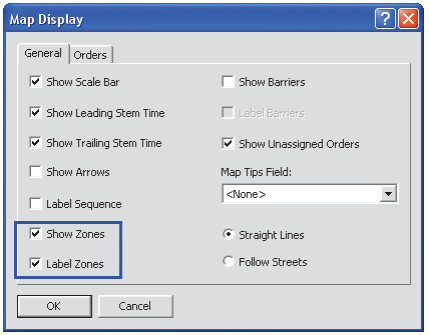
1. Click Routes in the Monday Hard Zones routing folder in the Tree View.
2. Right-click Truck 1 in the List View, then click Zones.
3. Check Truck 1. Click OK to close the dialog box.



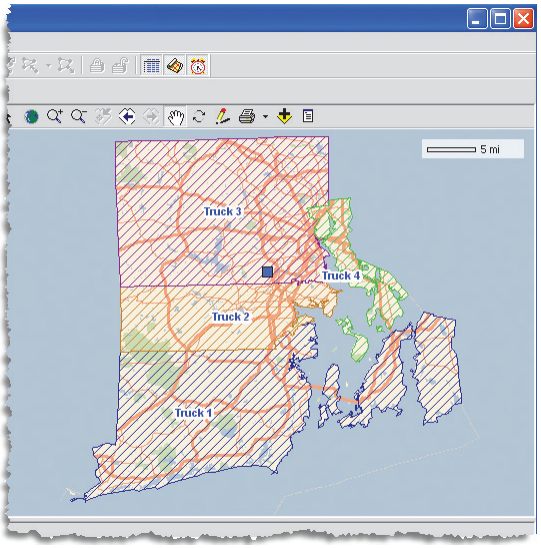
   This assigns the zone called Truck 1 to your route which is also named Truck 1. Notice that the zone changes to the same color as the route.

4. Assign the other three vehicles to their corresponding zones.
5. Click Control Map Display on the Map View toolbar to see the zones assigned to their routes on the map.

6. Click the General tab, then check Show Zones and Label Zones. Click OK.



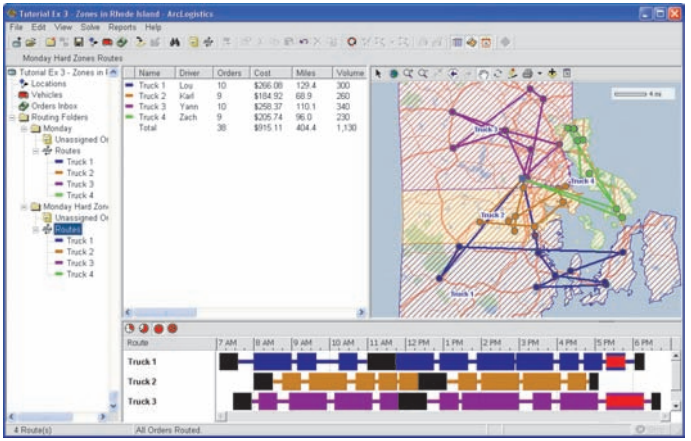
The zones appear in a separate dialog box, as seen below.



Importing orders and building routes

Import the same orders and build routes in the Monday Hard Zones routing folder.

1. Click Import on the Main toolbar.
2. Click Tutorial Ex 3 for the Import Profile. Click Next to confirm that Orders is selected, then click Next.
3. Ensure that the routing folder where the orders will be imported into is Monday Hard Zones. Click Import to import the orders and click Finish.
4. Click Routes in the Monday Hard Zones routing folder.
5. Click Build Routes on the Main toolbar.



Differences

1. Click Routing Folders in the Tree View.

   The List View displays statistics for the two routing folders.

The main differences between the two routing folders are that Monday drives about 13 percent less mileage than does Monday Hard Zones, and Monday has 0.2 hours of time window violation compared to Monday Hard Zones, which has 0.6 hours of time window violations.

Click the File menu then click Save if you want to save your work.

This tutorial demonstrates two different methods to create routes. Depending on your organization's business rules and operational policies, either method could work. ArcLogistics offers many ways to create routes which are explained in this book. Exercise 4 will illustrate how the Trips Request function can be used to route special-needs school children.

Exercise 4: Special-needs school children routing in Rhode Island

In this exercise you'll solve a small school district routing problem where you have to transport 60 special-needs students from their homes to one of three schools. This tutorial will make use of the Trips Request function to import the student information and prepare it for routing. Some of the important aspects of this routing scenario are:

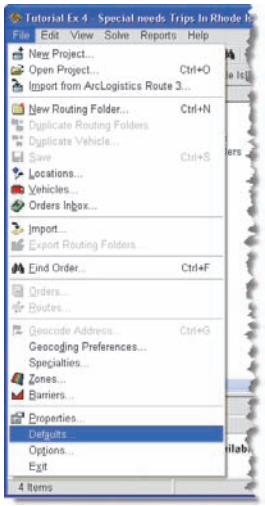
- Students are not allowed to ride on a vehicle for over 45 minutes.
- Many of the students have special requirements that need to be accommodated on the vehicles, including wheelchairs and personal aides, or require the vehicles to have specialist equipment, such as pads, vests, and oxygen, in case it's needed.
- The students all have unique addresses and need to be transported to schools that all have different start times.
- Many of the students must be picked up on the curbside of the street where they live as there are no driveways. In addition, the students are not allowed to cross the street so the vehicles must pick them up by using the curb approach function to ensure the vehicle always approaches on the right side of the street.

Start ArcLogistics and open the project named Tutorial Ex 4 - Special Needs Trips in Rhode Island.

Setting defaults

To make it easier for data management you will set a few default values that will apply for this exercise.

1. Click the File drop-down menu, then click Defaults.



2. On the Set Defaults dialog box, click the Default Trip Request Properties tab. Edit the following settings

   Trip Type "Arrive"

   Earliest Arrival: 10 mins

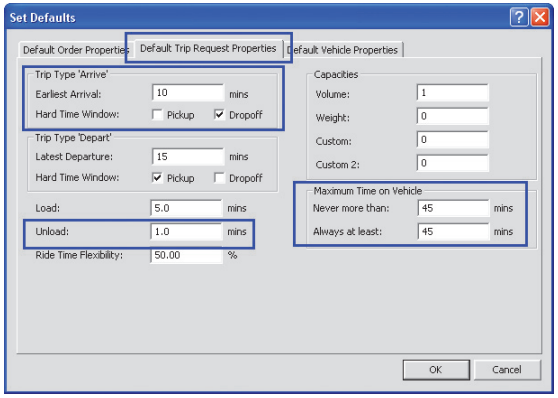
   Hard Time Window = Dropoff

   Unload: 1.0 mins

   Maximum Time on Vehicle

   Never more than: 45 mins

   Always at least: 45 mins



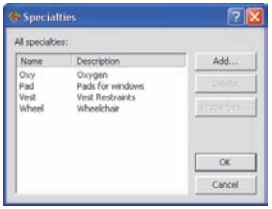
These settings ensure that students will be dropped off at their schools within 10 minutes of the latest arrival time and that ArcLogistics will allocate 1 minute per student for the dropoff. It also ensures that each student will be on the vehicle for a maximum of 45 minutes.

Examining the existing routing information

In this step you'll examine the pre-set routing information to understand some of the business rules.

1. Click the File drop-down menu, then click Specialties. The Specialties dialog box opens. Notice that there are four specialties already created. Click OK.
2. Click the vehicles item in the Tree View.

   This populates the List View with all of the vehicles.



3. Double-click the vehicle with the name 204.

   The vehicles property page opens.
4. Click the Constraints/Costs tab.

Notice that the Capacities has a Volume of 12 and a Custom of 1. This means that the vehicle can take 12 passengers and one wheelchair, because in our scenario, Volume represents passengers and Custom represents wheelchairs. Notice that the vehicle has specialties associated with it.

5. Click the Work Day tab.

No lunch break has been allocated as the vehicles will all return after school starts and the routes will be very short.

6. Click Close.
7. Select any other vehicle and examine its properties.

Notice that different vehicles have different specialties and capacities associated with them, representing differences that would be found in real world fleets.

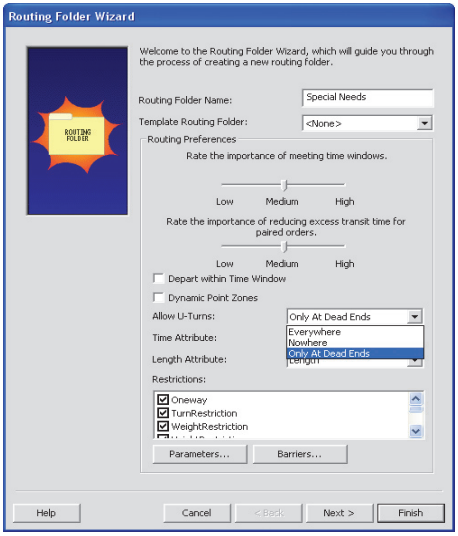
8. If you have Microsoft Access you can examine the table that contains the student information you will import. Navigate to C:\Documents and Settings\All Users\Documents\ESRI\ArcLogistics\Tutorials and open the database named Ex4_Students.mdb.

   If using Microsoft Vista, navigate to OS Disk C:\Users\Public\Public Documents\ESRI\ArcLogistics\Tutorials\Ex4_Students.mdb.

Creating a routing folder

1. Click the New Routing Folder button on the Main toolbar. Type “Special Needs” for the Routing Folder name. In the Allow U-Turns field, click the pull-down menu and click Only At Dead Ends. Click Finish.

   The U Turn policy for the new routing folder is set. A routing folder called Special Needs will be created and appears in the Tree View.



Importing orders

You’ll now import a set of 60 student addresses to be routed. You’ll use the Trips Request function to create 120 orders since each student address will be associated with the school where they need to be dropped off, resulting in two stops (orders) for each student.

1. Click the Import button on the Main toolbar.

   The Import Wizard dialog box opens. Make sure <new import profile> is the Import Profile. Click Next.

2. Check Trip requests. Click Next.
3. In the Routing Folder field click the pull-down menu and click Special Needs. Click Next.
4. Check Use a data file directly. Click Next.
5. Browse to the student data that you will import. It is at C:\Documents and Settings\All Users\Documents\ESRI\ArcLogistics\Tutorials. Click Ex4_Students.mdb. Click Open, then click Next.
6. In the Table name field click the pull-down menu and click Special Needs Students. Click Next.
7. Click a field on the left, and while holding down your mouse button, drag it to a field on the right. Use the following field mapping:

   Order Number = Ordernumber

   Customer Number = CustomerNumber

   Name = Name

   From Street = Pick up Address

   From Zone = Zone

   From Curb Approach = Curb Approach

   To Street = School Address

   To Zone = School Postal

   Arrive Time = Latest Drop Off Time

   Pickup From Time = Earliest Pick Up

   Pickup To Time = Latest Pick Up

   Load = Time At Pick up

Volume = Passengers

Custom = Wheelchairs

Specialties = Specialties

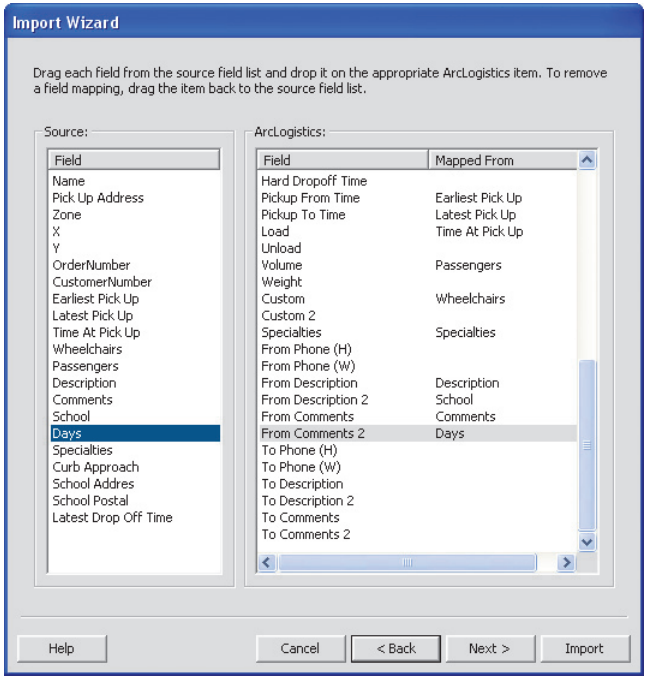
From Description = Description

From Description 2 = School

From Comments = Comments

From Comments 2 = Days

Leave the remaining fields blank. Click Next.



8. Click Add all orders. Click next.

9. Type “Tutorial Ex 4” and check Save this Import Profile. Click Import.

   ArcLogistics imports all of the student information and creates paired orders with their corresponding school information. This import takes longer than the regular importing process.

10. When the import is complete, click Finish.

Examining a trip

Examine a trip to better understand the data and rules that may affect the routes generated. Each student address and information is now a pickup and has been associated to a school address and information, which is now the corresponding delivery. These two ordered pairs will be placed on the same vehicle. Within ArcLogistics the trips appear as two separate orders, but will always be linked, so if you select one you also select the other for editing, display, or routing purposes.

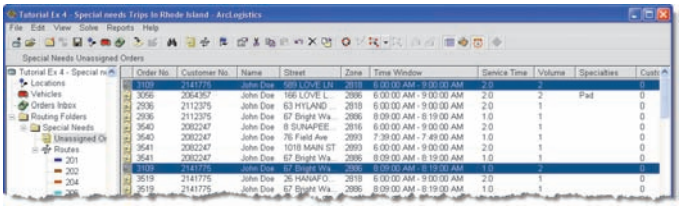
1. Click, in the Tree View, the Unassigned Orders item in the Special Needs routing folder that you previously created. You’ll see all of the orders that were just imported.

2. Click the Map View button on the Main toolbar, then click the Time View button on the Main toolbar.

   This hides those views, leaving only the List View visible to see more information.

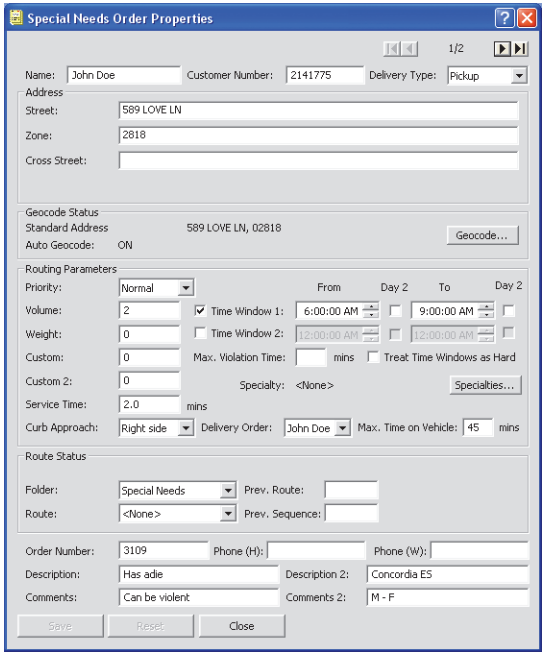
3. Scroll to the right until you can see the Comments field in the List View. Click on the Comments field to rank the field. Click again to reverse the ranking and bring the orders with comments to the top. There are only two orders with comments.

4. Scroll to the left and click on the top order at 589 Love Lane.



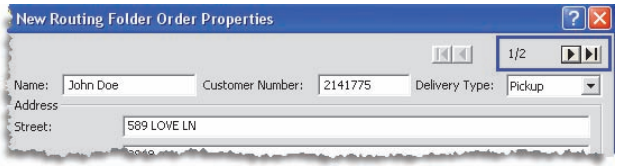
Notice that clicking on the order selects both the pickup order and the delivery order.

5. Click the Properties button on the Main toolbar to open the properties dialog box for that order.



Examining the order property, you'll notice that this is one of two orders selected. You can see this by looking at the top-right corner at the Next Item button where it says 1/2. One order is a pickup at the student's home address, and the other is the delivery at the student's school. Important routing information that will affect the solution includes the volume of 2, meaning that there are two people there to be picked up. This is because this student always rides with a personal aide, as noted in the description field. Also note that the pickup will take two minutes and the vehicle can only approach the pickup address from the right side. The curb approach is required because the address does not have a suitable driveway; the student must be picked up curbside, and the student is not allowed to cross the street.

6. Click the Next Item button to view the delivery that is associated with the pickup.

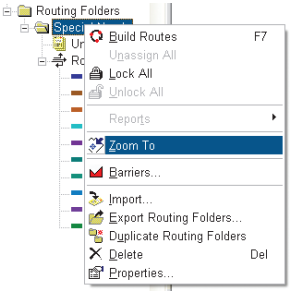


This is the delivery address of the school and the student needs to be there between 8:09 AM and 8:19 AM. Click Close.

7. Click the Map View button on the Main toolbar, then click the Time View button.

This displays the Map View and Time View, in addition to the List View.

8. Right-click the Special Needs routing folder in the Tree View, then Select Zoom To. This will zoom the Map View to the extent of the student and school addresses.



Creating Routes

1. Click the Routes item within the Special Needs routing folder.

   This displays all routes within the Special Needs routing folder in the List View.

2. Click the Build Routes button on the Main toolbar.

   ArcLogistics creates a routing solution. When the solution has been generated you'll notice that not all of the vehicles have been used.

Viewing Routes

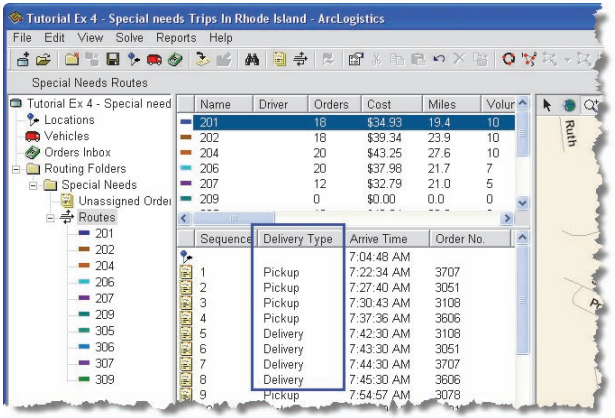
1. Click the 4 Hour View button in the Time View to change the scale in the Time View.

   This allows you to better see the route timelines.

2. Click on the first vehicle in the List View.

   This opens the second List View and displays the sequence of the route. You can now select each order in turn and click through the route to see in the Map View each order as it is selected.

3. Scroll to the right in the List View that contains the route detail and drag the Delivery Type column to the left.



   This will assist you in identifying pickups and deliveries as you examine routes. You can also hide columns by right-clicking the column header and selecting Hide.

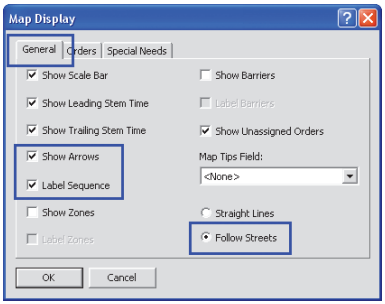
Displaying routes in the Map View

In this step you'll change settings in the Map View to better visualize the routes you have created so you can see the curb approach rule.

1. First, change the map display settings so you can see the actual travel path with the stop sequence displayed. Click the Control Map Display button at the top of the Map View.

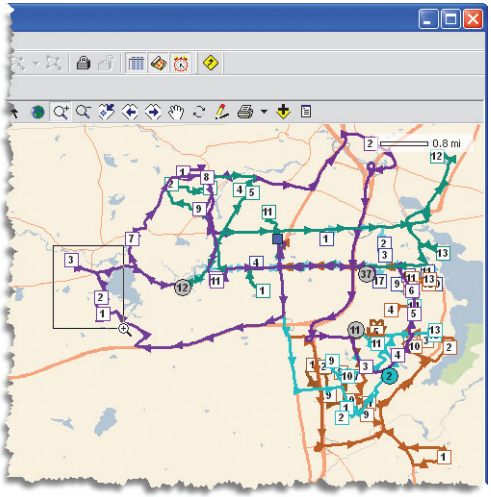
   The Map Display dialog box opens.

2. Select the General tab, then check the Show Arrows option. Check the Label Sequence option, then check the Follow Streets option. Click OK.



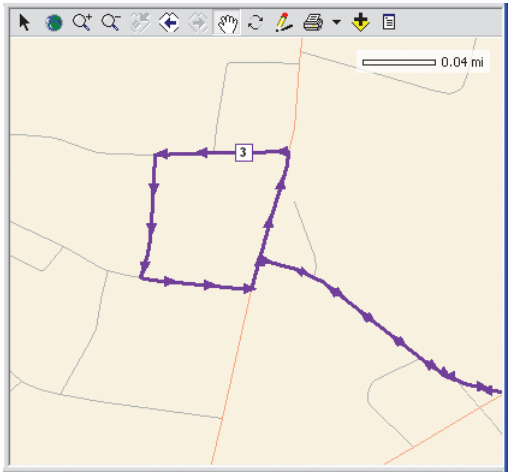
It may take a few minutes to calculate and display the route shape.

3. Click the Zoom In button on the Map View and drag a box around the three orders at the far west of the Map View.



This zooms in to those three orders. Notice how routes have honored the curb approach rule for these orders. To comply with the right curb approach rule, the route must circle the block, becoming slightly longer.

4. Zoom in again to the order that is furthest west and examine the travel path.



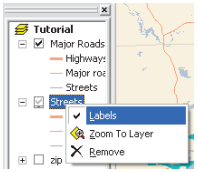
5. Right-click the Special Needs routing folder in the Tree View, then Select Zoom To.

   This zooms the Map View back to the extent of the student and school addresses.

6. Click the On/Off TOC button at the top of the Map View.

   The table of contents is displayed on the left side of the map.

7. Right-click the Street layer and check Labels. Repeat this for the Major Roads layer.

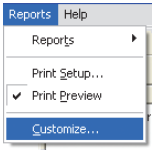


This enables labeling in the Map View of the street network.

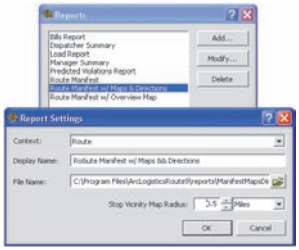
Reports

In the final step you'll customize stop vicinity maps within one of the reports. A stop vicinity map is a detailed map of each stop.

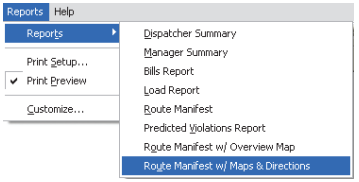
1. Click the Reports drop-down menu from the Main toolbar. Select Customize.

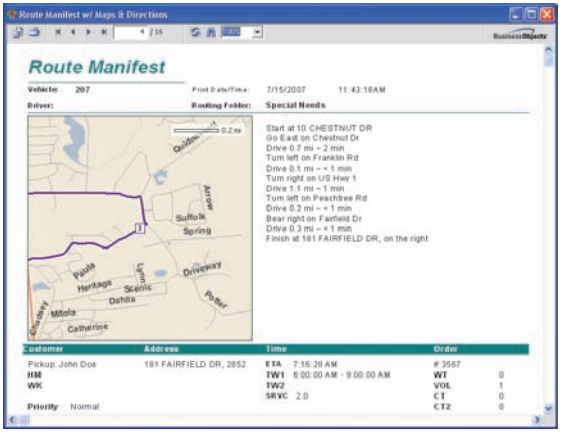


2. Click Route Manifest w/Maps & Directions, then click Modify. For Stop Vicinity Map Radius, type in 0.5. Leave the units as Miles. Click OK. Click Close.



3. Click a route of your choice and, in the Tree View, select the Reports drop-down menu on the Main toolbar. Click Reports then click Route Manifest w/Maps & Directions. Examine the report to see the vicinity maps for each stop and the driving directions.





4. Click Close to close the report.

Resetting the settings

Set the stop vicinity maps and Map View settings to their original settings.

1. Select the Reports drop-down menu from the Main toolbar. Select Customize. Click Route Manifest w/Maps & Directions, then click Modify. Type “1.0” for the Stop Vicinity Map Radius. Leave the units as Miles. Click OK. Click Close.

   This sets the vicinity maps back to their original setting.

6. Click the On/Off TOC button to display the table of contents in Map View. Turn off the street labels.

Having street labels turned on will result in slower map rendering.

7. Finally, change the map display settings back to the original settings. Click the Control Map Display button at the top of the Map View.

   This opens the Map Display dialog box.

8. Click the General tab, then uncheck the Show Arrows option. Uncheck Label Sequence, then uncheck Follow Streets. Click OK.

9. Save your work if you wish.

Congratulations! You have successfully finished Tutorial Exercise 4. This tutorial used trip requests to route special needs school children to their schools. In the next and final tutorial exercise you’ll solve a Paired Orders para-transit routing problem in Ireland, including the use of barriers.

Exercise 5: Para-Transit with barriers in Ireland

Para-transit is an alternative mode of flexible passenger transportation that does not follow fixed routes or schedules, and typically uses vans or minibuses to provide service.

In this exercise you'll solve a small para-transit routing problem in the Cork area of Ireland. You will also learn how to import paired orders that meet the requirements of this para-transit operation and will create a barrier to block a ferry crossing that you want to aviod.

To make sure ArcLogistics Route uses Irish measurements and currency, adjust your Windows Regional and Language Options.

1. Click Start, point to Control Panel, and click Regional and Language Options.
2. Click English (Ireland) in the Regional Options tab.

3. Click OK.

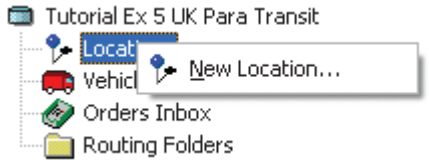
   This changes the currency to € and distance to KM.

Start ArcLogistics Route and open the project named Tutorial Ex 5 - Para Transit with barriers in Ireland.

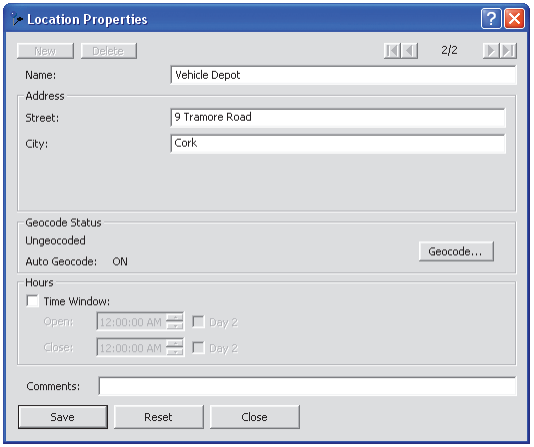
Setting up a location

First, you must set up the location from where your vehicles will operate.

1. Right-click on the Locations item in the Tree View and select New Location.



2. Type "Vehicle Depot" in the Name box.
3. For the address type "9 Tramore Road, Cork".

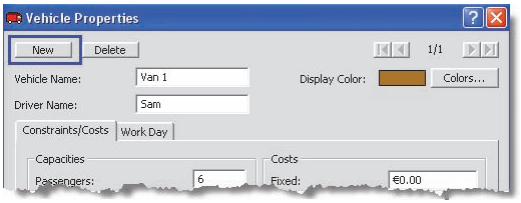


4. Press the Tab key. This automatically geocodes the address. Notice that the geocode status window now includes the address as a successful geocode.
5. Check the Time Window box and change the Open time to 7 AM and Close time to 6 PM.
6. Click Save and click Close.

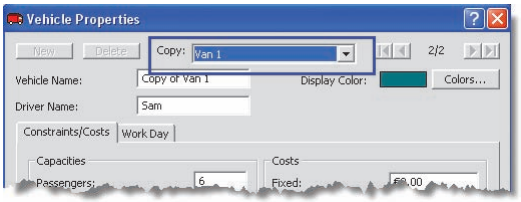
Adding vehicles

You'll now create five vans that will operate from the vehicle depot you just created. These vehicles can only hold six passengers at any one time and will start and end their days at the vehicle depot.

1. Right-click the Vehicles item in the Tree View and click New Vehicle.
2. Type "Van 1" for Vehicle Name and "Sam" for the Driver Name.
3. Type "6" for Volume.
4. Click on the Work Day tab.
5. Type "9 AM" for Latest Start. Leave the earliest start time at 7AM.
6. Set the Lunch Break to 20 minutes and Start Between 11 AM and 1 PM.
7. Set the Start Location to Vehicle Depot with 20 minutes Time at Start.
8. Set the End Location to Vehicle Depot with 20 minutes Time at End.
9. Click Save.
10. Click New.



11. Click the Copy down arrow and select Van 1.



12. Change the text to Van 2 and the Driver Name to Lou in Vehicle Name. Click Save.
13. Click New, click the Copy down arrow, and select Van 1.
14. Change the text to Van 3 and the Driver Name to Jake in Vehicle Name. Click Save. Click Close.
15. Create two additional vans named Van 4 and Van 5, using the above procedure.

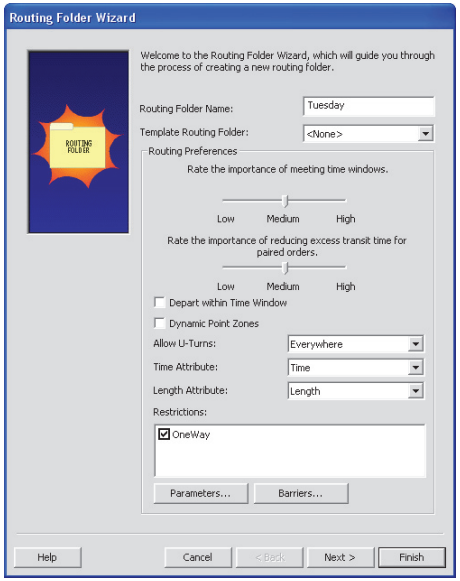
You now have five vehicles in your routing project that have the same properties.

Creating a routing folder

Now create a routing folder to solve the routing problem.

1. Click New Routing Folder on the Main toolbar.

2. Type “Tuesday” for the Routing Folder Name.



3. Click Finish.

Geocoding Preferences

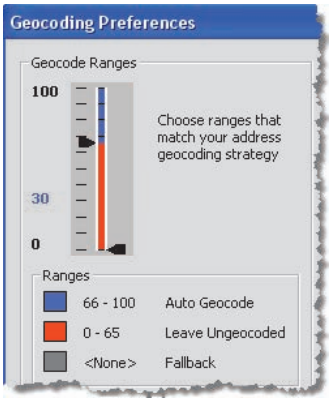
When ArcLogistics imports orders, the address of each order is geocoded. Geocoding involves assigning a position on the street network to the order. Open the Geocoding Preferences and change the settings so that there are no fallback options.

1. Click File and click Geocoding Preferences.

   The dialog box displays.

The default geocoding preferences allow addresses to be geocoded using fallback methods—for example, if a street address cannot be found in the street data, the order can be geocoded automatically to the center of the address’ postal code. You need to send your drivers to the exact house to pick up their passengers. If any orders’ addresses cannot be found, you’ll want to find them yourself using your knowledge of the local area.

2. To disallow geocoding to a fallback position, click the arrow on the right of the Geocoding Ranges slider and drag it down to zero (0). Click OK.



Any address that doesn’t get a score of at least 66 will remain ungeocoded. Now you’re ready to import the orders for Tuesday.

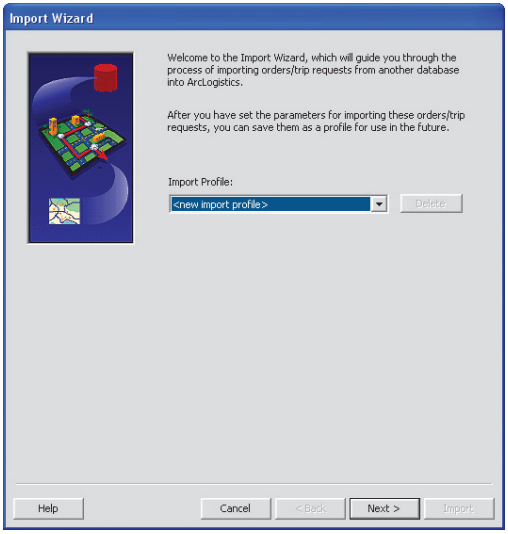
Importing orders

Tuesday orders are in a Microsoft Access database. You'll now import them into the routing folder you just created.

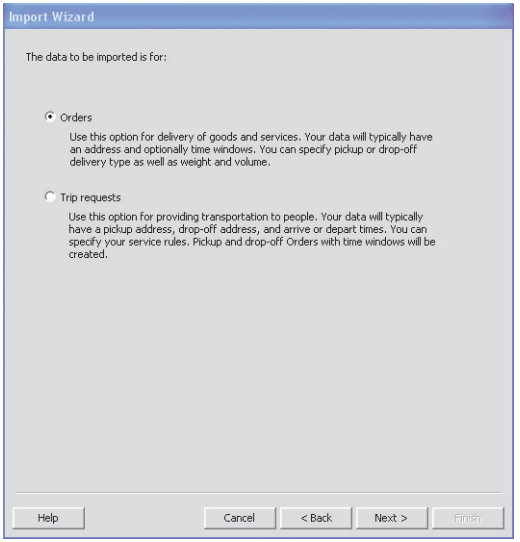
1. Click Import on the Main toolbar.

ArcLogistics displays the Import Wizard.

2. Chose <new import profile> for the Import Profile. Click Next.



3. The passenger data you'll be importing has already been paired and contains ridership rules, so you'll use the default Orders type. Click Next.



4. Click the second option, Routing Folder, and make sure that Tuesday is the name of the selected routing folder. Click Next.
5. Check Use a data file directly. Click next.
6. Click Browse and navigate to C:\Documents and Settings\All Users\Documents\ESRI\ ArcLogistics\Tutorials. Click Ex5_Out_Patients.mdb, then click Open.

   Navigate to OS Disk C:\Users\Public\Public Documents\ESRI\ArcLogistics\Tutorials\ Ex5_Out_Patients.mdb, if using Microsoft Vista.
7. The file path appears on the Order Import Wizard. Click Next.

8. Click the drop-down arrow and click Tuesday Orders from the list of tables in the database. Click Next.
9. Click a field on the left, and while holding down your mouse button, drag it to a field on the right.

This tells ArcLogistics how to read the fields in the Orders table. When importing orders that are paired as pickups and deliveries it is critical that the Order Number and Delivery Type fields are matched correctly. The Order Numbers must match for the pickups and deliveries to be correctly paired. The patient database already contains the X and Y coordiantes of all patients, so you'll use these in addition to the street address. Drag the following fields to their corresponding field, then click Next.

Order Number = Order Number

Customer Number = Customer Number

Name = Name

Delivery Type = Delivery Type

Street = Street Address

City = City

X = X

Y = Y

Time Window 1 Start = From Time

Time Window 1 Finish = To Time

Max Time on Vehicle = Max Time on Vehicle

Service Time = ServiceTime

Volume = Volume

10. Check Add all orders, then click next.
11. Type "Tutorial Ex 5" for the name of the profile. To save this profile, make sure the check box is checked. Click Import. All 96 orders will be imported and geocoded. Click Finish to close the Import Orders Wizard.

Your routing problem is now set up. You have 96 orders representing 48 separate trips. There are 24 trips that pick up patients from their homes and take them to one of three out-patient facilities and another 24 trips where the same patients are picked up at the out-patient facility and taken back home. The patients have a ridership rule of being on a vehicle for 60 minutes or less and they all have specific appointment times for their out-patient visits and for their return pickup. There are five vehicles available for use and each vehicle can take at most six people at any one time.

Building routes

You're now ready to build the routes for Tuesday.

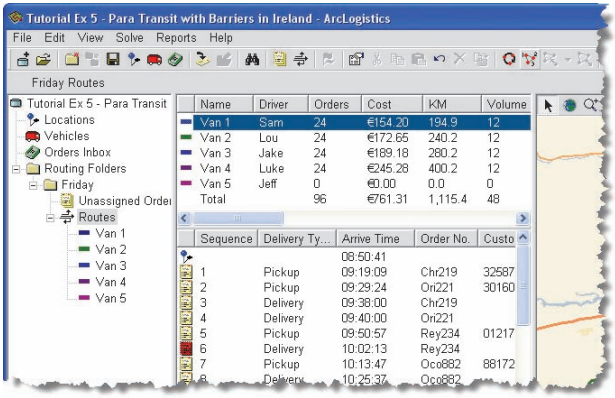
1. Click the Build Routes button to have ArcLogistics automatically generate a routing solution. You'll see 96 of 96 orders routed in the Routing Results window.

Displaying routes

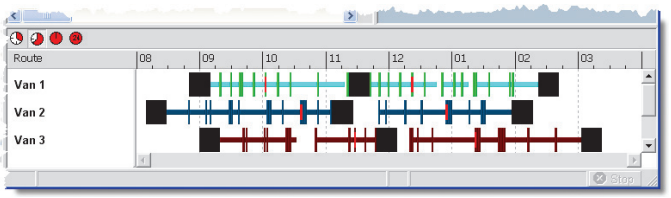
1. Click Routes in the Tree View, in the Tuesday routing folder. This populates the List View with the five routes.

You can examine the statistics for each route and the total statistics for all routes combined. The routes are also shown in the Map View as straight lines, by default.

2. Click on any route in the List View and a second List View will open that displays all the stops that vehicle is scheduled to make along the route.



3. Click the Eight Hour View button on the Time View.

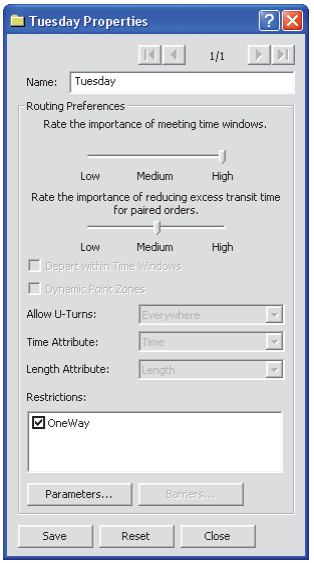


The routes are displayed along a time line. The thin colored blocks represent the time spent at a stop. Black blocks represent start, lunch, and end of route times. The colored lines running between each order represent travel time, and the blank spaces represent time where the vehicle is waiting for the next task. The thin colored blocks containing red in them represent an estimated time window violation.

Rerouting to meet time windows

You're not satisfied with the number of estimated time window violations, so you decide to change the routing folder properties and raise the importance of meeting time windows to high.

1. Right-click the Tuesday routing folder and select Properties.



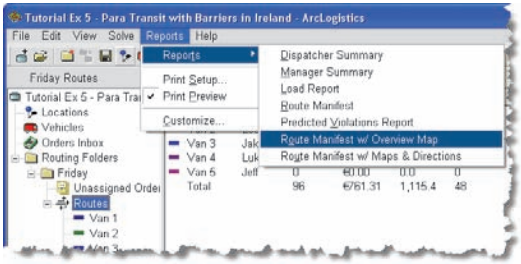
2. Click the top slider bar and move it to High.
3. Click Save then Close.
4. Click Build Routes on the Main toolbar.

ArcLogistics generates routes which will eliminate the estimated time window violations.

Printing a route manifest

Now that you've finished building the routes for Tuesday, you'll generate and print a route manifest with an overview map. You can provide the manifest to your drivers so that they'll have an overview map and details for each order on the route.

1. Click the route for Van 1 in the Tuesday routing folder.
2. Click the Reports menu, point to Reports and click Route Manifest w/Overview Map. ArcLogistics generates and displays the report. This will take a few moments.



3. Click the Print button if you wish to print the manifest. Click the Close button to not print the manifest.

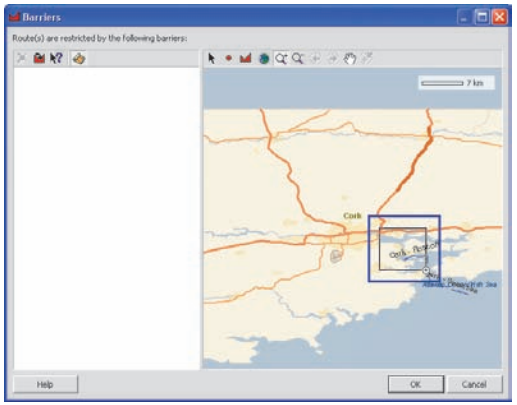
Last-minute change by creating a barrier

Just before the drivers leave for the day you discover that one of the car ferries that links Glenbrook with Carrigaloe on Great Island is out of service with mechanical issues. You want to avoid this area, if possible, so you'll create a polygon barrier to prohibit routes from using the ferry crossing, then you'll make sure that the routes are still realistic.

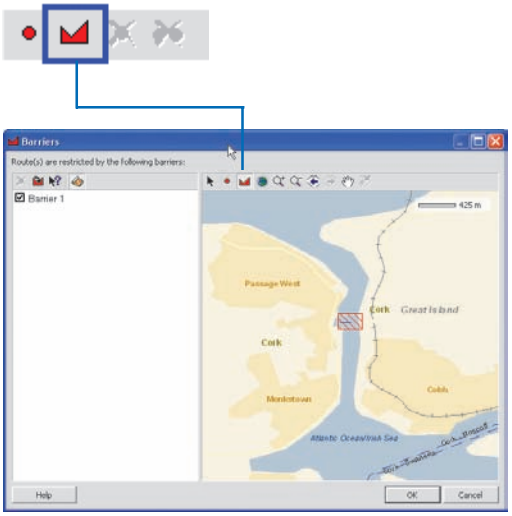
Barriers cannot be assigned to a routing folder if a routing solution is present, so you'll first unassign all of the orders.

1. Click the Select button on the Map View toolbar. Drag a box around all of the orders to select them. Click Unassign Orders on the Main toolbar.
2. Right-click the Tuesday routing folder and select Barriers.

   The Barriers user interface opens.
3. Click Zoom In on the Barriers toolbar and drag a box around the area to the south east of the city of Cork (next to the inland waterway) as shown in the image below.

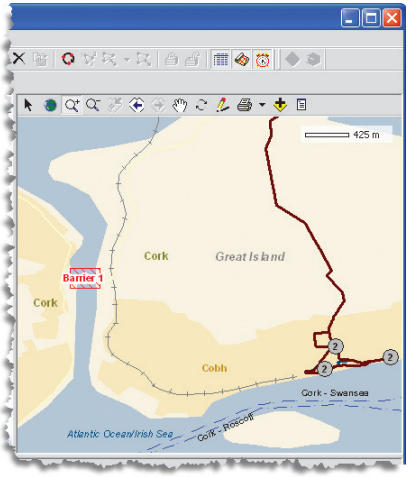


4. Click New Polygon Barrier on the Barriers Toolbar. Click three corners of a polygon on the map covering the ferry crossing as shown in the image, then for the fourth corner, double-click to complete the polygon barrier.



5. Check the barrier name. Click OK.
6. Click Control Map Display on the Map View toolbar. Select the General tab and check Show Barriers and Label barriers. Check Follow Streets. Click OK.
7. Make sure you have the Tuesday routing folder selected, then click Build Routes on the Main toolbar.

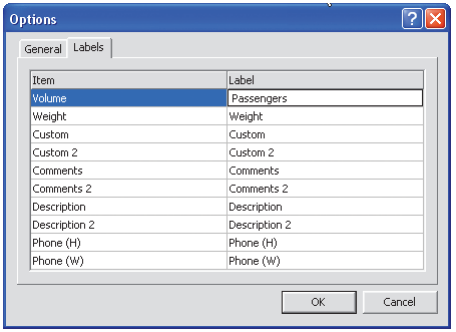
ArcLogistics creates the solution and honors the new barrier by not allowing any routes to use the ferry crossing defined by the polygon area. If you examine the routes, you'll notice that they now use a different travel path to the north of the ferry crossing. If you check the Time View you'll also notice that the routes are still realistic even with this new restriction.



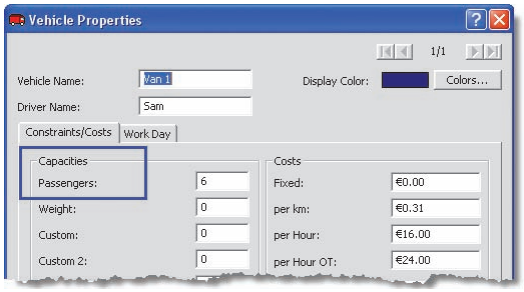
Changing labels

Change one of the labels in an ArcLogistics property dialog box for clarity, to better reflect the terminology used in the para-transit industry.

1. Click the File menu and click Options. Select the Labels tab.
2. Edit Volume=Volume to Volume=Passengers.



4 Click OK.



Notice that Volume has been replaced with Passengers to better reflect the nature of the routing problem that you've solved. Remember to change the label back to the original Volume when you're done.

Exiting ArcLogistics

1. Click File and click Exit.
2. Change your Regional and Language Options back to the original setting, if necessary.

Congratulations! You have now completed the final Tutorial, Exercise 5. This exercise demonstrated how to create routes for para-transit vehicles where passengers are required to be picked up at one address and dropped off at another address by a specific time, using the Paired Orders function. You also placed a polygon barrier in the Map View and changed a label to better reflect terminology in the para-transit industry.

ArcLogistics basics

3

IN THIS CHAPTER

- Starting ArcLogistics
- The ArcLogistics window
- What's in the Tree View
- Looking at your information in different views
- The List View
- The Map View
- The Time View
- Property dialog boxes
- The Geocode Address dialog box
- Global defaults and options
- Getting online help
- Saving your work and exiting ArcLogistics

In the previous chapter, you worked through several routing scenarios. You learned that the items you work with in ArcLogistics are locations, vehicles, orders, routing folders, and routes. This chapter provides more detail about how you work with these items and how they are presented in the ArcLogistics views and property dialog boxes.

Starting ArcLogistics

When you first start ArcLogistics, the Startup screen asks you if you want to start a new project, a new project from a previous version, or an existing project.

Tip

Open last project on startup

If you want ArcLogistics to always open to the last routing project, check Always open last project on startup.

Starting ArcLogistics

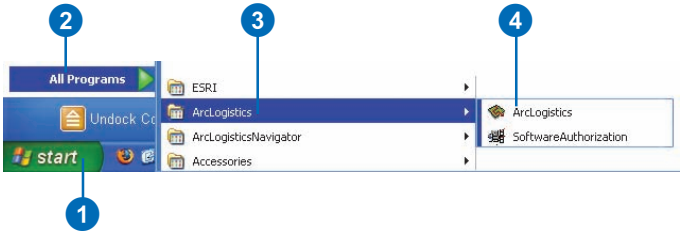
1. Click the Start button on the Windows taskbar.
2. Point to All Programs.
3. Point to ArcLogistics.
4. Click ArcLogistics.

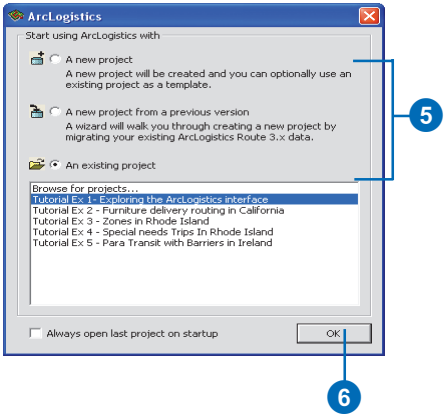
   The ArcLogistics Startup screen displays.
5. Click the option you want.
6. Click OK.

   If you chose to set up A new project, the New Project dialog box opens.

   If you chose to open A new project from a previous version, the ArcLogistics Project Migration Wizard opens.

   If you chose to open An existing project, select the project and click OK.

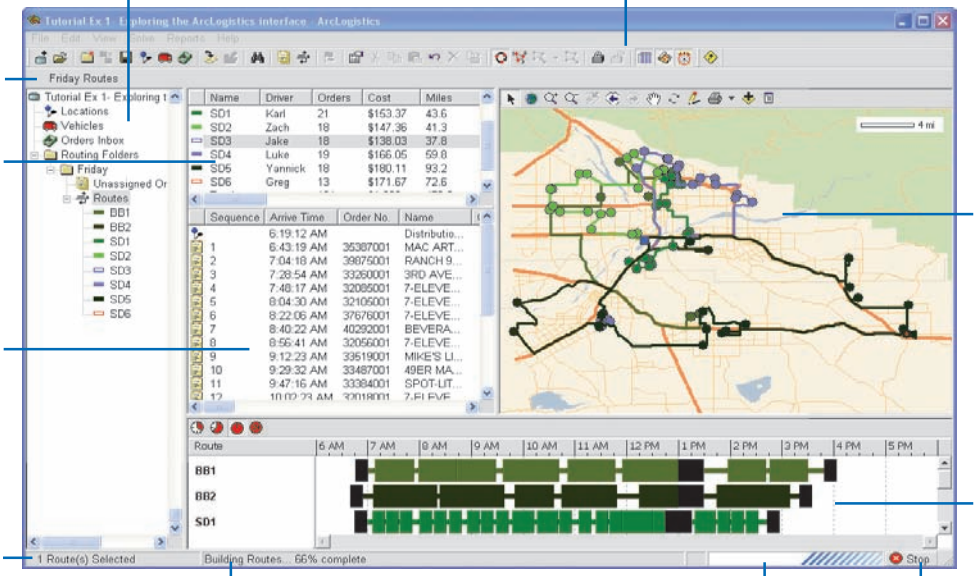




The ArcLogistics window

The ArcLogistics main window is divided into a series of sub views. They can be sized independently to suit your working style.

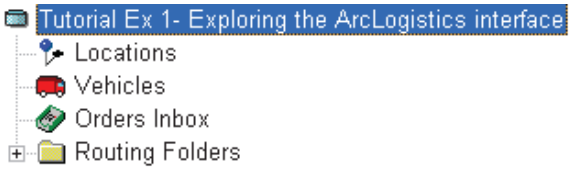
The Tree View, List View, Map View, and Time View are linked, so any selections or changes you make on one are reflected in the other views automatically.



What's in the Tree View

ArcLogistics organizes your routing problems within the context of a routing project. In your routing project there are four top level items in the tree view (on the left):

Locations, Vehicles, Orders Inbox, and Routing Folders.



The Locations item contains the properties of the locations (e.g., depot, warehouse, and so on) in your routing project.

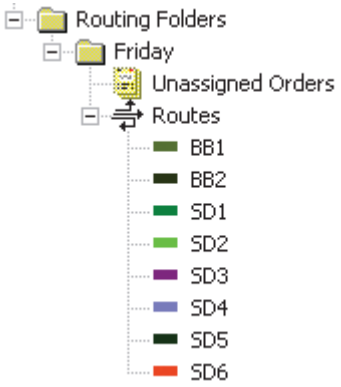
The Vehicles item contains properties of all the vehicles in your routing project.

The Orders Inbox is where you can temporarily store orders you need to service but are not yet sure when you want to service them.

The Routing Folders item is where routing problems are actually solved. A routing problem is set up by creating a new routing folder and specifying vehicles and orders to use, at which point, you will be ready to build routes.

A routing folder can represent a day of the week, a date, a territory, a period of time, an order type, or any other method you use to organize orders for routing. You can name them whatever you wish, or they can be named automatically from fields in your order database.

Each routing folder that is added automatically contains two subfolders: an Unassigned Orders folder and a Routes folder. The Unassigned Orders folder contains the orders to be routed. The Routes folder contains a set of routes based on the vehicles you have available for the routing problem. Routes in the routing folder can have orders assigned to them.



In addition to the Tree View, there are three other views that you work with: the List View, the Map View, and the Time View. You work with these views to display and manipulate the information in the active folder in the Tree view.

Looking at your information in different views

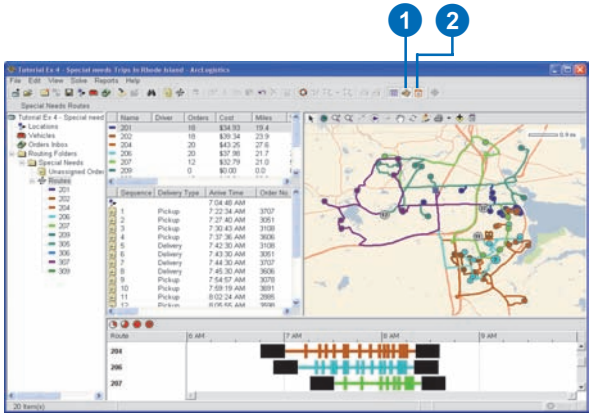
ArcLogistics provides three different ways to view your information: List View, Map View, and Time View. The information shown in these views is always associated with the currently active folder in the Tree View.

Tip

Toggle View buttons

When you click one of the three View buttons on the Main toolbar the view will be toggled on/off.

Switching to the List View



1. Click Map View on the Main toolbar.

   This will turn off the Map View.

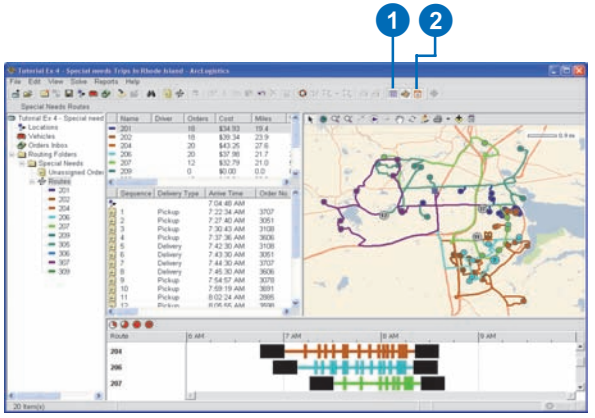
2. Click Time View on the Main toolbar.

   This will turn off the Time View.

   Only the List View will now be visible.

   Note: This process assumes you are starting with all three views visible.

Switching to the Map View



1. Click List View on the Main toolbar.

   This will turn off the List View.

2. Click Time View on the Main toolbar.

   This will turn off the Time View.

   Only the Map View will now be visible.

   Note: This process assumes you are starting will all three views visible.

Tip

What is a splitter bar?

A splitter bar is a vertical or horizintal bar which separates two windows. This bar can be dragged back and forth using the mouse to resize the two windows it separates.

Switching to the Time View

1. Click Map View on the Main toolbar.

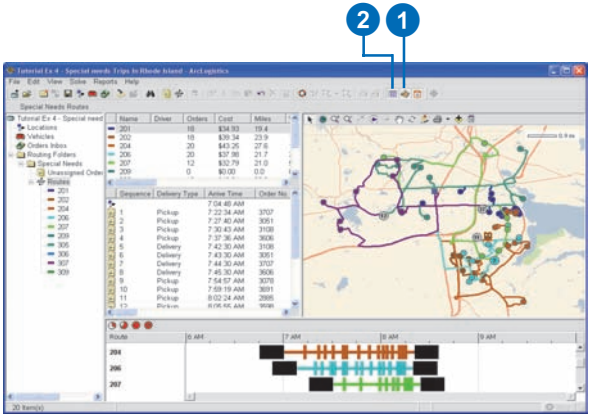
   This will turn off the Map View.

2. Click List View on the Main toolbar.

   This will turn off the List View.

   Only the Time View will now be visible.

   Note: This process assumes you are starting will all three views visible.

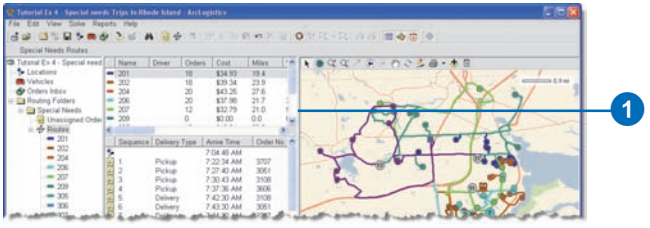


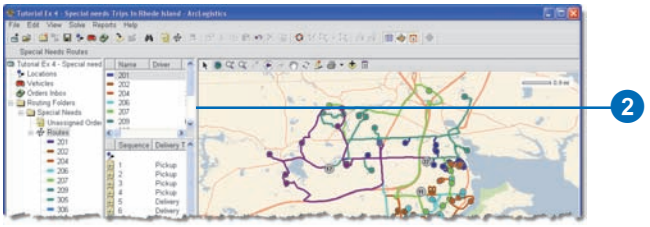
Using Splitter bars to resize the Views

1. Move your mouse over one of the View splitter bars.

   The cursor will change into two directional arrows illustrating the two directions that the View can be resized.

2. Click the mouse and drag the splitter bar to the desired position.





Changing the view layout

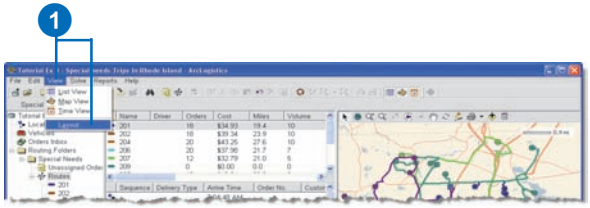
1. Click View on the Main menu then click Layout.

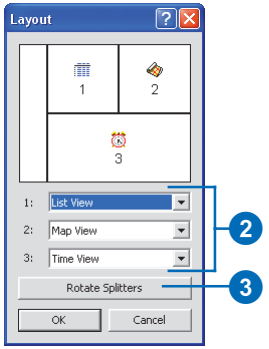
   The Layout dialog box opens.

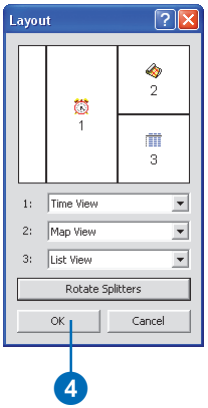
2. Click the view name on any of the three drop-down arrows to change the view in that position.

3. Click Rotate Splitters to move all views one position.

4. Click OK.







The List View

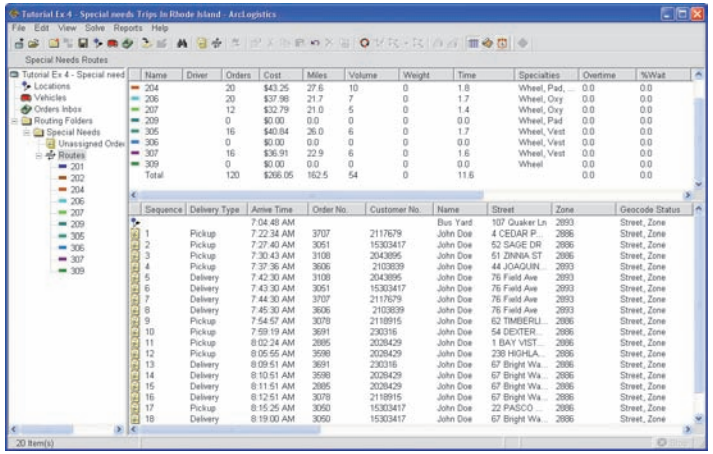
The List View lists all of the items contained in the active item in the Tree View.

For example, if the Vehicles item is active in the Tree View, then the List View lists all the vehicles that have been set up in the routing project.

Similarily, when a route is active in the Tree View, the List View shows the route's schedule, including start and end locations, sequence, orders, and lunch on the route.

A second List View will open if you click an item in the List View. This second List View will only open if an item in the List View is selected.

For example, if a Routes item is active in the Tree View, the List View lists all the routes that have been set up in the routing folder. If you then select a route in the List View, the Detailed List View will open and display the route's schedule.



Contents in the List View are always associated with an icon.

List View Icons

- Location
- Vehicle
- Orders Inbox
- Routing folder
- Order
- Ungeocoded order
- Routes folder
- Route (same color as vehicle)
- Locked route (same color as the vehicle)
- Locked order
- Order with violated time window
- Locked order with violated time window
- Location with violated time window
- Lunch

Using the List View

You can use the List View to see your data in tabular format. You can sort, resize, remove, and reorder the columns as well as select one or more items listed in the view.

Tip

Resetting the List View to the default sort order

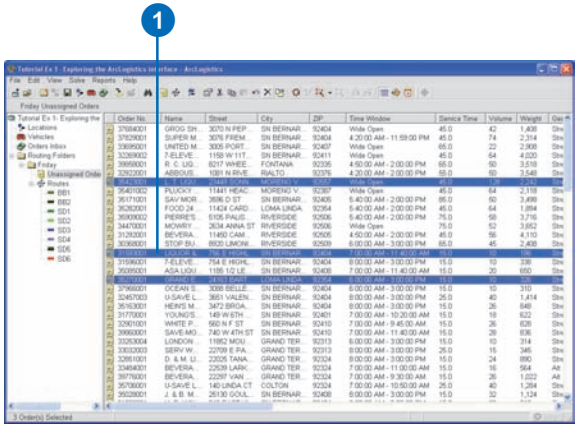
To return to the default sort order, click the heading of the column that contains the icons.

Selecting items in the List View

1. Click the row that you want to select.

   If you are using paired orders (see Chapter 11), both the pickup and delivery will be selected.

2. Press and hold the Ctrl key while clicking additional rows.

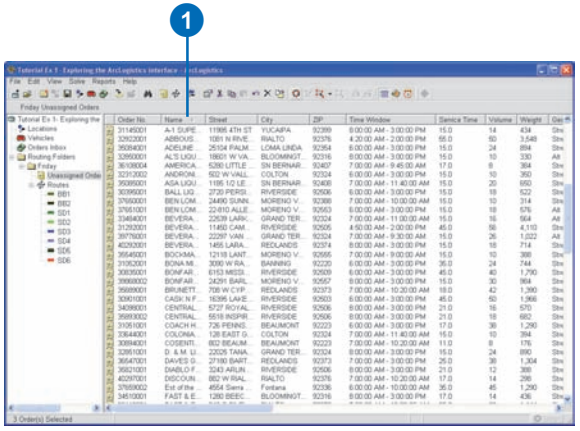


Sorting information in the List View

1. Click the heading of the column whose values you want to use to sort the rows.

   The column sorts in ascending order.

2. Click the column again to sort in descending order.



Changing a column's width

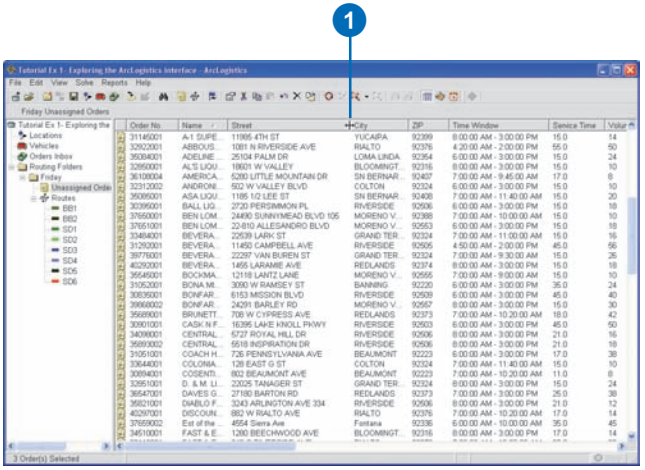
1. Position the pointer over the edge of the column you want to resize.

   The cursor will change into a small vertical line with two horizontal arrows showing which way the column's width can be changed.

2. Drag the column's edge to the desired width.

3. Release the edge of the column.

   The column is resized.

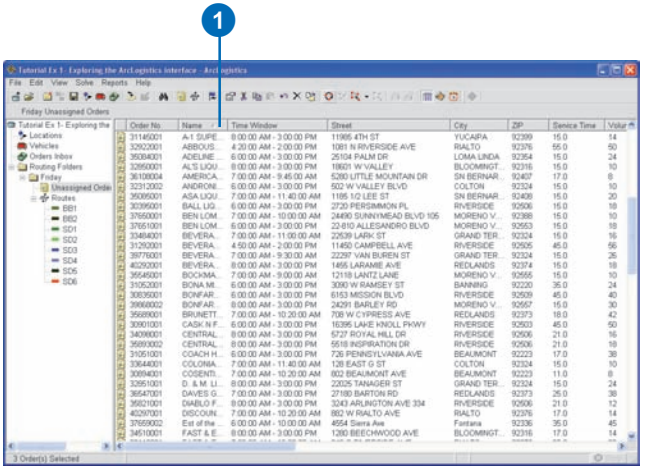


Rearranging the List View's columns

1. Click and drag the heading of the column you want to move.

2. Drop the column between the two columns where you want it to be moved.

   The column appears in the new position.



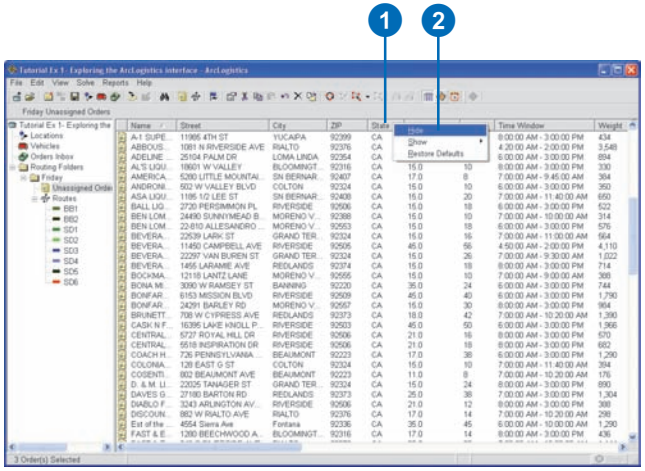
Tip

Adding a List View column

You can only add a List View column if it has previously been removed.

Hiding a List View column

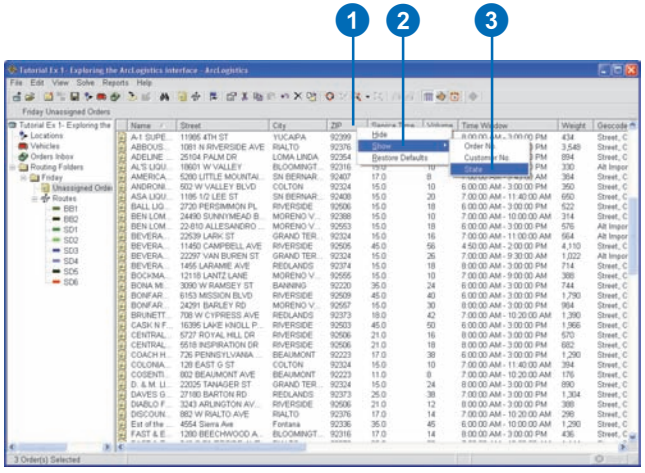
1. Right-click the heading of the column you want to hide from the List View.
2. Click Hide.



Showing a List View column

1. Right-click the heading of the column where you want to add a previously hidden column.
2. Point to Show.
3. Click the name of the column you want to show.

   The column will be added immediately to the left of the column where you right-clicked.

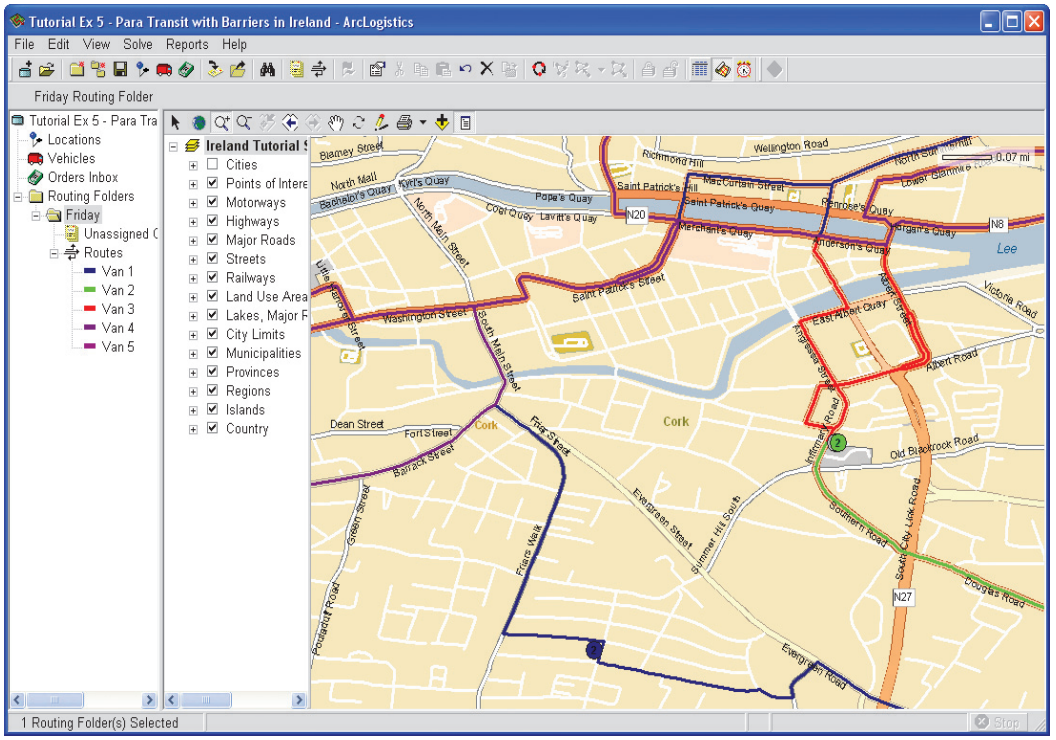


The Map View

The Map View displays a street map for the routing project. If you are using the street data that comes with ArcLogistics you will notice more detail on the map as you zoom in. You can also add additional layers to the map and alter the symbology of the map layers.

In addition to the street map, the Map View also displays what items are currently in the active folder in the Tree View. The only exception is if a subfolder of a routing folder is active in the routing project, the entire contents of the routing folder is displayed.

For more details on the Map View, see Chapter 6, ‘Working with the Map View’.



Detailed street data and routing folder contents displayed in the Map View

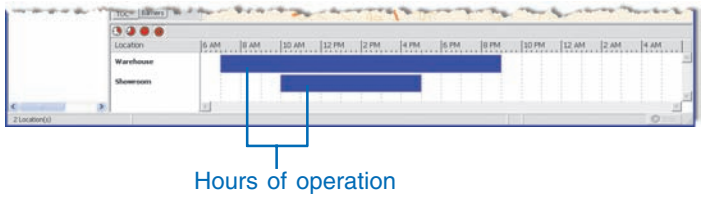
The Time View

The Time View shows the contents that are in the active item of the Tree View along a time line.

For each item in the Tree View, the following information is displayed:

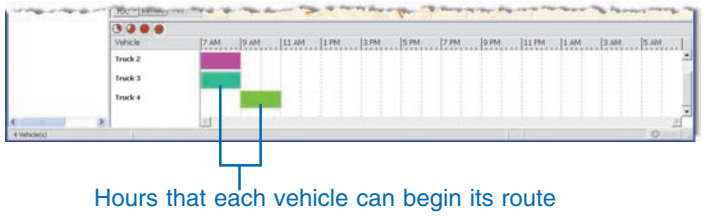
Locations

When Locations is the active item in the Tree View, the hours of operation of each location in the routing project are shown.



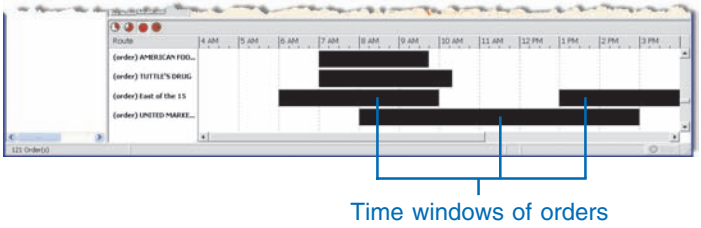
Vehicles

When Vehicles is the active item in the Tree View, the Time View shows the start range of each vehicle in the routing project.



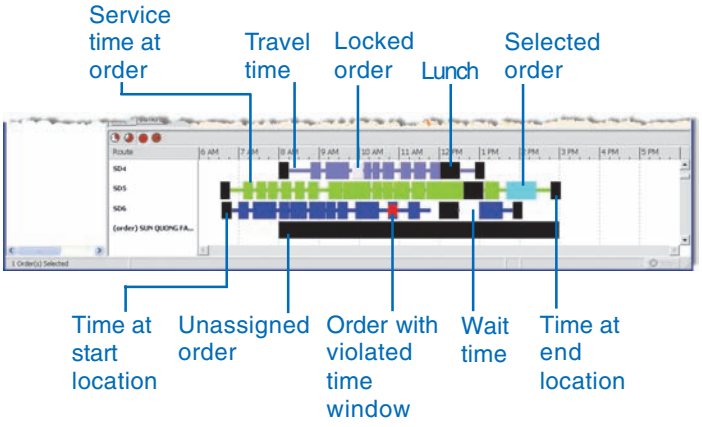
Orders Inbox

When the Orders Inbox is the active item in the Tree View, the Time View shows the requested time window for each order in the Orders Inbox.



Routing folder

When a routing folder, or any subitem of a routing folder, is active, the Time View displays each route's schedule and any unassigned orders in the routing folder.

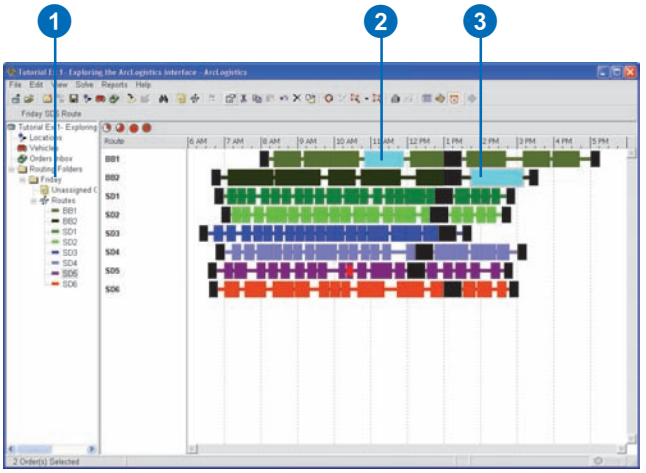


Using the Time View

The Time View lets you see your information along a time line. You can use the Time View's Hour View buttons to change how many hours are visible on the Time View at a time.

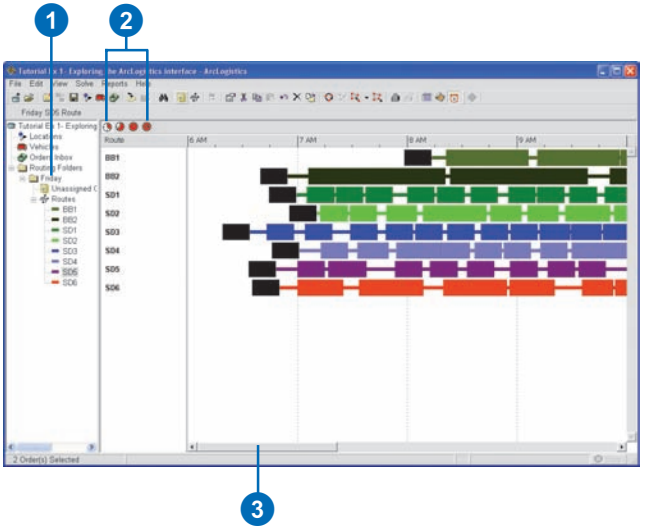
Selecting an item

1. Click the folder in the Tree View that contains the item you want to select.
2. Click the item you want to select.
3. To select additional items, hold down the Shift or Ctrl key while clicking items.



Changing how many hours the time line displays

1. Click the folder in the Tree View that contains the items you want to look at.
2. Click the 4, 8, 12, or 24 Hour View buttons.
3. If you want, use the horizontal scrollbar to show the hours of interest.



Property dialog boxes

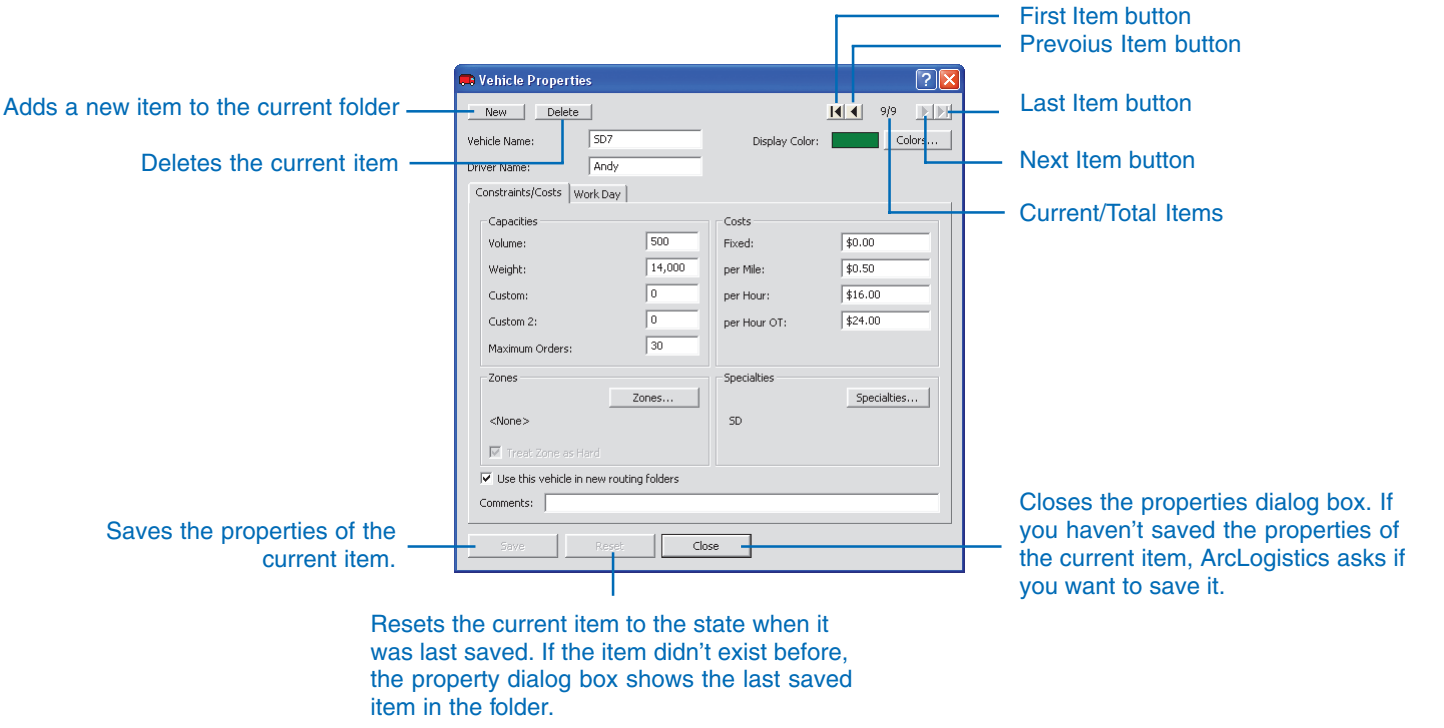
The following items in ArcLogistics have properties that can be controlled through their own properties dialog boxes:

- Routing projects
- Locations
- Vehicles
- Orders
- Routing folders
- Routes

To set or review the properties of an item, you use the item's properties dialog box. With the exception of the routing project properties dialog box, all property dialog boxes let you set the properties of one or more items.

If you want to review the properties of existing items, select the items you want to review, then click Properties on the Main toolbar. If you want to add, edit, or delete items, click Add/Edit on the Main toolbar.

All property dialog boxes have the same control buttons on them. These are described below using the Vehicles Properties dialog box as an example.



Using Property dialog boxes

Access the properties dialog box to review, edit, add, or delete items of the current set.

If you want to be able to add or delete items to the current group, use the appropriate Add/Edit button on the Main toolbar. For example, click Add/Edit Inbox Orders on the Main toolbar to open the properties dialog box for all orders in the Orders Inbox.

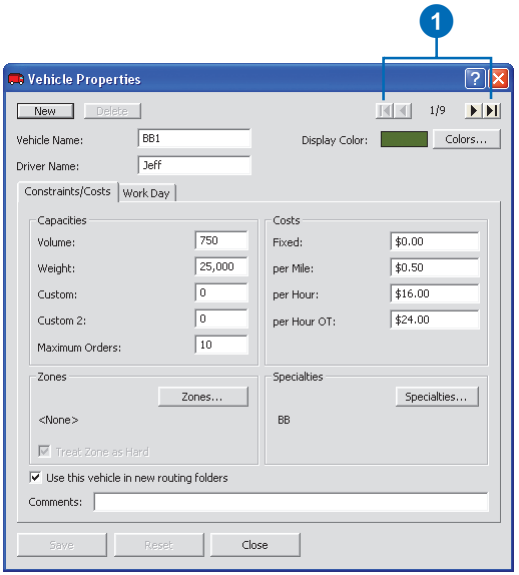
Alternatively, select the items you're interested in and then click Properties on the Main toolbar. The properties dialog box opens for the current selection. You cannot add or delete items if you open the dialog box using the Properties button.

See Also

For more information about working with service area, location, vehicle, routing folder, order, and route properties, see the appropriate 'Working with' chapter.

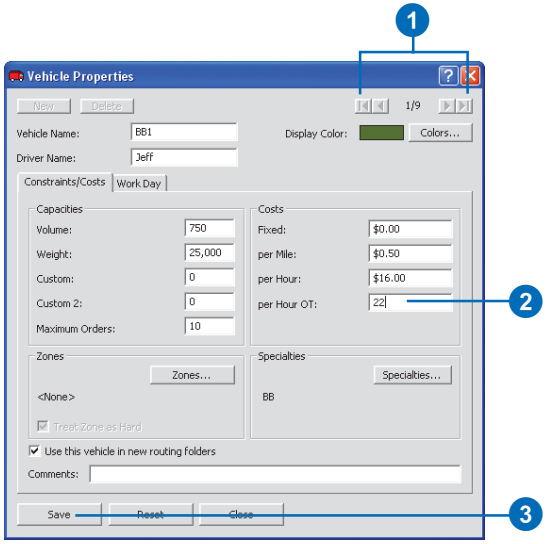
Moving to the item of interest

1. Click the arrow buttons to move to the item of interest.



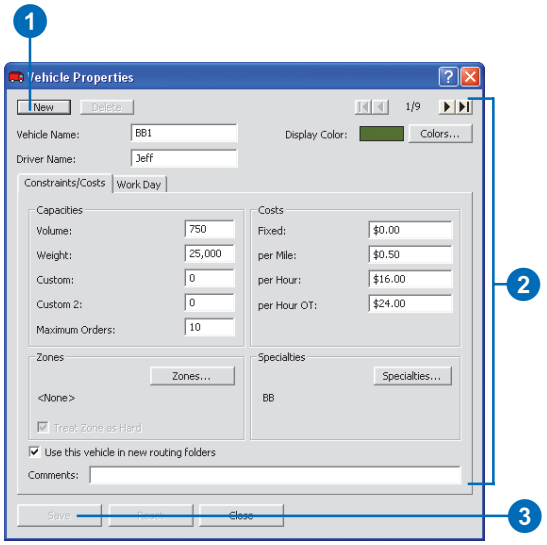
Making changes to an item's properties

1. Click the arrow buttons to move to the item of interest.
2. Make changes to any property that is editable.
3. Click Save.



Adding a new item

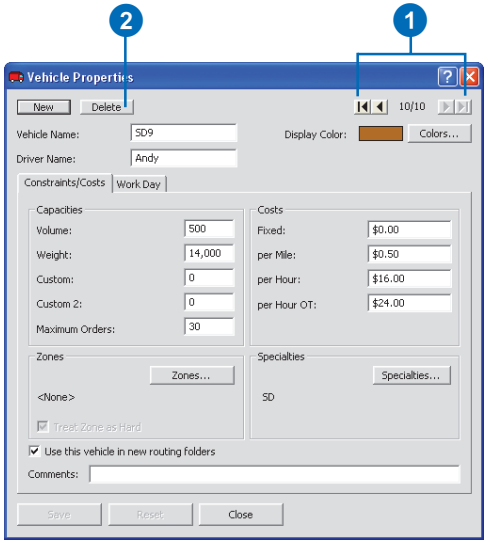
1. Click New.
2. Enter the properties of the new item.
3. Click Save.



Deleting an item

1. Click the arrows to move to the item you want to delete.
2. Click delete.

   If Delete is disabled, it means the item is in use and cannot be deleted. To delete the item, you must first remove all cases where it is being used.



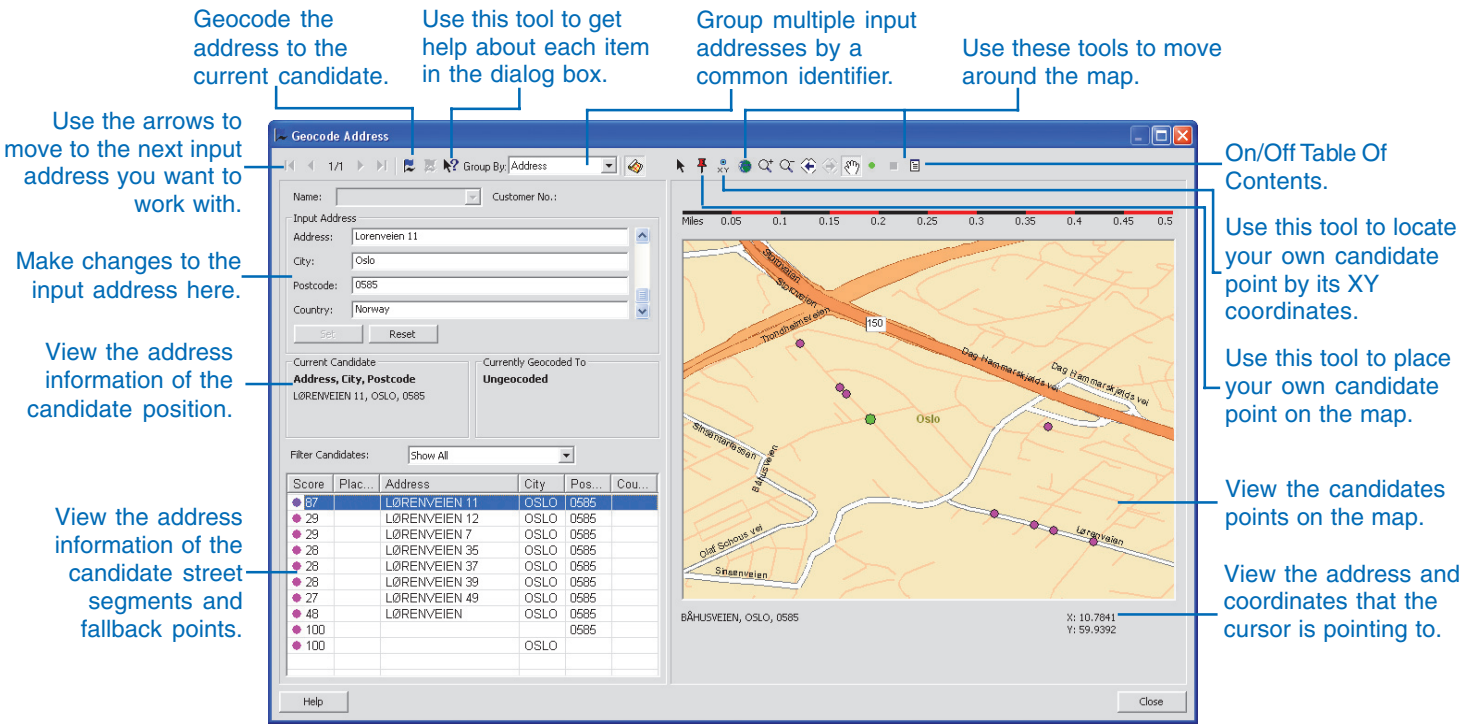
The Geocode Address dialog box

When ArcLogistics can't automatically geocode an address, use the Geocode Address dialog box to interactively geocode the location or order's address. The Geocode Address dialog box provides information that you can use to geocode the address to the most accurate position possible.

A key time-saving feature is the Group By drop-down list. When geocoding multiple orders, you can group all orders, or those that have the same customer number or address. By grouping orders, all orders in the group are geocoded to the same point.

The Geocode Address dialog box lists the best candidates that ArcLogistics can find in the street dataset. At the bottom of the list, the fallback positions are listed. The color of the point reflects the type of fallback option—for example, light blue represents cross-street fallback; pink represents postal code fallback, and so on.

Use the shortcut keys and the context menus to make the process even faster.



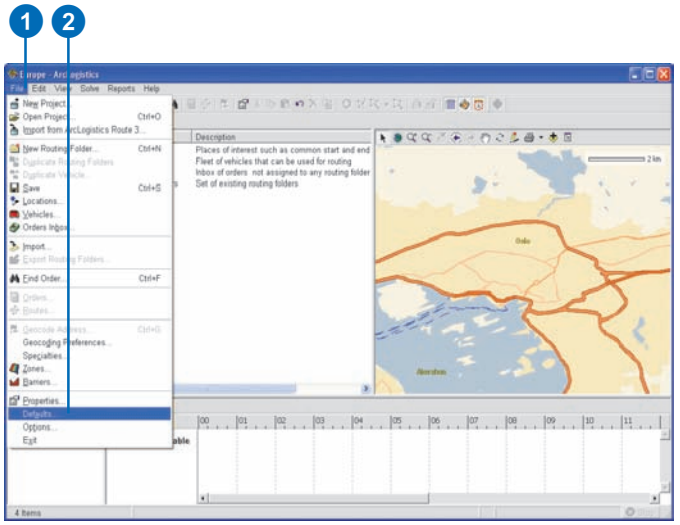
Global defaults and options

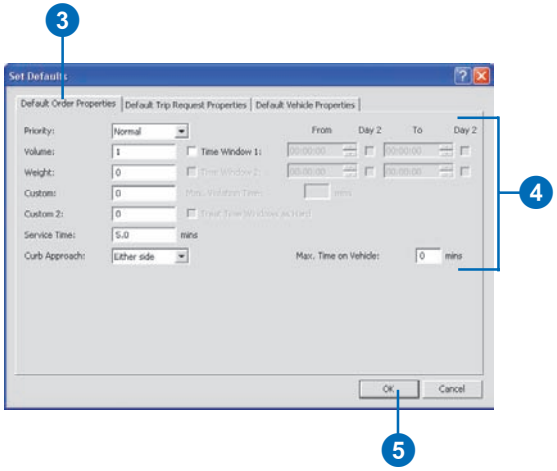
You can set global default values for orders, trip requests, and vehicles that are applied to all routing projects. You can also set global options for changing some user interface labels, how some orders are handled, and how ArcLogistics opens.

Setting default order properties

1. Click File on the Main menu.
2. Click Defaults.

   The Set Defaults dialog box displays.
3. Click the Default Order Properties tab.
4. Edit default values.
5. Click OK.

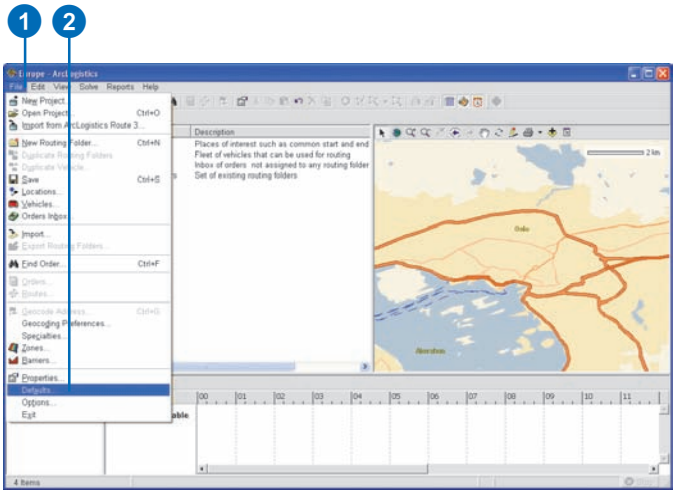


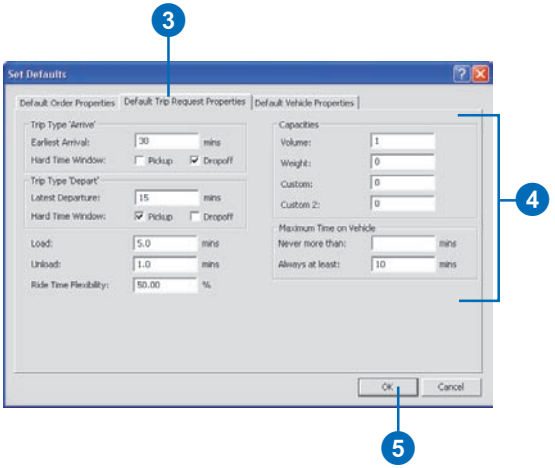


Setting default trip request properties

1. Click File on the Main menu.
2. Click Defaults.

   The Set Defaults dialog box displays.
3. Click the Default Trip Request Properties tab.
4. Edit default values.
5. Click OK.

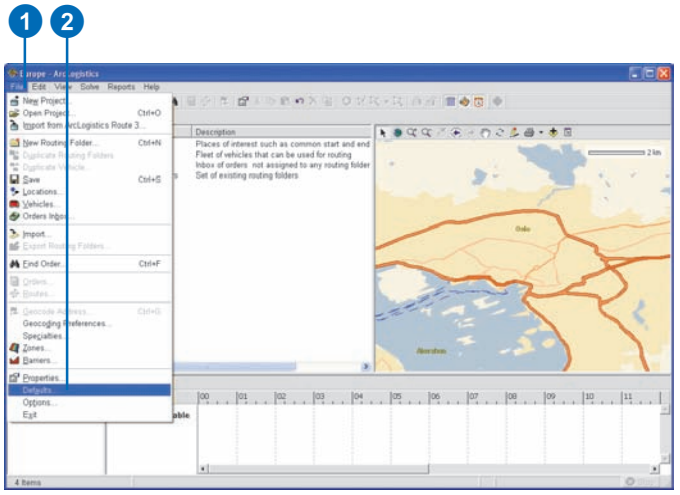


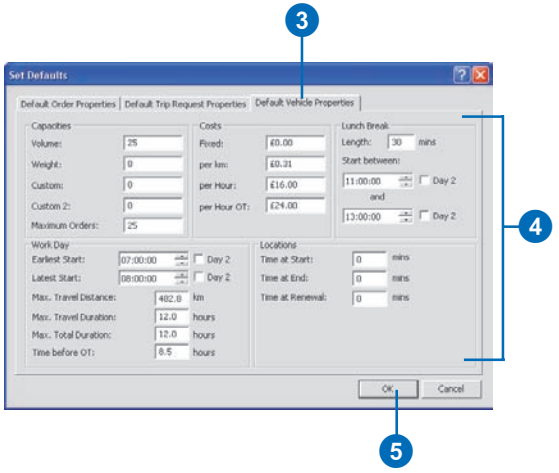


Setting default vehicle properties

1. Click File on the Main menu.
2. Click Defaults.

   The Set Defaults dialog box displays.
3. Click the Default Vehicle Properties tab.
4. Edit default values.
5. Click OK.





Tip

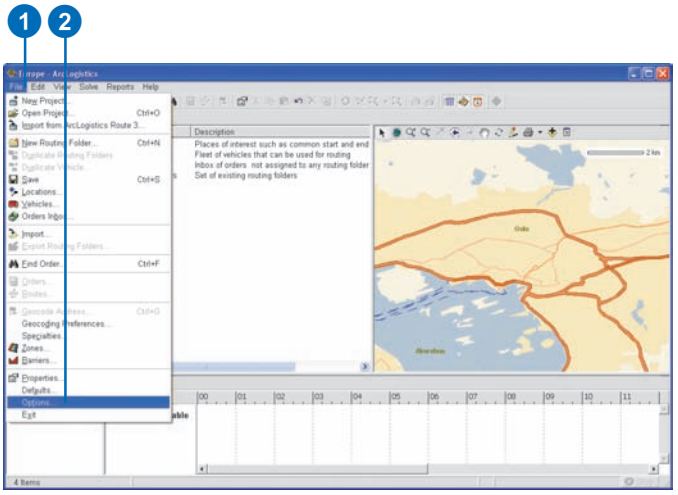
Default routing options

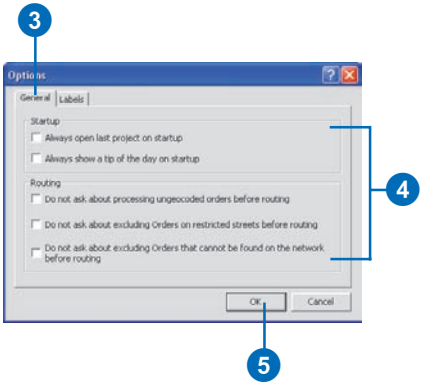
ArcLogistics will always ask about ungeocoded orders, orders on restricted street segments, and orders that are not on the street network before routing, unless you specify otherwise.

Setting General options

1. Click File on the Main menu.
2. Click Options.

   The Options dialog box displays.
3. Click the General tab.
4. Check the options you want.
5. Click OK.





Tip

Changing labels

It is often useful to change some of the user interface labels to better reflect specific industries or organizations, e.g. volume may be more meaningful as patients, or custom may be more meaningful as pallets.

Tip

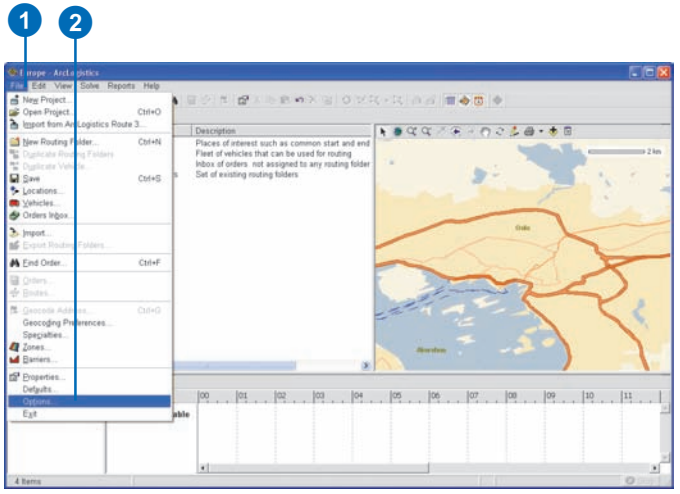
Change your reports

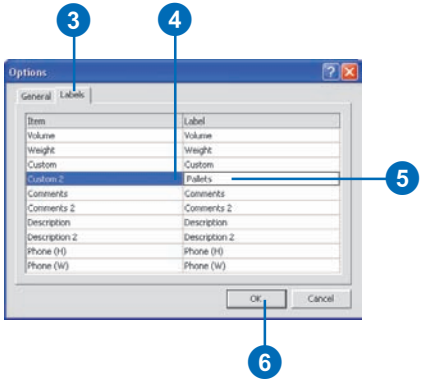
If you do change labels you will need to edit your reports as well to reflect the change.

Setting Labels options

1. Click File on the Main menu.
2. Click Options.

   The Options dialog box displays.
3. Click the Labels tab.
4. Click the label twice that you want to edit.
5. Edit the label name.
6. Click OK.





Getting online help

A quick way to get specific questions answered about ArcLogistics is to use the online Help.

You can access Help many ways while using ArcLogistics.

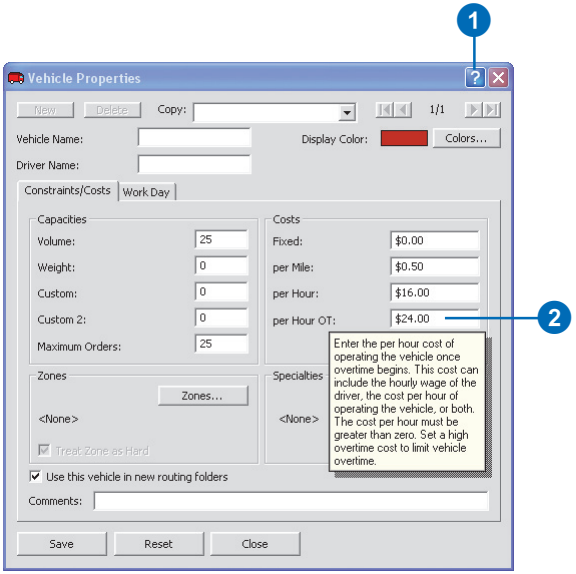
Tip

Getting help when using a wizard

Each wizard panel has a help button. Click the help button to get more information about that specific panel.

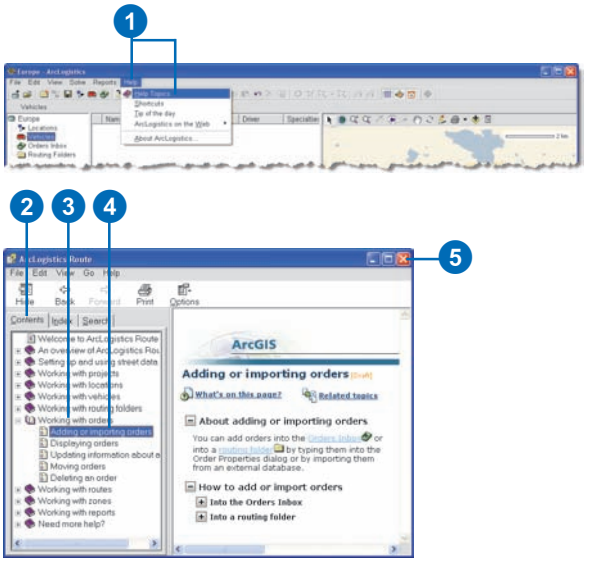
Getting help in a dialog box

1. Click the What's This button.
2. With the Help pointer, click the item in the dialog box about which you want more information.
3. Click anywhere on the screen to close the help description box.



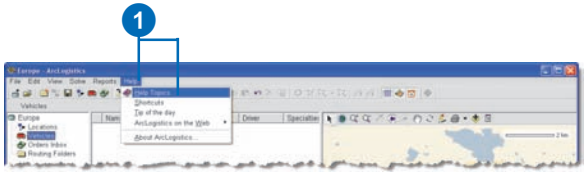
Using the Contents tab to get help

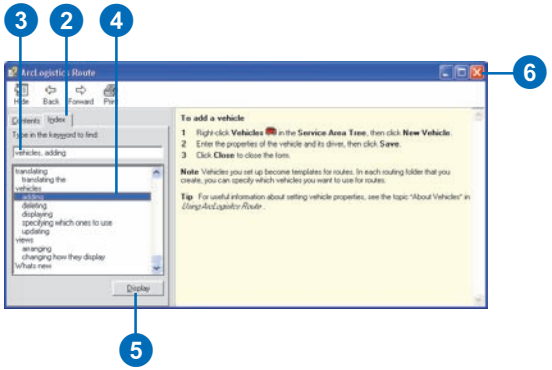
1. Click the Help menu and then click Help Topics.
2. Click the Contents tab.
3. Double-click a book to see a list of topics in that category.
4. Click the topic you want to read.
5. Click Close when finished.



Searching the Index for help

1. Click the Help menu and then click Help Topics.
2. Click the Index tab.
3. Type the subject about which you want information.
4. Click the topic you want to read.
5. Click Display.
6. Click Close when finished.





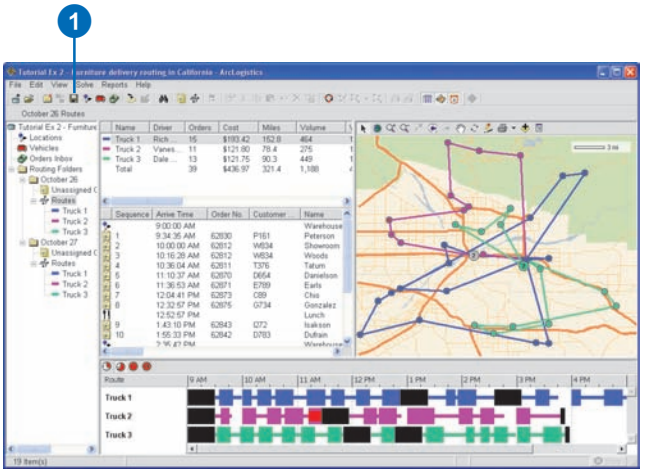
Saving your work and exiting ArcLogistics

ArcLogistics stores all of your information in a single file for each routing project. Click the Save button periodically while working. You don't have to specify a filename.

ArcLogistics keeps track of all your work for you. You always have the option to exit ArcLogistics without saving any changes if you wish to revert to a previously saved version of your work.

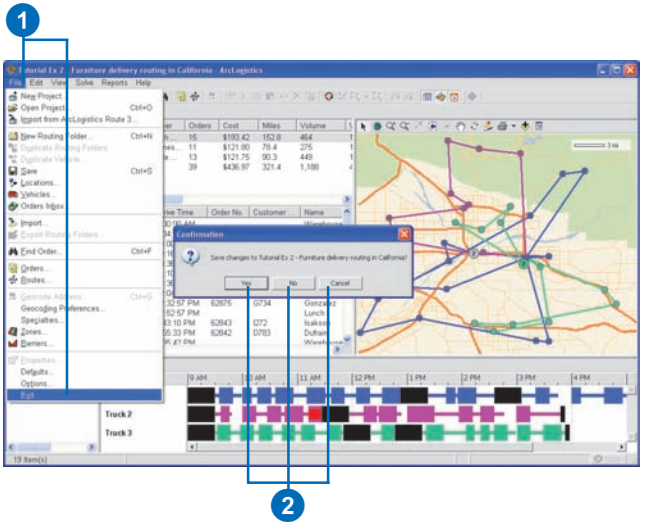
Saving your work

1. Click Save on the Main toolbar.



Exiting ArcLogistics

1. Click the File menu and click Exit.
2. Click Yes to save any changes, No to discard any changes, or Cancel to continue working.



Installing ESRI street datasets

4

IN THIS CHAPTER

- **Installing SDC street data**
- **Updating SDC street data**

Before you can start to use ArcLogistics you will need to install a street dataset that contains routing and geocoding attributes. This will be used for calculating routes, geocoding addresses, and for map display.

The street data that you can purchase with ArcLogistics is in a compressed format known as Smart Data Compression (SDC). This compressed data contains all of the streets for the entire United States and Canada on two DVDs, or all of the streets for Europe on another two DVDs. The data contains all of the information needed to use ArcLogistics for both routing and geocoding, so it is ready to use.

The SDC street data supplied with ArcLogistics cannot be edited and is licensed to ArcLogistics, meaning that other applications cannot use it. Managing speeds associated with SDC street data is done using parameters in either individual routing folders or routing project properties.

You can use your own street data provided it has been formatted correctly and contains a Network Dataset (NDS), plus an address locator that will specify rules for geocoding, and an ArcMap map document (.mxd) file. Street data formats include shapefile, geodatabse, and SDC. Using your own street data has some advantages for organizations that create and or maintain their own street data.

Installing SDC street data

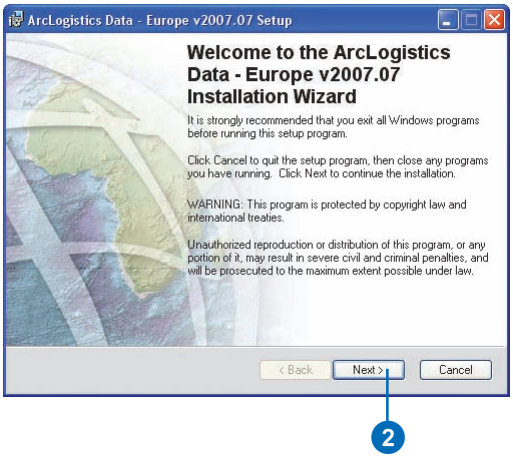
1. Insert the first street data DVD into your DVD drive.

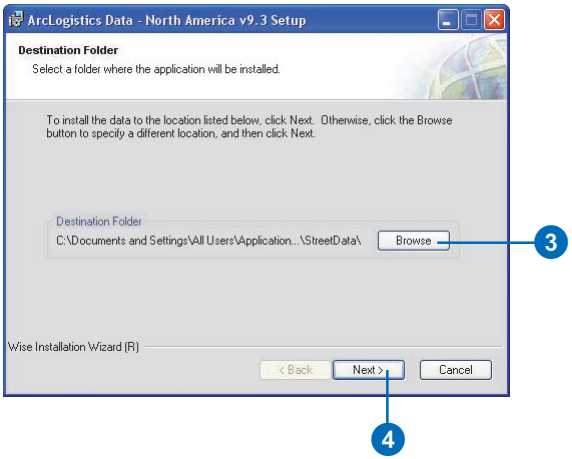
   The Welcome screen displays. This screen will be titled for Europe or North America, depending on which street data DVDs you have.

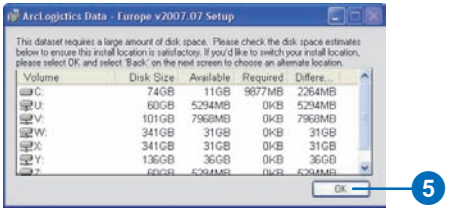
2. Click Next.
3. Browse to a directory to install the street data into or use the dafault location.
4. Click Next.

   ArcLogistics checks to make sure there is enough disk space.

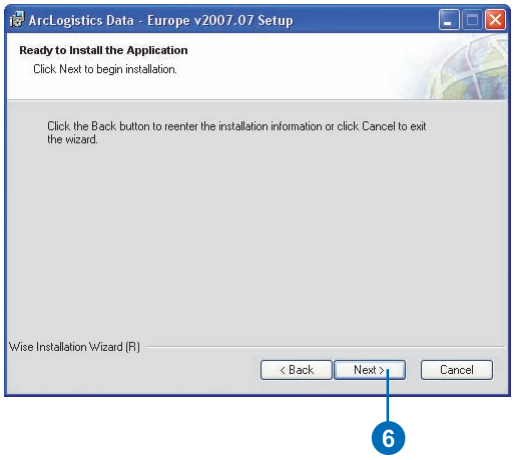
5. Click OK. ►

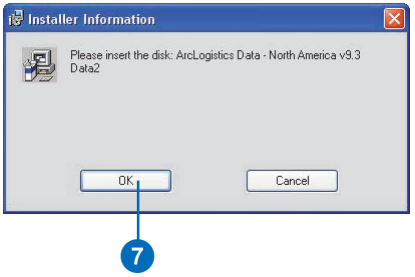


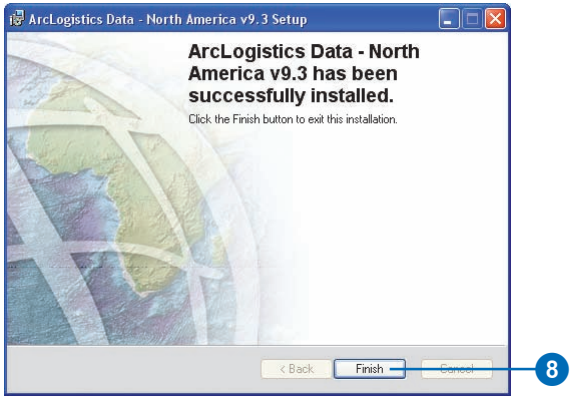




6. Click Next. This starts the street data installation.
7. Remove the DVD disk when prompted and insert the second DVD disk. Click OK.
8. Click Finish.







Updating SDC street dataset

If you are using SDC street data supplied by ESRI, you may want to update the street network. You can either install the new street data to a new location or overwrite the exisitng street data files.

Tip

Routing folders may change color

If you overwrite existing SDC street data with new SDC street data, existing routing folders will change color to grey. This indicates the street data has changed and if resolved may give a different result.

Tip

Installing new street data to a different location

If you don't want to update your existing street dataset, you can install new street data to a new location.

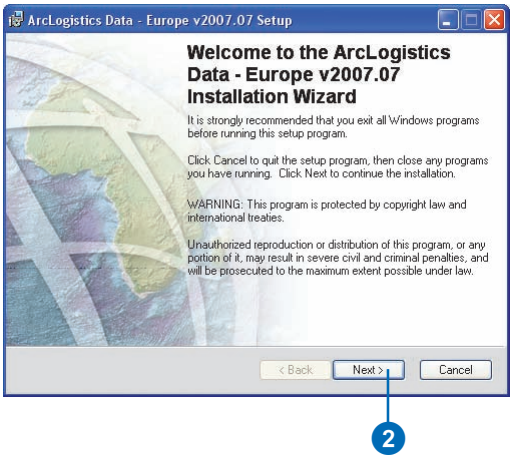
1. Insert the first street data DVD into your DVD drive.

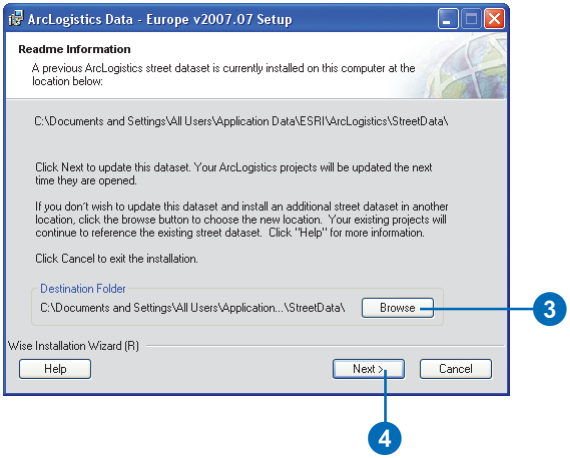
   The Welcome screen displays. This screen will be titled for Europe or North America, depending on which street data DVDs you have.

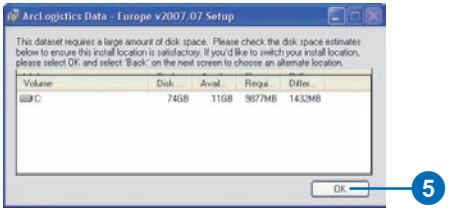
2. Click Next.
3. ArcLogistics will detect if there is already an SDC street dataset and offer a choice to either update the existing street dataset or browse to a new directory location.
4. Click Next.

   ArcLogistics checks to make sure there is enough disk space.

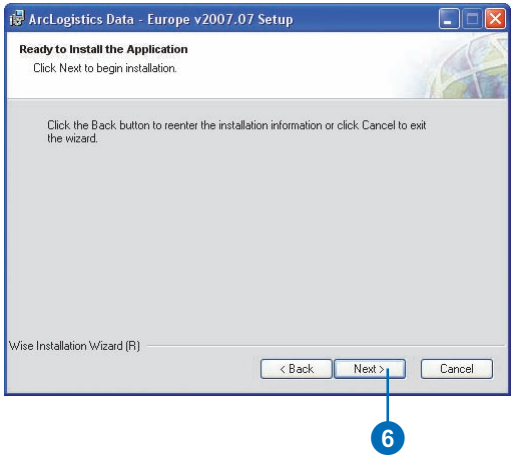
5. Click OK. ▸

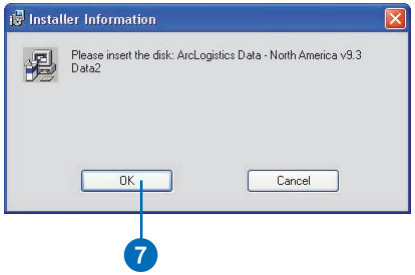


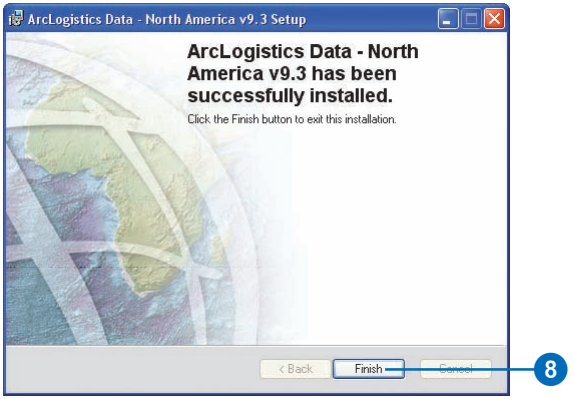




6. Click Next. This starts the street data installation.
7. Remove the DVD disk when prompted and insert the second DVD disk. Click OK.
8. Click Finish.







Working with routing projects

5

IN THIS CHAPTER

- **Creating a new routing project**
- **Migrating a routing project from a previous version of ArcLogistics**
- **Opening a routing project**
- **About routing project default property settings**
- **Updating default property information about a routing project**
- **Setting up a list of specialty codes**
- **Managing routing projects**
- **Geocoding preferences you can set**
- **Setting geocoding preferences**
- **Adjusting street dataset drive times**

After setting up a street dataset your next step will be to create a routing project. A routing project is a storage space for all the information related to your routing operations. Routing projects are where your locations, vehicles, routing folders, orders and routes are entered and stored, and also the place to define the appearance of the map and the rules used for geocoding.

Routing projects point to and operate upon a street dataset that you have already set up. You can have as many routing projects as you want using the same street dataset. You may want to have one routing project for one area and another routing project for another area, or one routing project for one type of routing operation and another for a different type of routing operation (e.g., Los Angeles & Miami, Scotland & Norway, delivery routes & technician routes, or sales & delivery routes).

Before adding locations and vehicles to a routing project, you may want to consider a few things. What do you want displayed on the routing project map? Do you want to set up a list of specialty codes that can be used to associate orders with specific vehicles and/or drivers? How do you want ArcLogistics to handle addresses that can't be matched to the street dataset? Each of these things can be changed at any time, but they're worth thinking about before you start adding information to a service area.

You can set default values for routing projects that will be used every time you set up a new routing folder within the routing project, and default values for orders, vehicles and trip requests within the routing project.

Creating a new routing project

Once you have your street data set up you are ready to create a routing project.

A new routing project can also be created using an existing routing project as a template. Routing project properties, locations, vehicles, and specialties in the template routng project are automatically copied into the new routing project. You can also choose to copy the orders from the Orders Inbox, and/or the routing project's routing folders.

Tip

Archiving a routing project

You may want to create a new routing project at the beginning of every week or month. This way you can start with a fresh routing project, but always have access to previous work if needed.

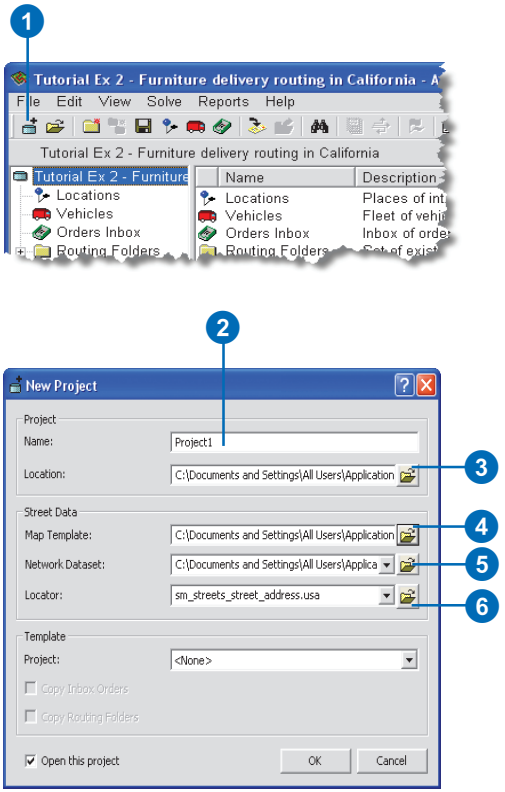
See Also

For more information on map templates, network datasets, address locators, and postal code locators, see Chapter 4, 'Setting up and managing street datasets'.

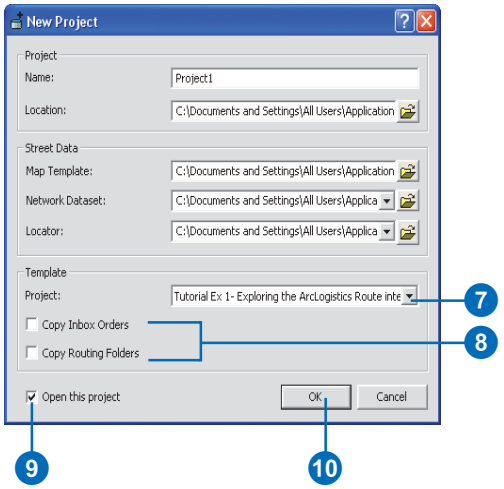
1. Click New Project on the Main toolbar.

   The New Project dialog box opens.

2. Type a name for the routing project.
3. Specify the location of the routing project file. The default location is in the Projects directory.
4. Browse to the Map Template of your street database. The file will have a filename extension of .mxd.
5. The Network Dataset field should be populated with a default network dataset file when you select the map template file. You can override this, if necessary, and browse to another network dataset.
6. The Locator field should be populated with a default locator. You can override this, if necessary, and browse to another locator. ▶



7. Choose an existing routing project, if you wish, to use as a template; otherwise, choose <None>.
8. Check Copy Orders Inbox and/or Copy Routing Folders, if you want these copied into the new routing project.This is only available if you are using an existing routing project as a template.
9. Check Open this project if you want to open the routing project now.
10. Click OK.



Migrating a routing project from a previous version of ArcLogistics

If you have been using a previous version of ArcLogistics, you may want to migrate your routing project to the new version of ArcLogistics. This will save you from re-creating your locations, vehicles, and routing folders.

Tip

Install street data first

Before migrating your old routing project you must install your new street data.

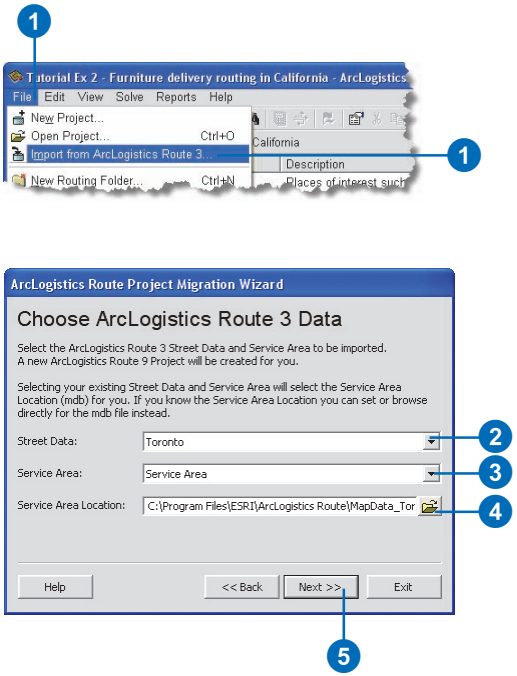
1. Click File on the Main menu, then click Import from ArcLogistics 3.

   The ArcLogistics Project Migration Wizard opens.

2. Choose the street dataset that is associated with the routing project you want to migrate.
3. Choose the old Service Area name.
4. If you know the location of your old Service Area project file you can browse directly to it.

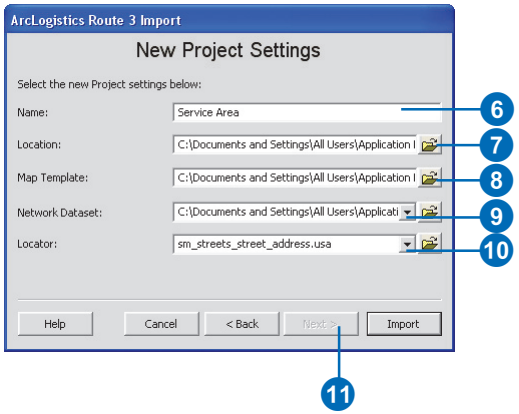
   This field will be autmatically populated if you have completed steps 2 and 3.

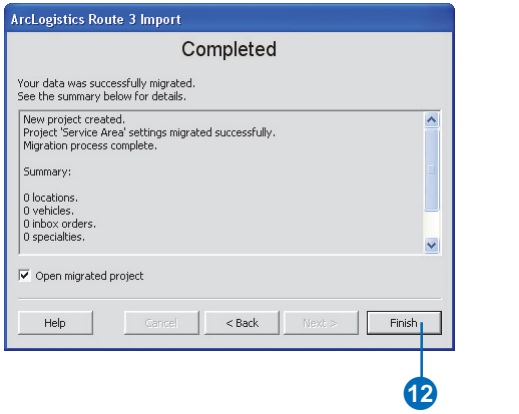
5. Click Next. ▶



6. Type a name for the new routing project.
7. Specify the location of the routing project file. The default location is in the Projects directory.
8. Browse to the new Map Template of your street database. This file will have a filename extension of .mxd.
9. Select the map template file. The Network Dataset field should be populated with a default network dataset file. You can override this, if necessary, and browse to another network dataset.
10. Select the map template file. The Locator field should be populated with a default locator. You can override this, if necessary, and browse to another locator.
11. Click Next.

    The old routing project will now be imported and a status message will be displayed.
12. Click Finish.





Opening a routing project

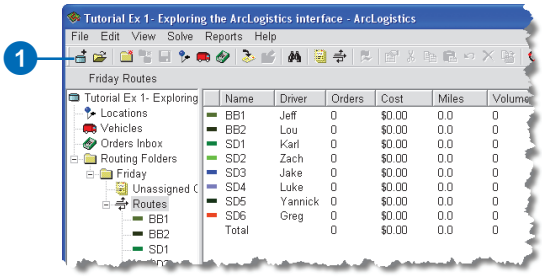
When you start ArcLogistics the default routing project opens. If you prefer, you can work with another routing project by opening it.

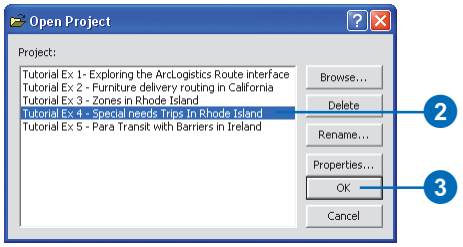
1. Select Open Project on the Main toolbar.

   The Open Project dialog box opens.

2. Click the name of the routing project you want to use.

3. Click OK.





Tip

Why your routing project may not be listed in the Open Projects dialog box

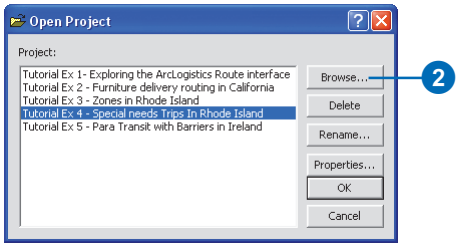
All routing projects saved in the default Projects directory will be listed in the Open Projects dialog box. If you create routing projects and save them in another directory, only your most recently used routing projects will be listed in the Open Project dialog box and you may need to browse to locate them.

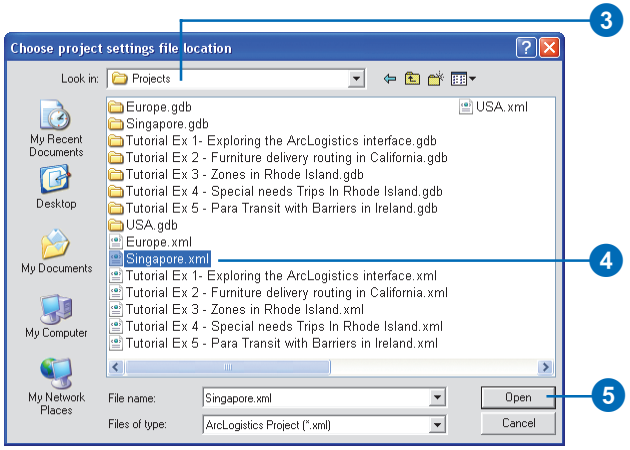
Browse to a routing project

1. Select Open Project on the Main toolbar.

   The Open Project dialog box opens.

2. Click Browse.
3. Browse to the directory where your routing project is.
4. Click the routing project you want to open.
5. Click Open.





About routing project default property settings

Routing projects contain default information that all new routing folders will use. These properties will affect the solution generated and it is worth looking at these options to better understand how they may apply to your routing scenario.

Rating the importance of meeting time windows

ArcLogistics allows you to set the level of importance in meeting time commitments. It offers three options on how important it is to meet the time window commitments of orders: High, Medium, and Low. High means that the complete solution may cost more in distance driven, time taken, and/or routes utilized to complete the routes, but there should be less time window violations of orders compared to a solution that uses the Low setting.

Rating the importance of reducing excess transit time for paired orders

Excess transit time for a paired order is the amount of additional travel time above the minimum direct travel time between the two addresses of the paired order. If it is important in your routing strategy to minimize the excess transit, then you may want to set this to High.

Departing within Time Windows

If your routes must depart from a stop before the time window closes check this option. If your routes can arrive at a stop before the time window closes and continue to service the order after the time window closes, then leave this option unchecked.

Dynamic Point Zones

ArcLogistics can create routes that minimize route crossover and form natural geographic clusters. These routes may be more expensive to operate or may miss some time window commitments, but are more likely to be geographically distinct.

U-Turn policy

Some routing problems require special consideration to U-turns depending on performance capabilities of their fleet.

The three settings related to U-Turns are Everywhere, Nowhere, and Only at dead ends. If you set the U-Turn policy to Nowhere you may find that some orders could be technically unreachable. For example, if an order was on the end of a cul-de-sac.

Time Attribute

The Time Attribute is how long it takes to travel the length of each street segment. If you are using the street data supplied with ArcLogistics, this setting will be Time and the units are in minutes. If you are using your own street data or custom prepared street data you may have several options for your Time Attribute, depending on how it was created.

Length Attribute

The Length Attribute is the distance of each street segment. If you are using the street data supplied with ArcLogistics this setting will be Length.

Restrictions

Restrictions modify the traversability of street segments and are built into the network dataset. One-way streets and turn restrictions are typical of the types of restrictions included with the street data supplied with ArcLogistics.

Parameters

Parameters are settings that modify how ArcLogistics computes the drive times or restrictions for the streets. They are defined when the street data is created. The North American and European Network Dataset include parameters for adjusting the driving speeds. Some special-purpose network datasets can have parameters defined on them for other purposes—for example, you may have a restriction that depends upon vehicle weight.

Barriers

Barriers are geographic features that completely block the traversibility of the street segments they cover. Barriers can be drawn directly in ArcLogistics using a drawing tool, or they can be imported as a shapefile or a geodatabase. Barriers offer a simple and realistic way to manage roadworks, accidents, closed roads, flooded areas, restricted areas, and other conditions that temporarily block roads.

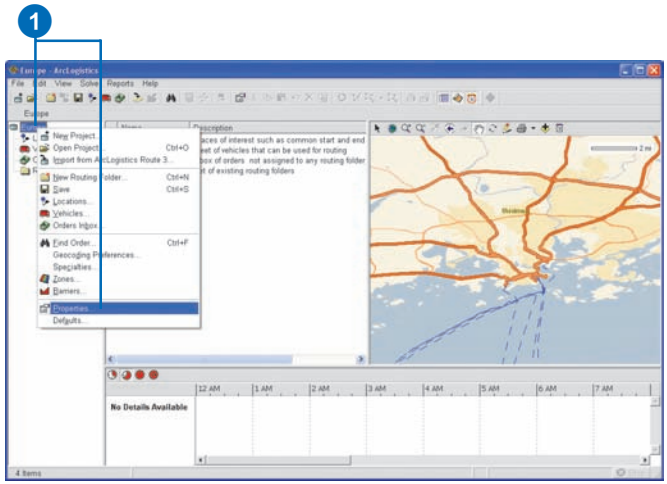
Updating default property information about a routing project

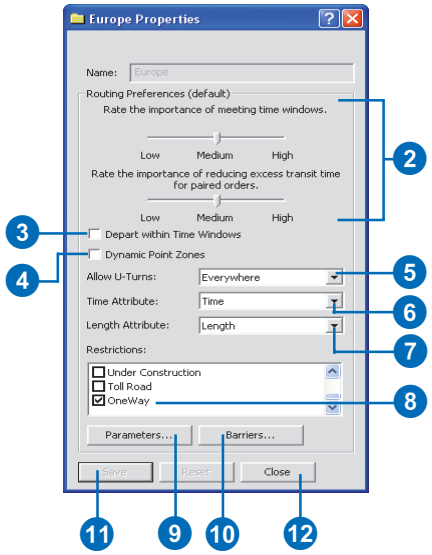
You can set the default properties based on the routing project you're currently using in ArcLogistics. The properties you set are used as the default properties for all new routing folders that you will add to the routing project. If needed, you can change these properties in each of your routing folders at a later time.

See Also

For information about setting the properties of individual routing folders, see 'Adding a routing folder' and 'Updating information about a routing folder' in Chapter 10.

1. Right-click the routing project name in the Tree View and click Properties.
2. Click the slider bar, and while holding down the mouse button, move it to the setting that you want to use.
3. Check Depart within Time Windows if you want your routes to leave from their stops before their time windows have finished.
4. Check Dynamic Point Zones if you want to minimize route crossover.
5. Select the U-Turn policy that you want to use. This will be either Everywhere, Nowhere or Only at dead ends.
6. Select the Time Attribute. This will be Minutes if using the supplied street data with ArcLogistics, but if you are using your own street data you may have a time attribute that reflects wet weather, or other conditions.
7. Select the Length Attribute.
8. Check any Restrictions that you want to use.
9. Click Parameters if you want to edit them.
10. Click Barriers if you want to edit them
11. Click Save.
12. Click Close.





Setting up a list of specialty codes

If any of your vehicles or drivers specialize in handling certain types of orders, you can use specialty codes that will force orders to be placed on vehicles best equipped for them, or with drivers having the required skills. When you build routes, ArcLogistics places orders on routes with matching specialty codes—for example, an order with the specialty code electrician can only be placed on a route with the specialty code electrician.

You can set up as many specialty codes as you want. From this list you can give vehicles and orders as many specialties as needed. ArcLogistics only assigns an order to a route that has all its specialties. If no route has all of an order's specialty codes, the order remains unassigned. If an order has no specialty codes, the order can be assigned to any route.

Tip

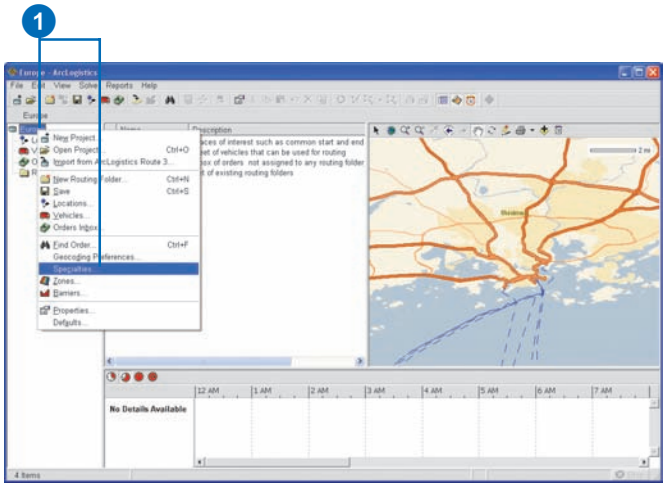
Adding a specialty code

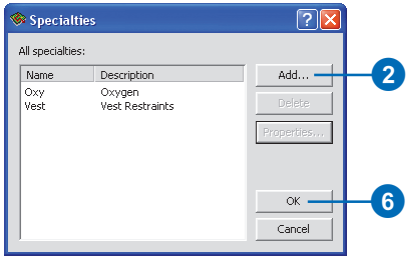
You can also add a specialty code by clicking the File menu then clicking Specialties.

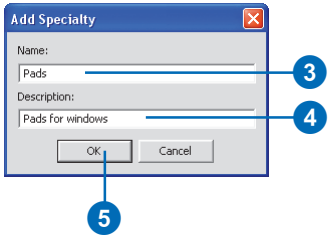
Adding a specialty code

1. Right-click the routing project name in the Tree View and click Specialties.

   The Specialties dialog box opens.
2. Click add.
3. Type the name of the Specialty.
4. Type a description if you want.
5. Click OK.
6. Click OK.







Tip

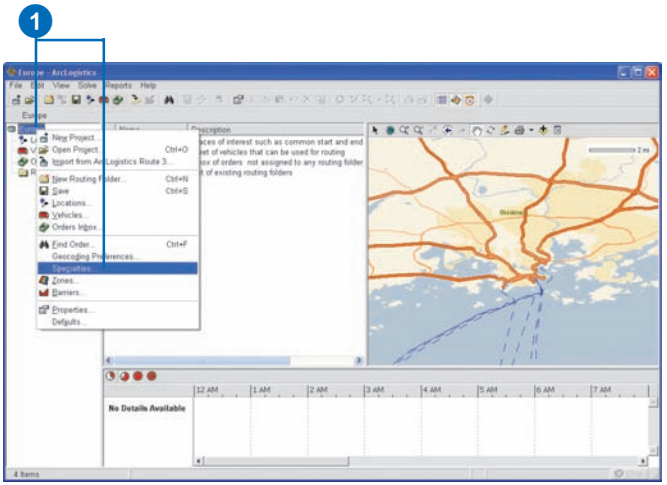
How specialties that are being used are renamed

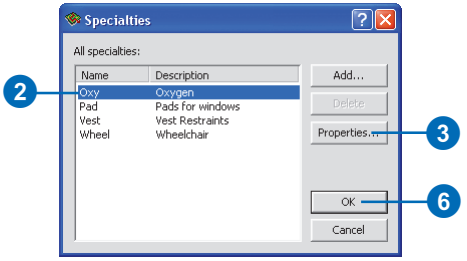
If you rename a specialty that's in use, the specialty is renamed throughout the routing project. All orders, vehicles, and routes that use the specialty are updated.

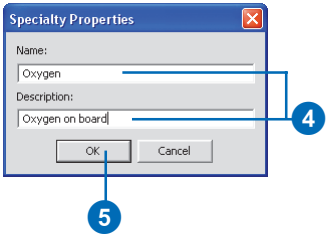
Renaming a specialty code

1. Right-click the routing project name in the Tree View and click Specialties.

   The Specialties dialog box opens.
2. Click the Specialty to rename.
3. Click Properties.
4. Type in the new Name and/or Description.
5. Click OK.
6. Click OK.







Tip

Only unused specialties can be deleted

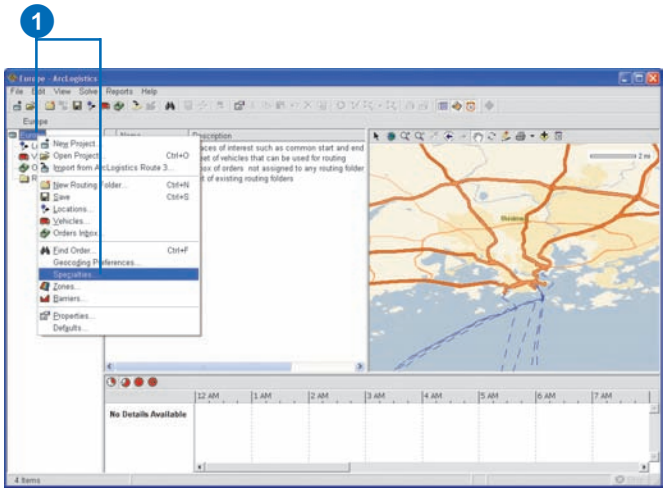
You can only delete a specialty if no vehicles, routes, or orders have the specialty assigned to them.

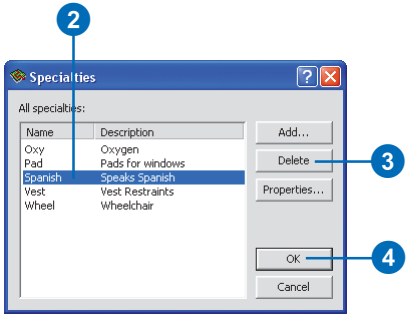
Deleting a specialty code

1. Right-click the routing project name in the Tree View and click Specialties.

   The Specialties dialog box opens.

2. Click the Specialty to delete.
3. Click Delete.
4. Click OK.





Managing routing projects

You can manage routing projects in ArcLogistics using the Open Project dialog box.. This allows you to rename, delete, and check properties of routing projects.

Rename a routing project

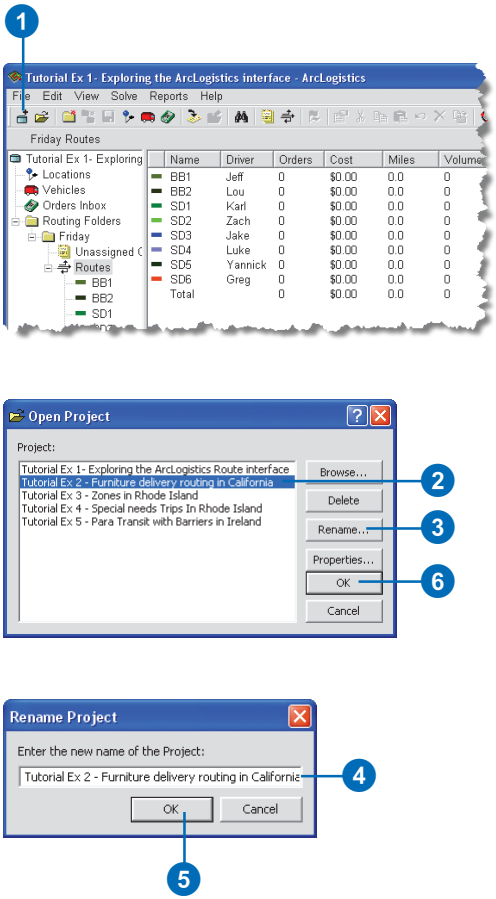
1. Select Open Project on the Main toolbar.

   The Open Project dialog box opens.

2. Click the name of the routing project you want to use.
3. Click Rename.

   The Rename Project dialog box opens.

4. Type in the new name for your routing project.
5. Click OK.
6. Click OK.



Tip

Deleting a routing project is permanent

If you delete a routing project you will not be able to undo the action.

Tip

You cannot delete a routing project that is open.

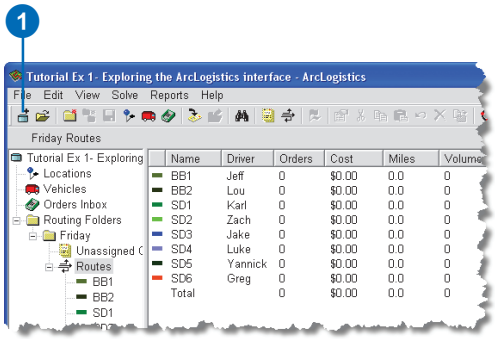
If you want to delete a routing project that is open, you must first open another routing project.

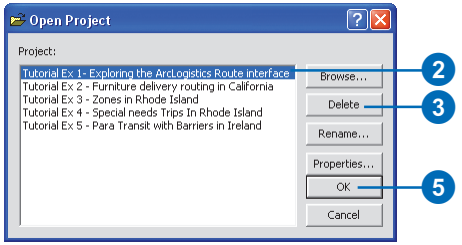
Deleting a routing project

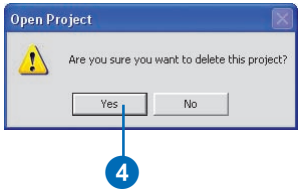
1. Select Open Project on the Main toolbar.

   The Open Project dialog box opens.

2. Click the name of the routing project you want to delete.
3. Click Delete.
4. Click Yes.
5. Click OK.







Tip

You cannot edit in the Project Properties dialog box.

The Project Properties dialog box cannot be edited. It is for information only.

Viewing a routing project properties

1. Select Open Project on the Main toolbar.

   The Open Project dialog box opens.

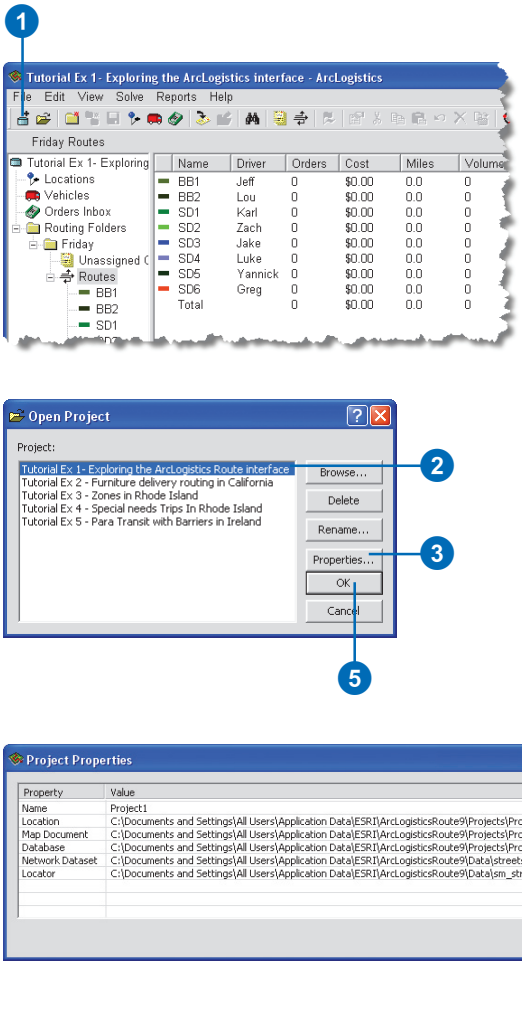
2. Click the name of the routing project you want to view the properties of.

3. Click Properties.

   The Project Properties dialog box opens.

4. Click OK.

5. Click OK.



Setting geocoding preferences

To decide whether an address matches the information in the street dataset, ArcLogistics uses a set of rules. You can alter the parameters that are used when these rules are applied.

Geocode ranges

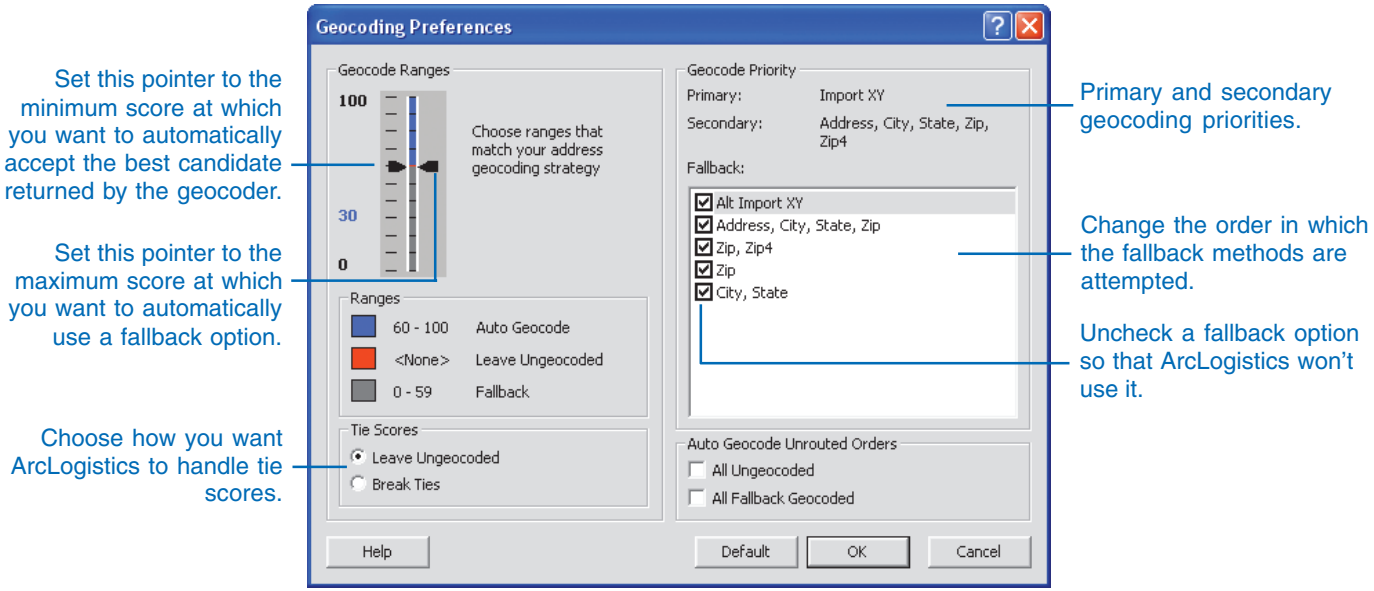
When evaluating how similar your input address is compared to candidate street segments in the street dataset, ArcLogistics computes a score. A street segment that matches the information in the input street address exactly gets a score of 100. If parts of the address do not match, the score begins to fall—for example, if the street suffix is incorrect, a candidate street segment may get a score of 90. If the street name is spelled close but differently and the suffix is incorrect, the street segment might get a score of 80.

Tie scores

In the event that multiple street segments are equally good candidates, you can set ArcLogistics to leave the input address unmatched or pick one of the candidate addresses. In most cases, you should leave the addresses unmatched and review the candidates interactively using the Geocode Address dialog box.

Fallback

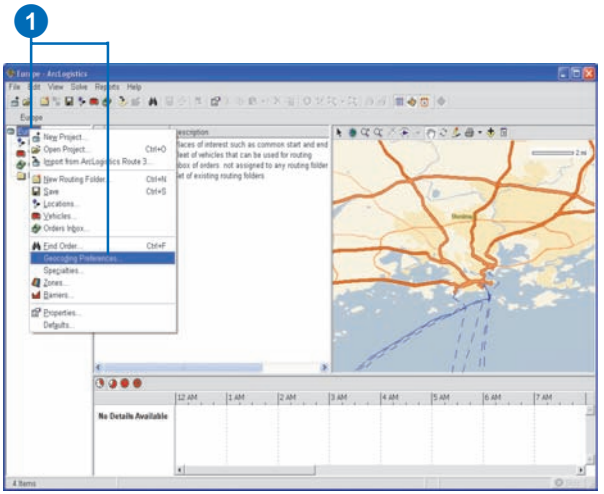
Fallbacks are used to geocode if the primary and secondary geocoding priorities do not find an address match. These are less accurate but in some cases may be satisfactory. Uncheck one or more of the fallback options if you don't want to use it.

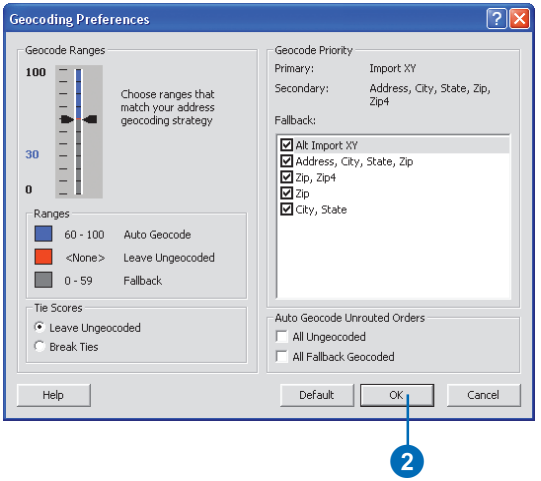


Setting geocoding preferences

Geocoding preferences are applied to routing projects and are separate from street data. You should make sure that you set your geocoding preferences before you start importing orders. You can always change your geocoding preferences later if you want.

1. Right-click the routing project name in the Tree View and click Geocoding Preferences.
2. Make the changes you want and click OK.





Adjusting street dataset drive times

ArcLogistics comes with a highly detailed street dataset for Europe or North Amerrica. Speeds for every street segment have already been calculated, but you may want to adjust these to better reflect your operational requirements.

If you are using the street data that is supplied with ArcLogistics, you can use paramaters in either routing folders or in your routing project to adjust the speeds of the street dataset. These parameters modify how ArcLogistics computes the drive times.

Tip

View default speeds by street in the Map View

The Map View table of contents contains a layer named Streets By Default Speeds. Check this layer on and make sure it is at the top of the table of contents. You will then see all of the streets color-coded by their default speed setting.

See Also

For more information on viewing streets by their speed see the topic 'Viewing streets by speed' in Chapter 6.

1. Right-click the routing project name in the Tree View and click Properties.

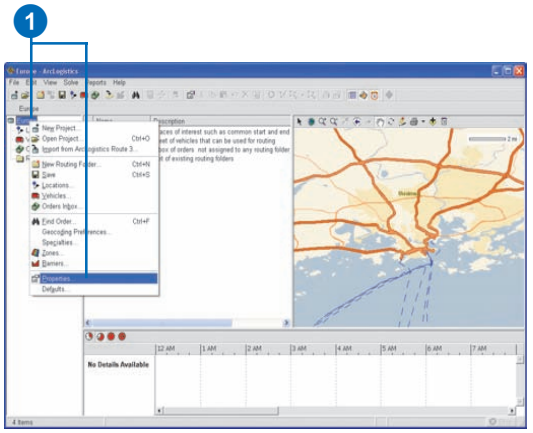
   The routing project dialog box opens.

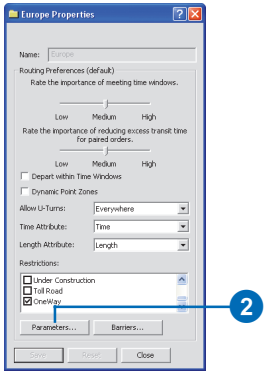
2. Click Parameters.

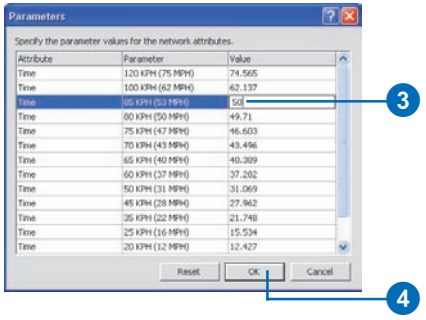
   The Parameters dialog box opens.

3. Click the Value cell of the default parateter speed you want to edit. Make your edits.

4. Click OK.







Working with the Map View

6

IN THIS CHAPTER

- About the Map View
- Map controls
- Changing the display of routing information in the Map View
- Table of contents
- Adding additional data
- Displaying speeds

The Map View displays a street map for your routing project and allows you to visualize all of your routing data geographically. The initial appearance of the map will be the same as it was created in the original map document used to set up the routing project.

There are several standard map controls in the Map View that allow you to navigate around the map and to select routing information within the map

With the Map Display dialog box, you can change the symbology of orders, the colors of routes, how routes are displayed, and the display options for unassigned orders, the scale bar, zones, and barriers within the map. You also have an option to display routes as straight lines or to follow the streets, to include directional arrows, and to label the sequence of the routes. If you have many routes, you may want to take advantage of the option to hide the leading and trailing stem time.

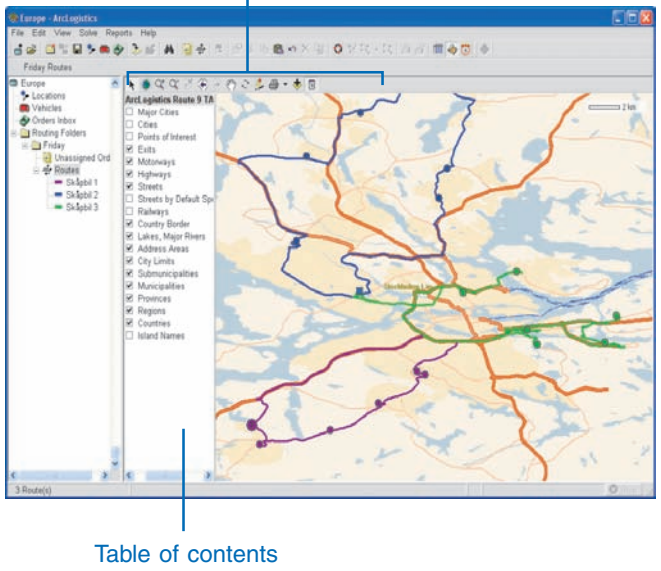
Choose to display or hide the map's table of contents. Within the table of contents, you can alter the rendering of the map by changing the symbology and order of the layers.

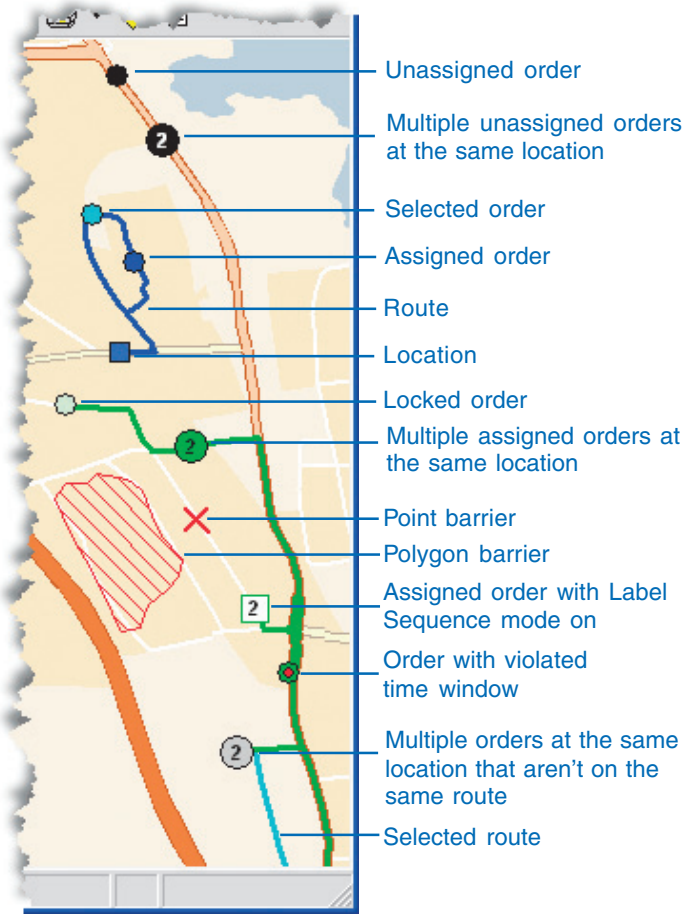
It is also possible to add additional geographic data to the map that may assist you in making routing decisions—for example, you can display geographic features that are relevant to your organization, such as weather or traffic information.

About the Map View

The Map View lets you see your information spatially. A set of standard map controls is found along the top of the Map View on the Map View toolbar. These controls allow you to move around the map, and to open or hide the table of contents. Using these tools you can change the look and feel of the map and routing data.

In addition to the street map, the Map View also displays what items are currently in the active folder in the Tree View. The only exception is if a subfolder of a routing folder is active in the routing project, in which case, the entire contents of the routing folder is displayed.





The graphic above shows each of the different types of routing information that can be displayed in the Map View.

Map Controls

The Map View contains a set of standard map controls that are used to move around the map and to visualize your routing data.

These controls are:

- Select
- Zoom to Full Extent
- Zoom In
- Zoom Out
- Zoom to Selected
- Zoom to Previous Extent
- Zoom to Next Extent
- Pan
- Refresh Map
- Control Map Display
- Print Map
- Add Layer
- On/Off Table of Contents

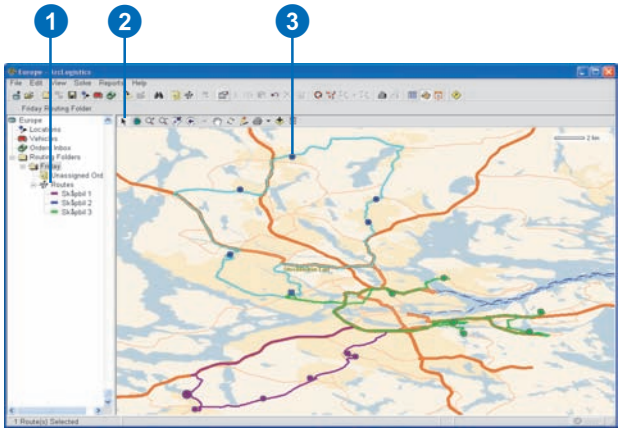
Tip

Should I hold the Shift or Ctrl key?

Holding down the Shift key causes an item that is being selected to be added to the selection, regardless of whether or not it is already selected; whereas, holding down the Ctrl key causes an item's selection status to be toggled.

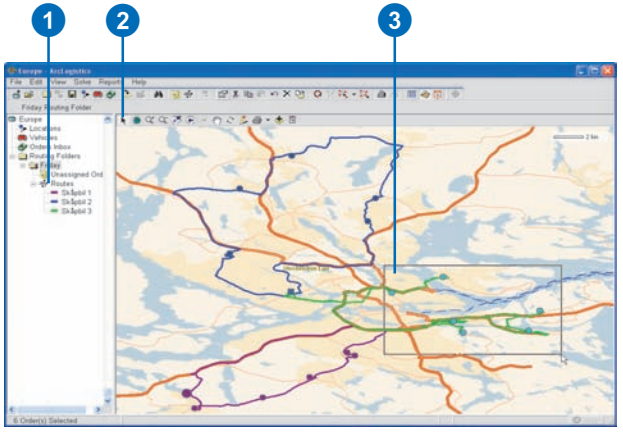
Selecting an item by clicking it in the map

1. Click the folder in the Tree View that contains the item you want to select.
2. Click Select on the Map View toolbar.
3. Click the item you want to select.
4. Hold down the Shift or Ctrl key while clicking additional items.



Selecting items by dragging a box

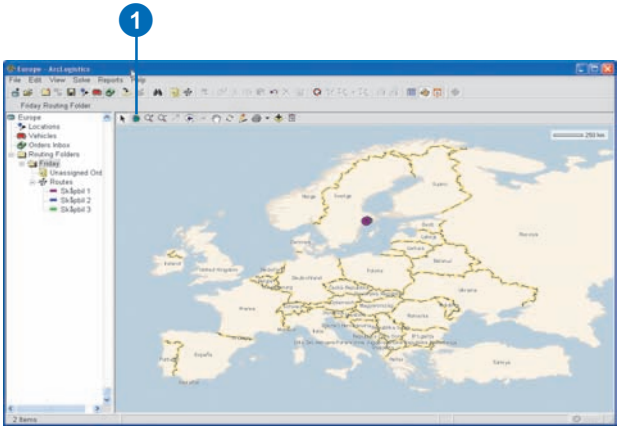
1. Click the folder in the Tree View that contains the items you want to select.
2. Click Select on the Map View toolbar.
3. Click and drag a box over the items you want to select.
4. Hold down the Shift or Ctrl key while dragging another box to select additional items.



Zooming to the full extent of the street data

1. Click Zoom to Full extent on the Map View toolbar.

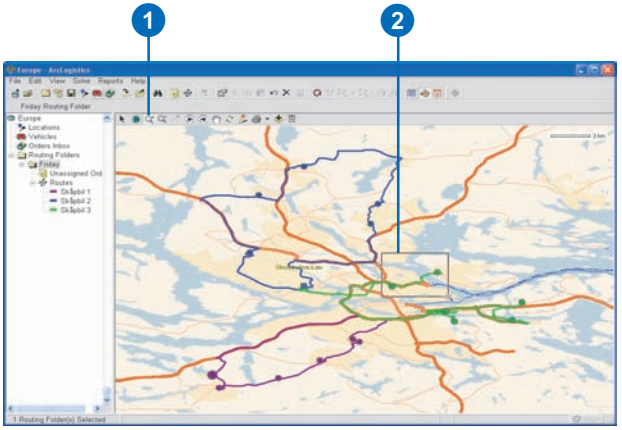
   The Map View zooms to the full extent of the street data.



Zooming in

1. Click Zoom In on the Map View tolbar.
2. Click and drag a box on the map.

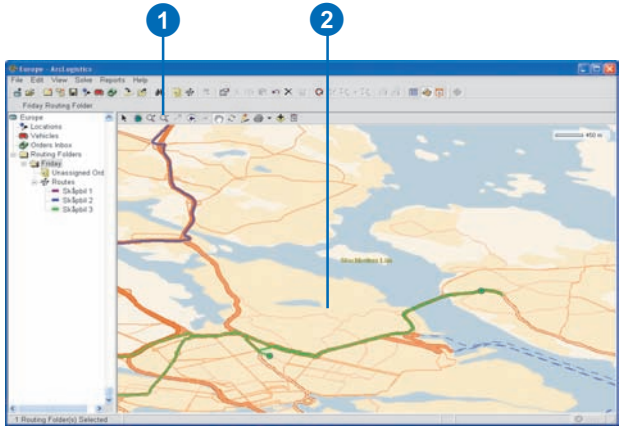
   The map zooms in to show the area inside the box you drew.



Zooming out

1. Click Zoom Out on the Map View toolbar.
2. Click the position on the map from which you want to zoom out.

   The Map View zooms out a fixed amount from the position you clicked. Click again to zoom out more.

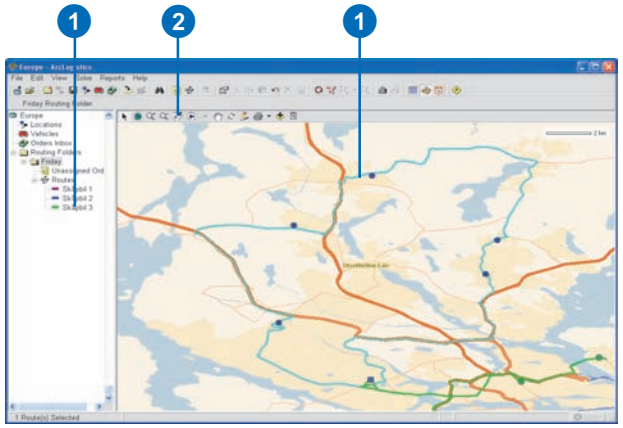


Zooming to the selected items

1. Select an item.

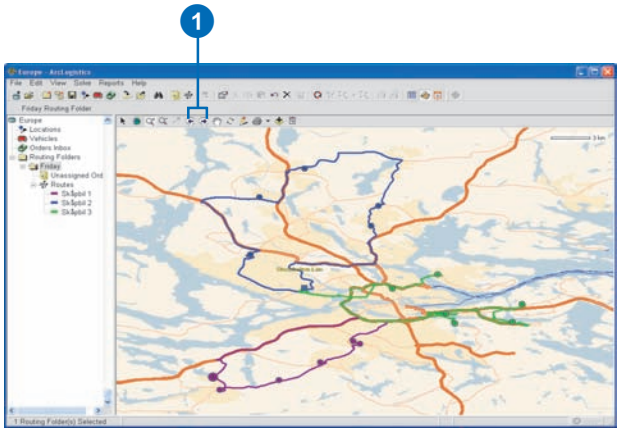
   Selected items can be locations, vehicles, orders, or routes.
2. Click Zoom to Selected on the Map View toolbar.

   The Map View zooms to the selected locations, vehicles, orders, or routes.



Moving back or forward one display extent

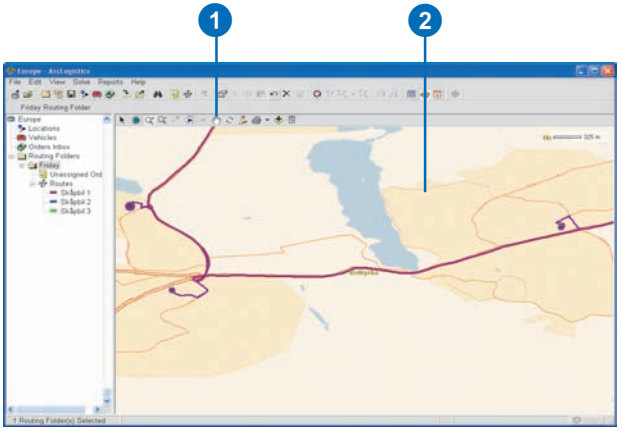
1. Click Zoom to Previous Extent or Zoom to Next Extent on the Map View toolbar.



Panning

1. Click Pan on the Map View toolbar.
2. Click and drag the map.

   The Map View shows the area you've panned to.



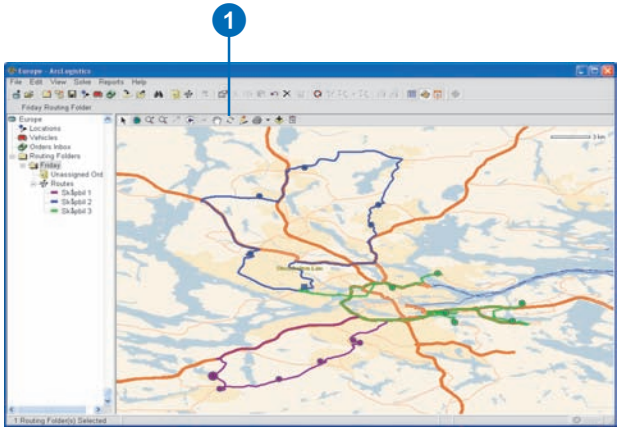
Tip

When to use Refresh Map

If you have data added to the Map View from external sources that is being updated, click Refresh Map to redraw the map to include the latest information.

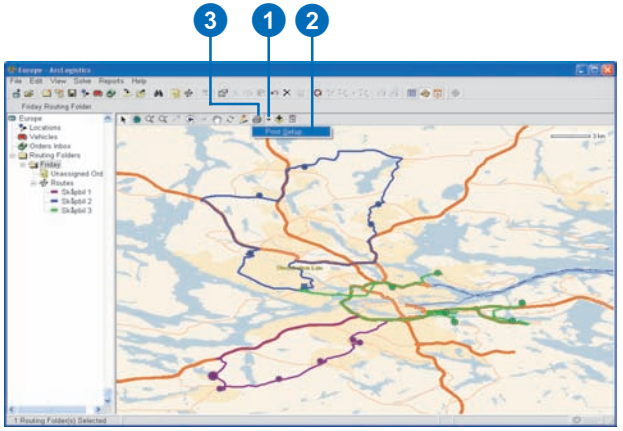
Refresh map

1. Click Refresh Map on the Map View toolbar.



Printing the current map extent

1. Click the down arrow next to Print Map on the Map View toolbar to change printers.
2. Click Print Setup and select your printer.
3. Click Print Map on the Map View toolbar to send the current map extent to your printer.



Changing the display of routing information in the Map View

Clicking Control Map Display on the Map View toolbar opens the Map Display dialog box. This is the place to manage the display of routing information in the map. It allows you to change the symbology of orders, the colors of routes, how routes are displayed, and options for how to display unassigned orders, the scale bar, zones and barriers within the map.

There are two panels with tabs in the Map Display dialog box where you can access display settings: General and Orders. If you select a routing folder or any subfolder in the Tree View, a third panel and tab will be enabled for that routing folder.

General tab

Show Scale Bar displays the map scale bar.

Show Leading Stem Time displays the route on the map from the route start location to the first stop. In large operations this is sometimes left unchecked to avoid clutter in the Map View.

Show Trailing Stem Time displays the route on the map from the final stop to the route end location. In large operations with dozens of vehicles, this is sometimes left unchecked to avoid clutter in the Map View.

Show Arrows displays arrows along the route pointing in the direction of travel.

Label Sequence displays all stops with their sequence number within the route.

Show Zones displays zones (if there are any) in the map. Zones will be colored to match the routes with which they are associated.

Label Zones place a label on any zones displayed in the map.

Show Barriers displays barriers in the map. Barriers are displayed as red hashed polygons or a red X for point barriers.

Show Unassigned Orders displays unassigned orders within a routing folder, in the map.

Map Tips Field allows you to select a field from the drop-down menu to be included in the map tips shown when you mouse-over orders.

Straight Lines displays routes as straight lines in the map.

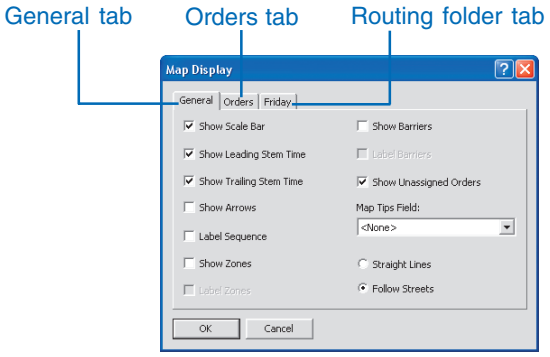
Follow Streets displays routes using the actual geometry of the route as they follow the street segments. This display takes longer to render in the Map View than Straight Lines does.

Orders tab

The Orders tab allows you to change the symbology of orders based on a field you select. The fields you can select are the order properties; you have a choice of five shapes for order symbols: circle, rectangle, triangle, hexagon, and star. If Label Sequence is selected for orders, when assigned to routes, they will be symbolized as squares, with the sequence number inside the square.

Routing Folder tab

If a routing folder or any subfolder is selected in the Tree View or List View, a routing folder tab is enabled within the Map Display dialog box. This tab allows you to hide or display routes and change their colors.



Changing the display of routing information in the Map View

Use the Map Display dialog box to show only the routing information you need, or to change the appearance of the routing information you need. The less information on the map, the easier it is to interpret.

Tip

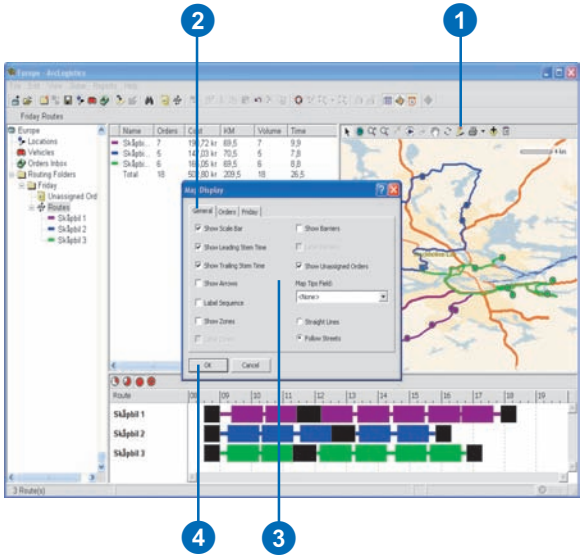
Straight Lines vs. Follow Streets

Straight Lines provides faster display. Use Follow Streets if you want to see the actual route on the Map View.

Changing how routes are displayed on the map

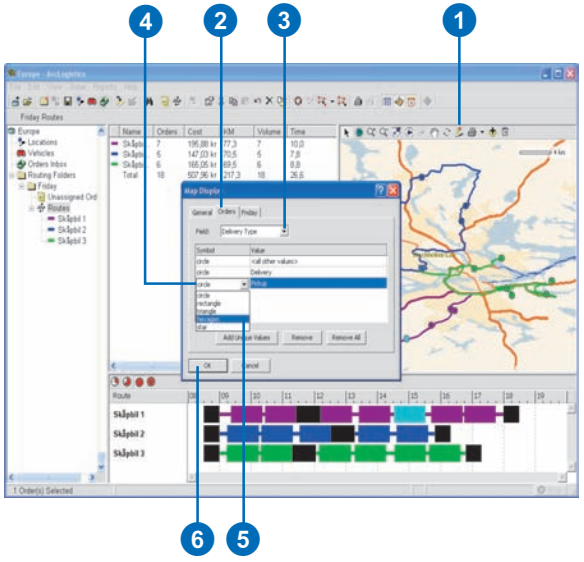
1. Click Control Map Display on the Map View toolbar. The Map Display dialog box appears.
2. Click the General tab.
3. Check the items that you want to display.
4. Click OK.

   The Map View updates and shows the checked options.



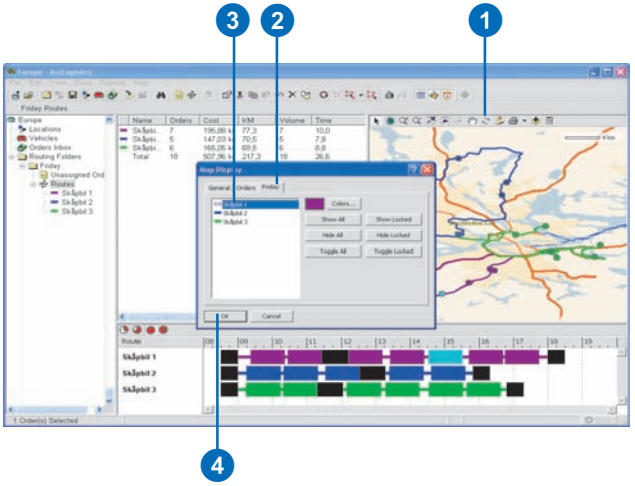
Changing Order symbols

1. Click Control Map Display on the Map View toolbar. The Map Display dialog box appears.
2. Click the Orders tab.
3. Click the down arrow next to Field and select a field that you want to base your order symbols on.
4. Click the symbol you want to change. A drop-down menu displays.
5. Click the new symbol you want to use.
6. Click OK.



Changing what routes are displayed on the map

1. Click Control Map Display on the Map View toolbar. The Map Display dialog box appears.
2. Click the Routing Folder tab.
3. Click a route symbol to hide the route from the map. Click the route symbol again to display the route in the map. If necessary, click the Show All, Hide All, Toggle All, Show Locked, Hide Locked, and Toggle Locked buttons to help.
4. Click OK.



Changing route colors on the map

1. Click Control Map Display on the Map View toolbar. The Map Display dialog box appears.
2. Click the Routing Folder tab.
3. Click a route.
4. Click Colors. The color palette displays.
5. Select a new color for the route.
6. Click OK.
7. Click OK.

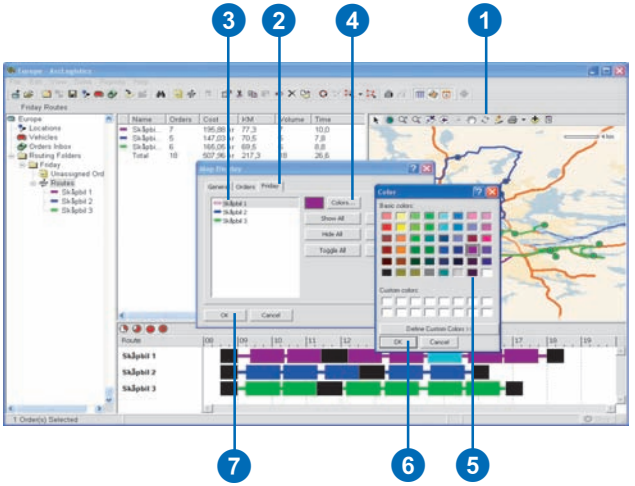


Table of contents

The Map View contains a table of contents that can be hidden or displayed. The table of contents is used to see what geographic layers are in the map, and to change their order and symbology.

The table of contents is also used to create and manage Barriers to the street dataset. Barriers are complete blockages to street data and forbid travel on the street segments affected.

Tip

Reordering map layers

The map is drawn with the layers on top of each other with the top most layer in the table of contents being the top layer in the map. If you move a street layer to the bottom of the table of contents, it will be covered by several polygon layers and not visible in the map.

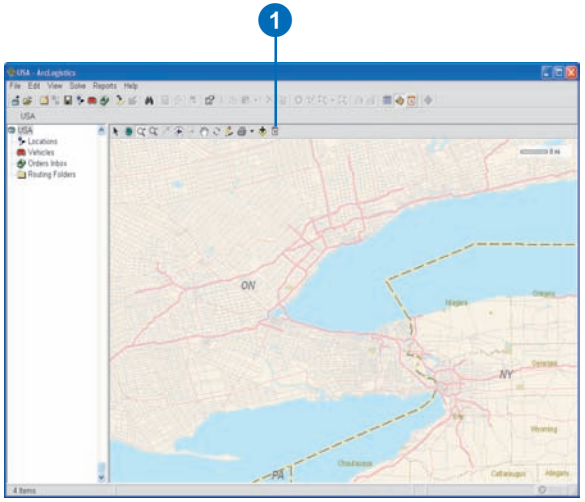
See Also

To learn more information about Barriers, see 'Barriers' in this chapter.

Viewing the table of contents

1. Click On/Off TOC on the Map View toolbar.

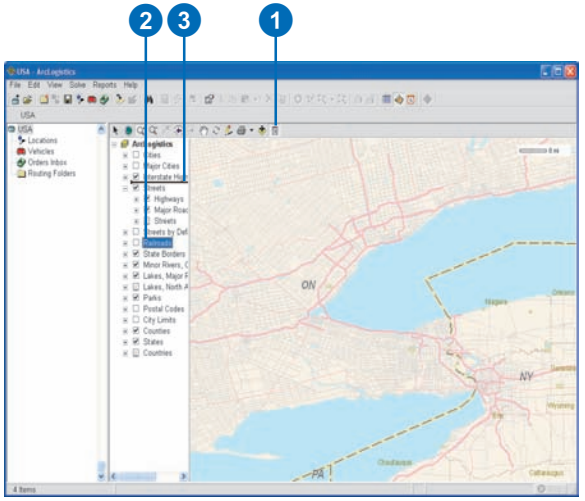
   If the table of contents is hidden this will display it. If the table of contents is displayed this will hide it.



Reorder map layers in the table of contents

1. Click On/Off TOC on the Map View toolbar if the table of contents is not visible.
2. Click and drag the map layer you want to move up or down in the table of contents.
3. Release the layer where you want it to be.

   The map redraws using the new layer order.



Tip

Layers may have scale dependencies

Most layers in the map will have scale dependencies, meaning that they display different symbology at different zoom levels. For example, at the full extent of the map, you will not see any local or major roads. As you zoom in closer, more detail becomes visible in the map.

Tip

Layers in the table of contents that are checked with a grey check mark are not in the display scale range

You will notice in the table of contents that some layers are checked with a grey check mark, and others are checked with a black check mark. The black check marks indicate that the layer is currently displayed in the map, while the grey check mark indicates that the layer is not currently displayed in the map because it is outside a set scale range.

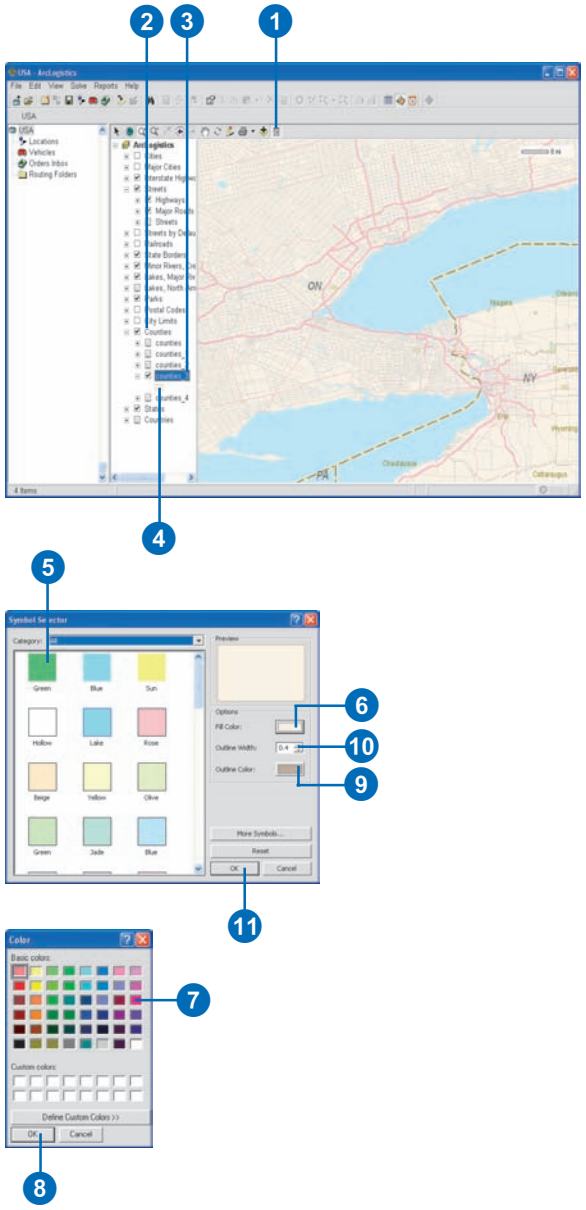
Changing a polygon layer's symbology

1. If the table of contents is not visible, click On/Off TOC on the Map View toolbar.
2. Double-click the layer for which you want to change the symbology.

   This expands the layer and shows what sublayers are available or what the existing symbology is.
3. Double-click a sublayer, if necessary, to show the existing symbology.
4. Click the symbol immediately below the layer or sublayer name.

   The Symbol Selector opens.
5. Select a new symbol from the available choices, if desired.
6. Click Fill Color to change the color within the polygon.

   The Color palette opens.
7. Click a new color.
8. Click OK.
9. Repeat steps 6 to 8 to change the Outline Color.
10. Click Outline Width and type in a new width.
11. Click OK.



Tip

What is the difference between a line layer, a polygon layer, and a point layer?

Line layers display shapes defined by a connected series of unique x,y coordinate pairs. The most common line layer is the street dataset. Line layers can also represent features such as railways and rivers.

Polygon layers display a closed shape defined by a connected sequence of x,y coordinate pairs, where the first and last coordinate pair are the same and all other pairs are unique. They represent features such as a country, province, postal code, or a lake.

Points are features that have an exact location defined by a pair of x,y coordinates, but no length or area. Points may represent customer locations or town centers.

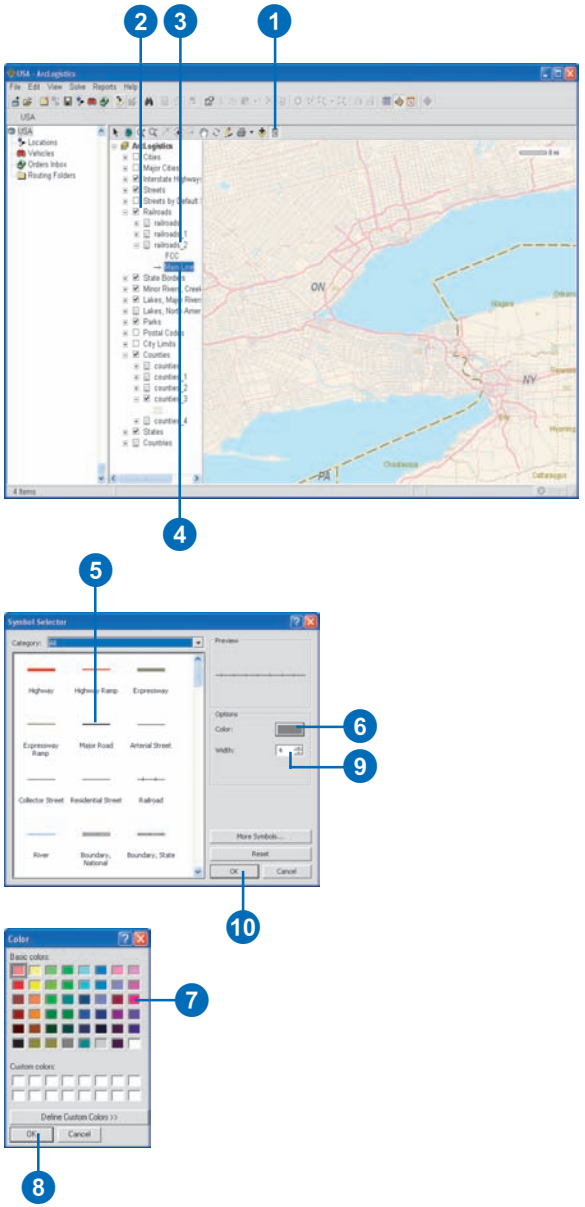
Changing a line layer's symbology

1. Click On/Off TOC on the Map View toolbar if the table of contents is not visible.
2. Double-click the layer for which you wish to change the symbology.

   This expands the layer and shows what sublayers are available or what the existing symbology is.
3. Double-click a sublayer, if necessary, to show the existing symbology.
4. Click the symbol immediately below the layer or sublayer name.

   This will open the Symbol Selector.
5. Select a new symbol from the available choices.
6. Click Color to change the color of the line.

   The Color palette opens.
7. Click the color you want.
8. Click OK.
9. Click Width and type in the width you want.
10. Click OK.



Tip

Saving changes

Changes made to the symbology of the map data will be saved with the routing project.

Changing a point layer's symbology

1. Click On/Off TOC on the Map View toolbar if the table of contents is not visible.
2. Double-click the layer for which you want to change the symbology.

   This will expand the layer and show what sublayers are available or what the existing symbology is.
3. Double-click a sublayer, if necessary, to show the existing symbology.
4. Click the symbol immediately below the layer or sublayer name.

   The Symbol Selector opens.
5. Select a new symbol from the available choices if you want.
6. Click Color to change the color of the point.

   The Color palette opens.
7. Click the color you want.
8. Click OK.
9. Click Size and type in the size you want.
10. Click Angle and type in the angle you want.
11. Click OK.

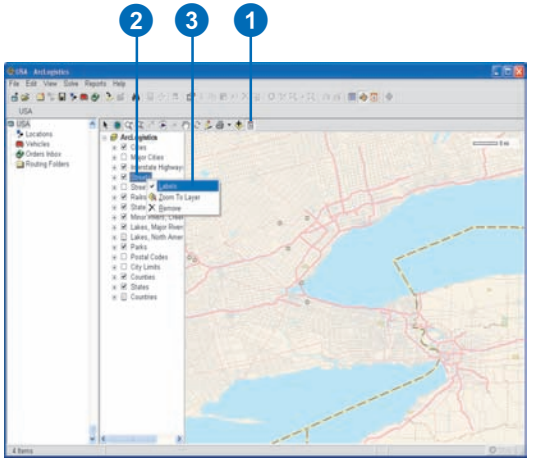
Tip

Turn off the street labels for faster map display

Determining which labels to place on the map requires significant processing each time the map extent is changed. For faster map display, consider turning the street labels off.

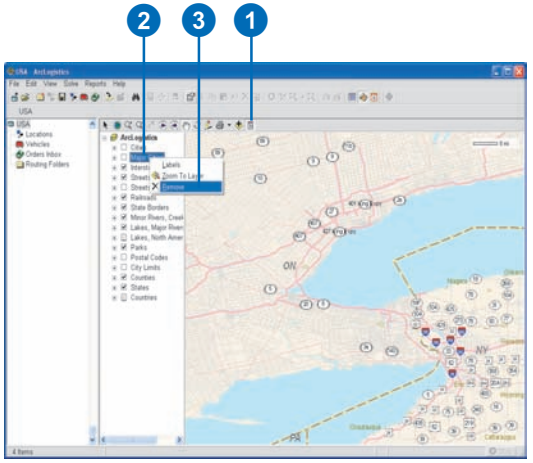
Labeling map data

1. Click On/Off TOC on the Map View toolbar if the table of contents is not visible.
2. Right-click the map layer you want to have labeled in the Map View.
3. Click Labels.



Removing map data

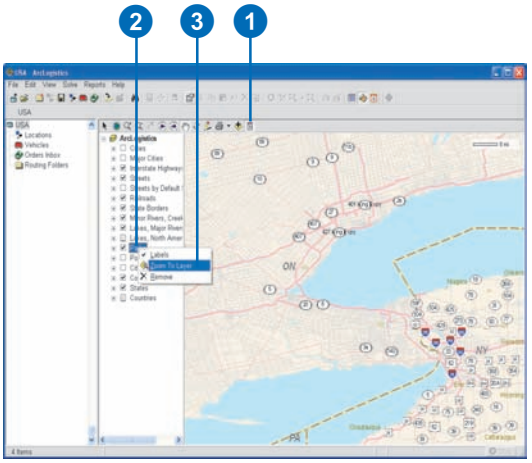
1. Click On/Off TOC on the Map View toolbar if the table of contents is not visible.
2. Right-click the map layer you want to remove from the Map View.
3. Click Remove.



Zoom to a Layer

1. Click On/Off TOC on the Map View toolbar if the table of contents is not visible.
2. Right-click the map layer to which you want to zoom.
3. Click Zoom To.

   The Map View will zoom to the extent of that layer.



Adding additional data

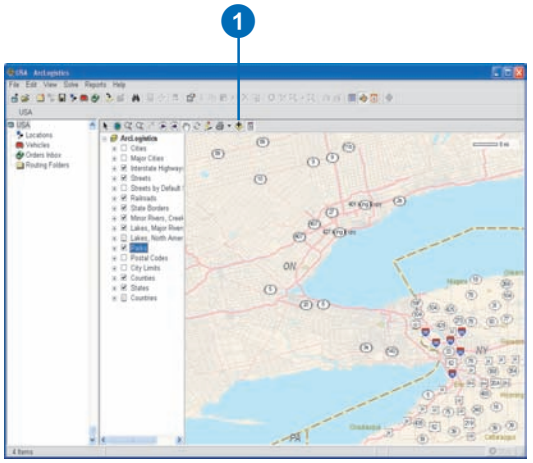
You may want to add additional data to the Map View to assist in decision making while creating routes. You can add any type of geographic data supported by ArcGIS, including shapefiles, geodatabases, layers, rasters, and Web services.

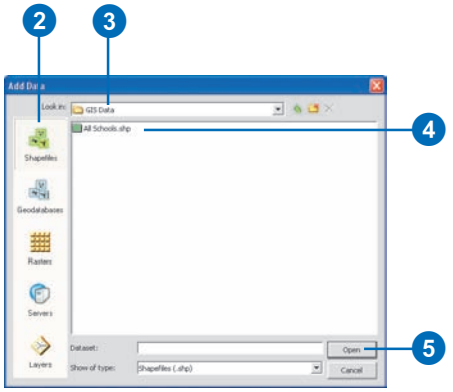
Adding shapefiles

1. Click Add Layer on the Map View toolbar.

   The Add Data dialog box opens.

2. Click Shapefiles.
3. Browse and navigate to the directory in which your shapefile data is stroed.
4. Click the shapefile you want to add.
5. Click Open.



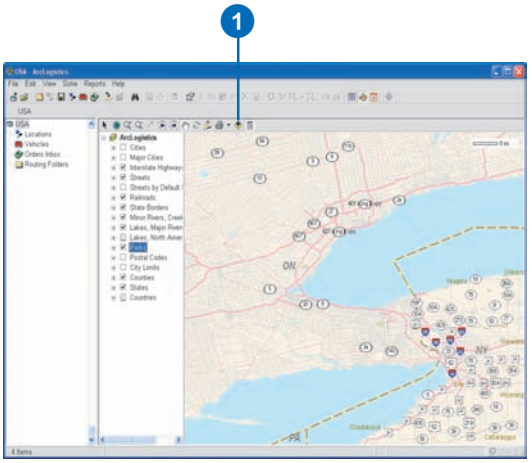


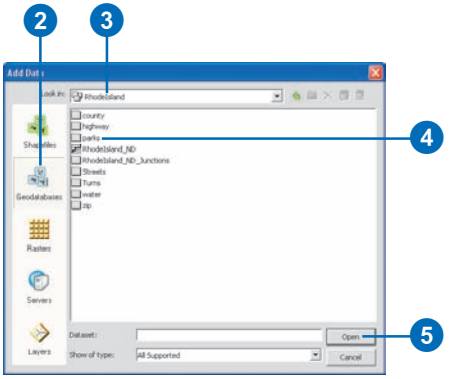
Adding geodatabases

1. Click Add Layer on the Map View toolbar.

   The Add Data dialog box opens.

2. Click Geodatabases.
3. Browse and navigate to the directory in which your geodatabase data is stored.
4. Click the geodatabase you want to add.
5. Click Open.



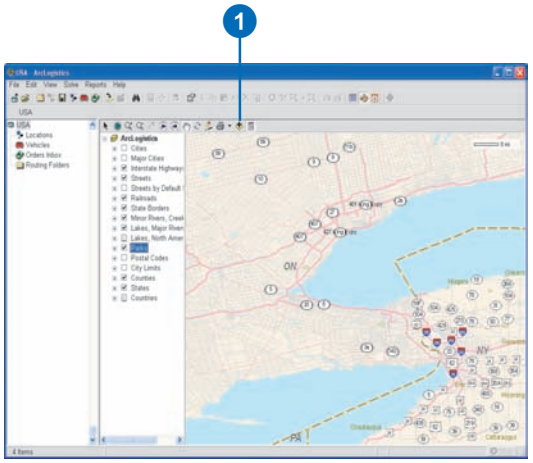


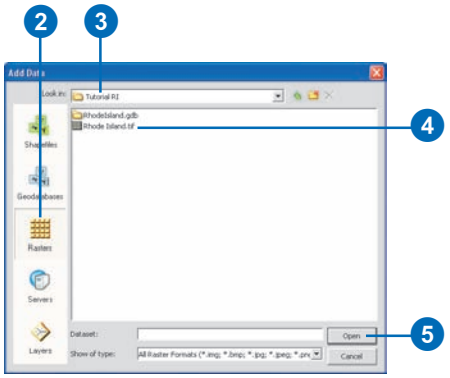
Adding rasters

1. Click Add Layer on the Map View toolbar.

   The Add Data dialog box opens.

2. Click Rasters.
3. Browse and navigate to the directory in which your raster data is stored.
4. Click the raster file you want to add.
5. Click Open.



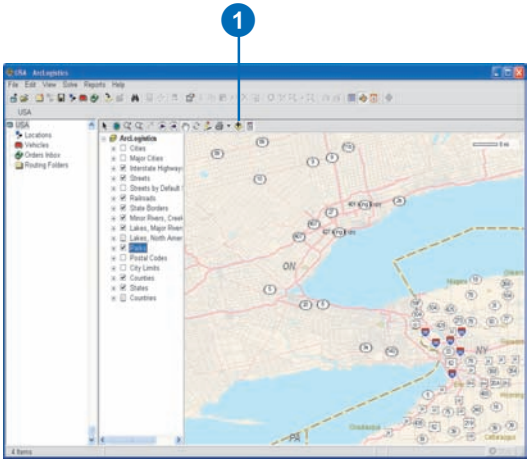


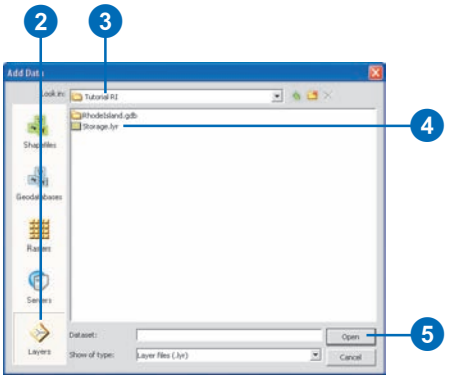
Adding layers

1. Click Add Layer on the Map View toolbar.

   The Add Data dialog box opens.

2. Click Layers.
3. Browse and navigate to the directory in which your raster data is stored.
4. Click the layer you want to add.
5. Click Open.





Adding server data

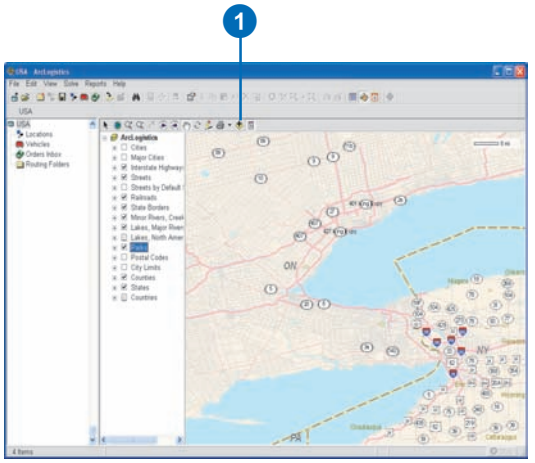
1. Click Add Layer on the Map View toolbar.

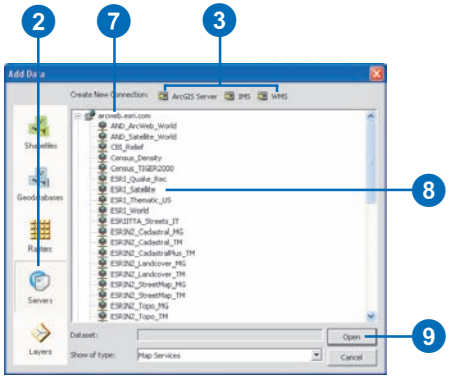
   The Add Data dialog box opens.

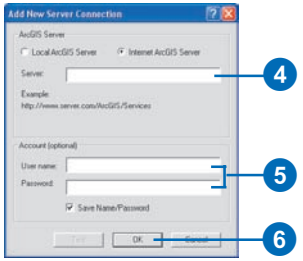
2. Click Servers.
3. Click the Create Server Connection option that you require.
4. Type in the server name in the Server field.
5. Type in your User name and Password, if necessary.
6. Click OK.

   This adds the Web service to the Add Data dialog box.

7. Double-click the Web service that was just added to the Add Data dialog box.
8. Click the server data you want to add.
9. Click Open.







Displaying speeds

If you chose to change the speeds of the street dataset using paramaters, you will want to know what speeds have been allocated to the various street classifications. For example, major roads will have a faster speed associated with them than local roads, but where are the major roads?

ArcLogistics includes a layer in the Map View that displays all of the streets colored and with their line thicknesses set by their default speeds.

Tip

Streets in the Map View always display using the default speeds

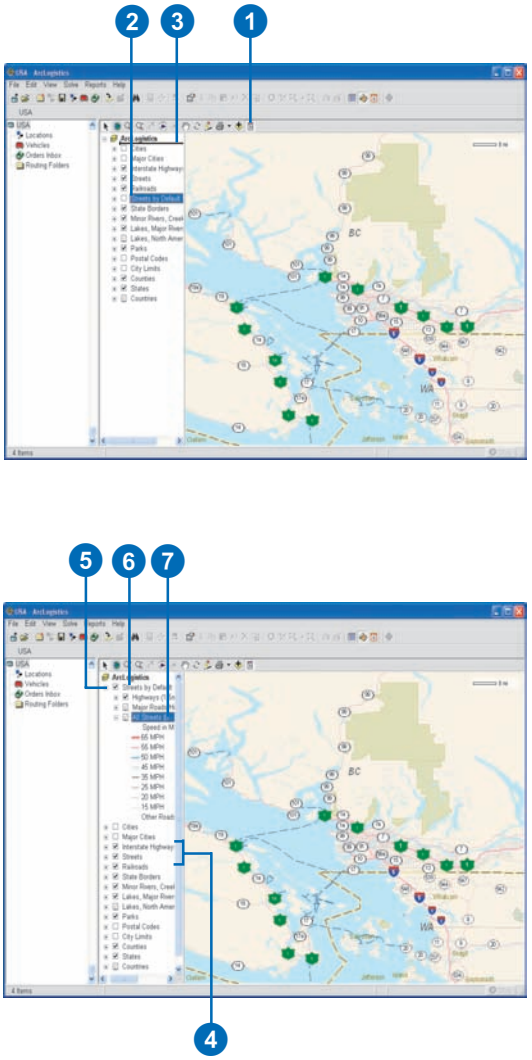
If you change the speeds of the street dataset using paramaters, their display in the Map View will remain unchanged and will not reflect the new adjusted speeds. This is because the underlying data has not been edited.

Displaying default speeds of the street dataset in the Map View

1. Click On/Off TOC on the Map View toolbar if the table of contents is not visible.
2. Click and drag the Streets by Default Speeds map layer up so that it is above all other layers in the table of contents.
3. Release the layer at the top of the table of contents.
4. Uncheck all other street layers in the table of contents.
5. Check Streets by Default Speeds.
6. Double-click Streets by Default Speeds.

   This will expand the layer in the table of contents and reveal the subfolders.
7. Double-click All Streets.

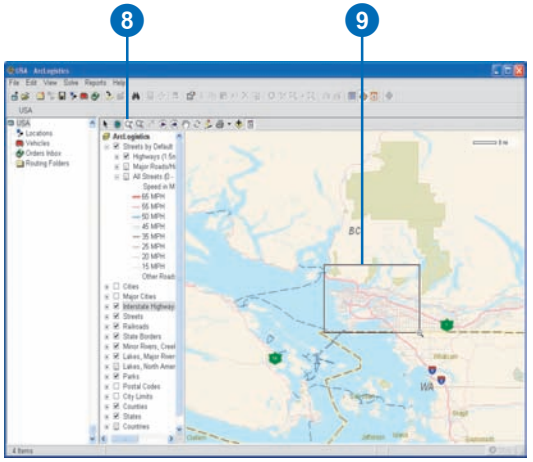
   This will expand the All Streets layer, allowing you to see the lines and colors that are used to display the streets based on their default speeds. ▸

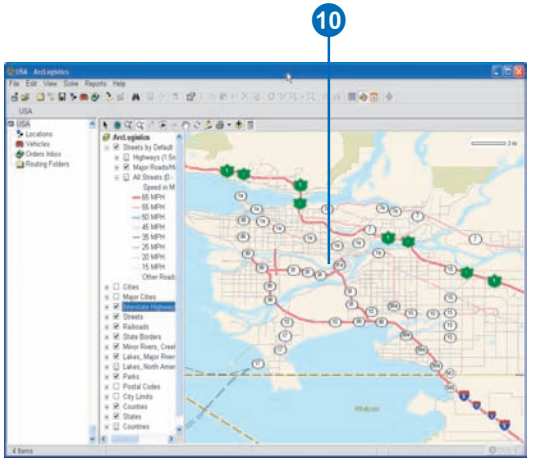


8. Click Zoom In on the MapView toolbar if you want to display more detail on the map to see all the streets.
9. Click and drag a box on the map to see the default speeds of the street dataset in the zoomed in area.

   The more you zoom in the more detail will be shown.
10. Keep zooming in until all the local streets are displayed.

    You will now be able to see all streets in the area displayed by their default speeds.





Working with locations

7

IN THIS CHAPTER

- **About locations**
- **Adding a location**
- **Displaying locations**
- **Updating information about a location**
- **Deleting a location**

Once you have established a routing project, you need to set up your locations.

Locations are key points in a routing project that can identify your warehouses, depots, drivers, homes, or any other important points. These locations are used to help define your routes.

There are several ways that locations can be used to define routes:

- As *start* or *end locations* (or both)
- As *renewal locations*

At a minimum, you need to set up a least one location that can be used as the start and end point for your routes.

Add a location by specifying its address and hours of operation.

Locations that you've added to the routing project can be displayed in the List View, Map View, and Time View.

After adding a location, you may want to update information about it. You can only update a location's properties if it is not currently in use by an existing order, vehicle, or route.

If you've added a location that you no longer need, you can delete it from the routing project.

About Locations

Locations are key points in your routing project. You set up a location by specifying its name, address, and hours of operation.

Once you've set up a location, you can decide how you want the locations used to define routes. Locations you add can be used in the following ways.

Start and end locations

To build routes, ArcLogistics needs at least one location to serve as its start and end point for routes. Locations can be your warehouses, depots, or even your drivers' homes. Start and end locations can be the same or different points, and each route can have its own start and end location.

Renewal locations

A renewal location is a location where a driver can reload (or unload) a product midroute when vehicle capacities are either reached or depleted.

If a vehicle delivers products, set the vehicle's renewal location(s) to where the vehicle can reload—for example, if a vehicle delivers propane, when that vehicle is empty, it returns to the filling station (its renewal location) to refill and then continues its route for the day.

If a vehicle picks up products, set the vehicle's renewal location(s) to where the vehicle can unload—for example, if a vehicle empties dumpsters, when the vehicle is full, it goes to the landfill (its renewal location) to unload and then continues its route for the day.

If your vehicles start and end their routes without reloading or unloading there is no need to set renewal locations.

Adding a location

Add your locations by entering their properties into ArcLogistics.

Each location you add can be used as many times as you want as the start, end, or renewal location.

See Also

If ArcLogistics is unable to automatically geocode the location, see 'Interactively geocoding a location' in this chapter.

See Also

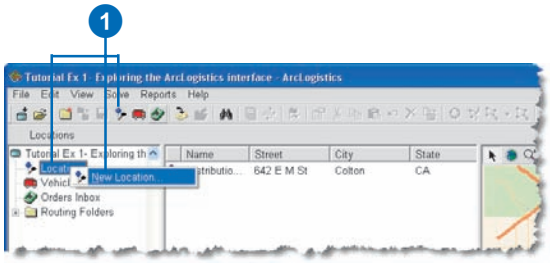
To learn how to set a location as a start, end, or renewal location for a vehicle, see Chapter 7, 'Working with vehicles'.

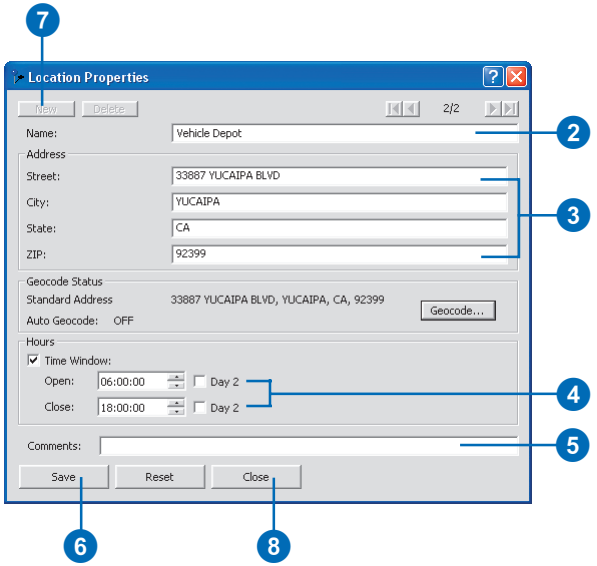
Tip

Adding a location in the Map View

You can right-click in the MapView and select Add As Location. The Location Properties dialog box displays. The Location's reverse geocoded address will be displayed in the Geocode Status section of the dialog box.

1. Right-click Locations in the service area tree, then click New Location, or click Add/ Edit Locations on the Main toolbar.
2. Type a name for the location.
3. Type the full address of the location.
4. Specify the hours that the location opens and closes each day.
5. If desired, type some comments about the location.
6. Click Save.
7. If you want to add another location, click New, then repeat steps 2 through 6.
8. When you're finished adding locations, click Close.





Interactively geocoding a location

When you add a location, ArcLogistics automatically tries to geocode it by finding an address range in the street dataset. If no match can be found, you need to interactively geocode the address using the Geocode Address dialog box.

Tip

Avoid using fallback options with locations

Take time to geocode your locations as closely as possible to the exact position on the map. Since your routes depend heavily on the position of locations, you should take time to make sure they're positioned accurately.

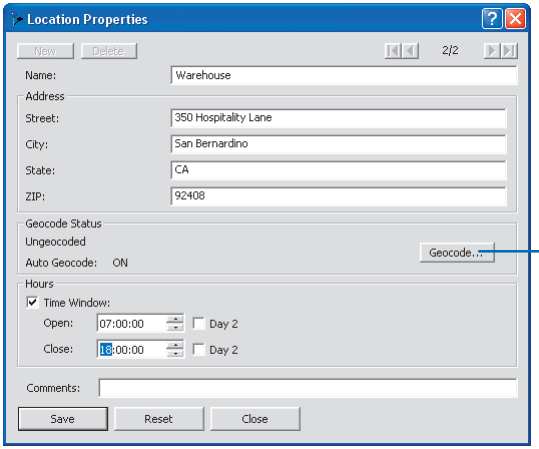
See Also

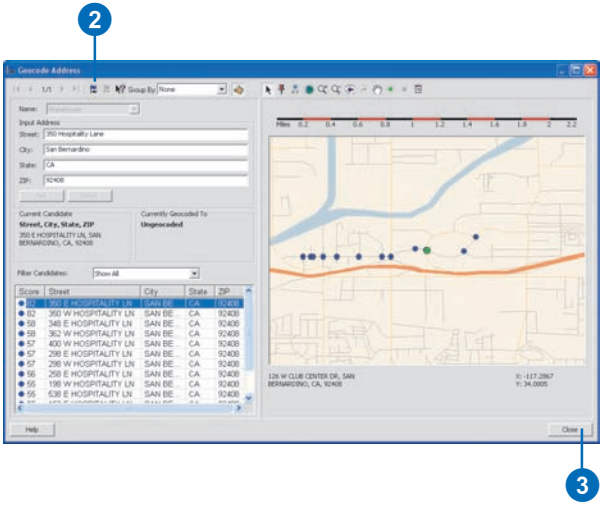
For more information about interactive geocoding see 'The Geocode Address dialog box' in Chapter 3.

See Also

For more information about adding a location, see 'Adding a location' in this chapter.

1. Click Geocode.
2. Geocode the location using the Geocode Address dialog box.
3. Click Close.





Displaying locations

Locations are displayed in the List View, Map View, and Time View.

In the List View, locations are displayed as text fields containing the location's name, address, and hours of operation.

In the Map View, locations are displayed as solid blue squares on the street data.

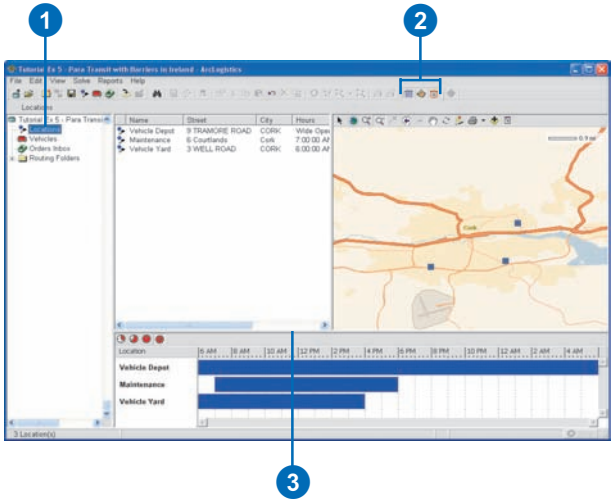
In the Time View, locations are displayed along a timeline showing the hours each location is open.

1. Click Locations in the Tree View.

   Locations will be displayed in the List View, Map View, and Time View.

2. If a view is not active and you want to see a location in that view, click the view's button on the Main toolbar.

3. Resize the ListView, MapView, and TimeView, if necessary, using the splitter bars to see all Locations.



Updating information about a location

Once you've set up your locations, you can edit their properties; however, you cannot edit the properties of a location that is in use. To do so, you must first remove it from the properties of any vehicles or routes that are using it.

Tip

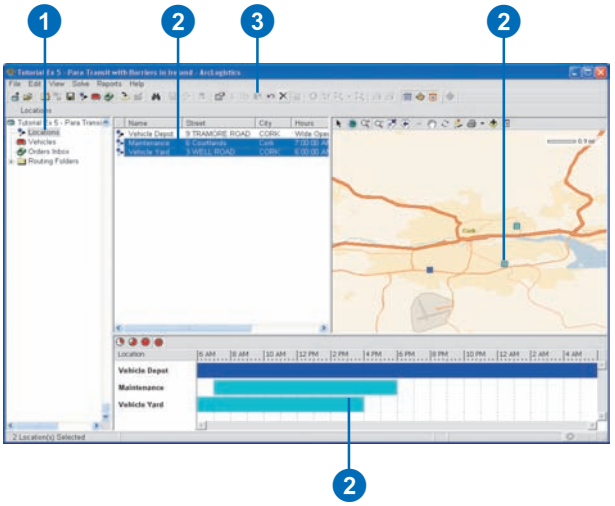
If you want to add or delete locations

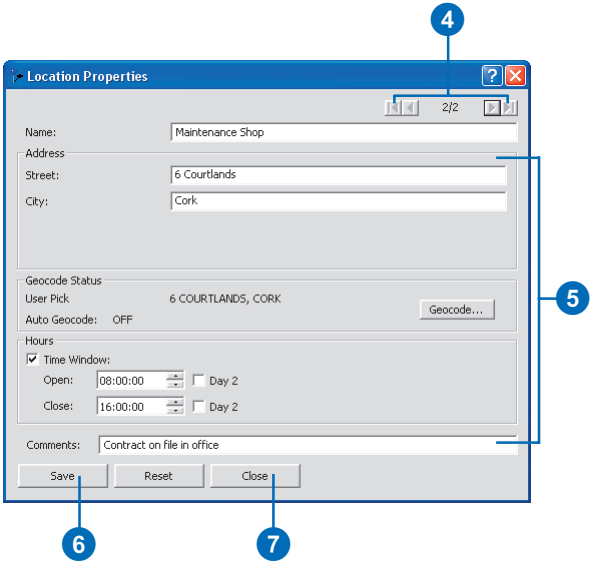
Use can also use the Add/Edit Locations button on the Main toolbar, or click the File menu, then click Locations.

You can also right-click a location in any view to edit or delete it, or right-click in the Map View to add a location.

1. Click Locations in the Tree View.
2. Select one or more locations in the List View, Map View, or Time View.
3. Click Properties. The Location Properties dialog box displays.
4. Use the arrows at the top right of the dialog box to move to the location that you want to edit.
5. Enter the changes in the dialog box.
6. Click Save.

   Repeat steps 4 through 6 if you want to update information about another location.
7. When you've finished, click Close.





Deleting a location

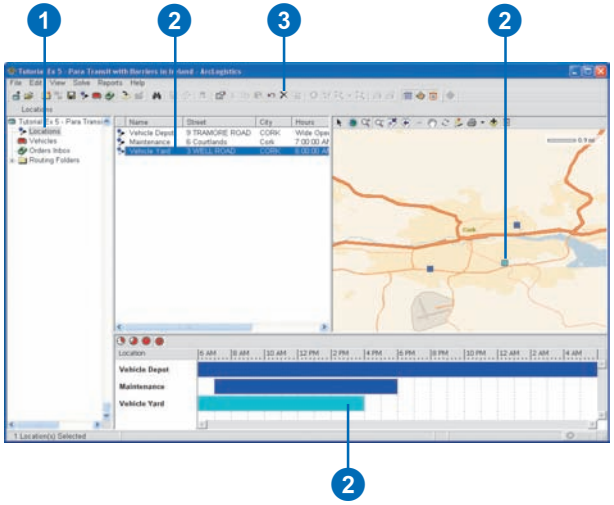
You can delete a location by using the List View, Map View, Time View, or the Location Properties dialog box.

You can only delete a location if it is not being used as a property of one or more vehicles or routes.

Deleting a location using the List View, Map View, or Time View

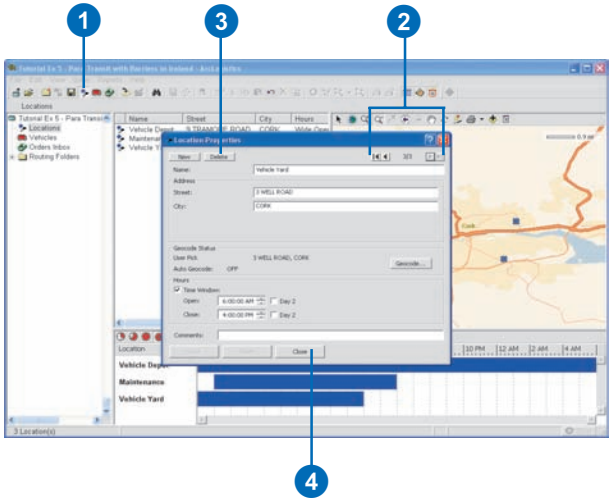
1. Click Locations in the Tree View.
2. Select one or more locations in the List View, Map View, or Time View.
3. Click Delete on the Main toolbar.

   You can also right-click a location in any view and click Delete.



Deleting a location using the Location Properties dialog box

1. Click Add/Edit Locations on the Main toolbar.
2. Use the arrows to navigate to the location you want to delete.
3. Click Delete.
4. Click Close to close the dialog box.



Working with zones

8

IN THIS CHAPTER

- Importing zones
- Creating zones
- Updating information about zones
- Assigning zones to vehicles
- Displaying zones
- Deleting zones

Zones are geographic map features that are associated with vehicles in order to send that vehicle into a preferred area. Zones are very useful when your operation has fixed routes with distinct geographies, or for when you want to favor routes to specific areas based on your own business practices.

A zone can be a polygon (area) feature or a point feature. Polygon zones can be either hard zones or soft zones, while point zones can only be soft zones.

A hard zone is an area constraint that doesn't allow a vehicle to be routed to an area outside of its assigned hard zone boundary. A soft zone is a preferred area of operation for a vehicle that still allows it to be sent to other areas, as required. Point zones are soft zones and act like gravity points drawing routes to that point.

Vehicles can have multiple polygon zones associated with them, or multiple associated point zones, but vehicles cannot have a combination of polygon and point zones associated with them.

Zones can be drawn directly in ArcLogistics using a drawing tool, or they can be imported as a shapefile or a geodatabase.

Once zones are created they can be renamed and all vehicles associated with this zone will have their zones property updated to reflect the new name.

If you no longer need a zone, you can delete it as long as it is not being used by a vehicle.

You can see your zones in the Map View, where they will be colored to match the vehicles with which they are associated.

Importing zones

Zones can easily be imported into ArcLogistics as either a shapefile or a geodatabse. Imported zones can be either points or polygons. Typically, imported zones have been created in a Geographic Information System which is very accurate. Zones can be imported with a name field, allowing for easy assignment to vehicles.

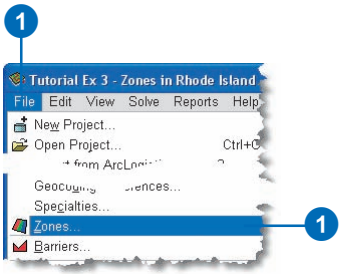
1. Click File on the Main toolbar and click Zones.

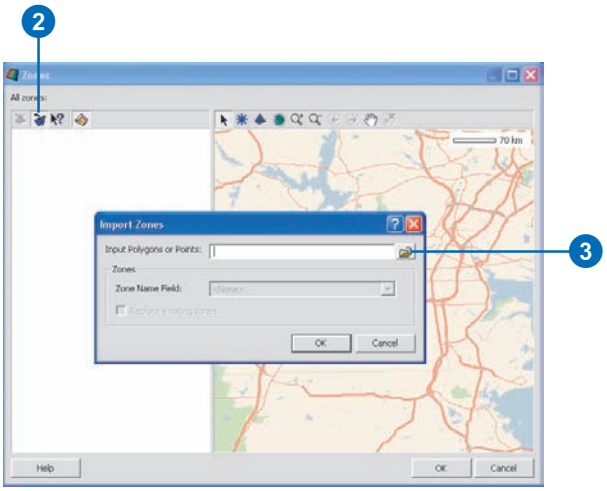
   The Zones window opens. The map opens by default to the extent that the Map View is open.

2. Click Import Zones on the Zones toolbar.

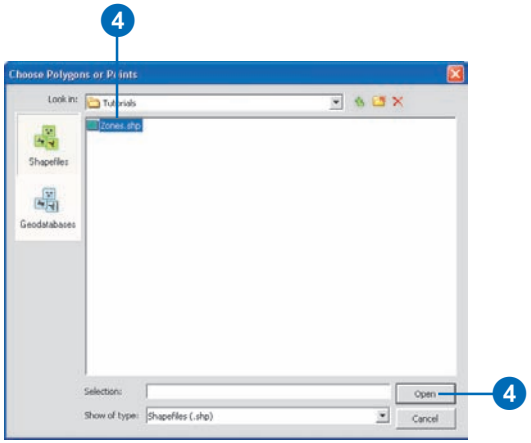
   The Import Zones dialog box opens.

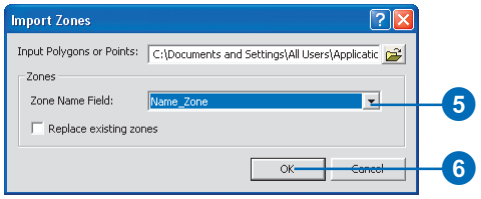
3. Browse to the location of your zone shapefile or geodatabase. ►

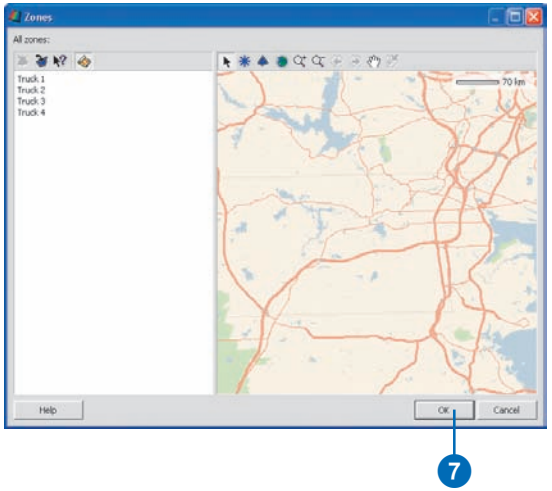




4. Select your zones file and click Open.
5. If your zones file has a name field you can select that to preserve the zone names in ArcLogistics. If not, your file will be imported and given default names, such as Zone 1, Zone 2, and so on.
6. Click OK.
7. Click OK to close the Zones user interface.







Creating zones

You can easily create zones in the Zones window by using either the New Point Zone or the New Polygon Zone tools on the Zones toolbar. When manually creating polygon zones you should pay special attention to how accurate the polygon zones are.

Tip

Creating zones from vehicles

Zones can also be created directly from the property page of a vehicle or by right-clicking a vehicle name.

Tip

Dynamic point zones

ArcLogistics can dynamically assign point zones to routes. When you choose this option, ArcLogistics gives more preference to designing routes that are geographically distinct with less crossover.

See Also

For more information on dynamic point zones, see Chapter 5, 'About routing project default property settings'.

Creating a point zone

1. Click File on the Main toolbar and select Zones.

   The Zones window opens. The map opens by default to the extent that your main map is open.

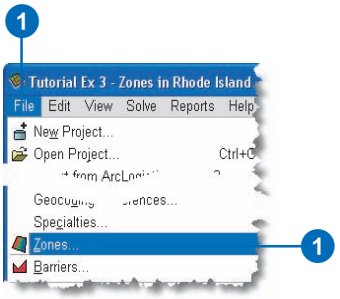
2. Select New Point Zone on the Zones toolbar.

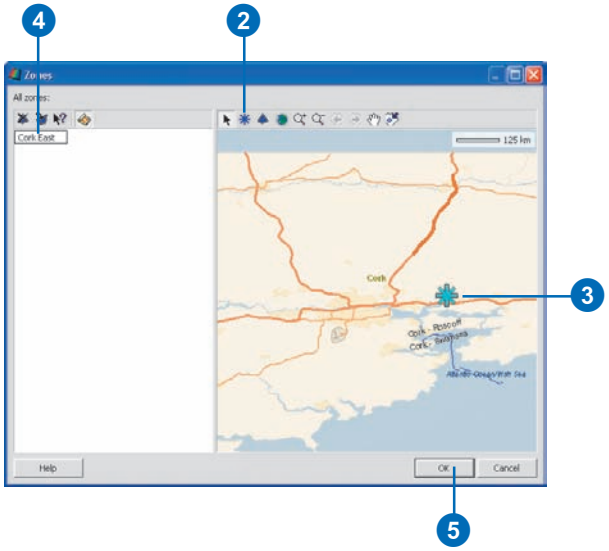
3. Left-click to place your point zone where you want it positioned.

   The point zones will be shown on the map as a bold asterisk and given a default name of Zone 1, Zone 2, and so on.

4. Enter a name for your zone before placing another point zone.

5. Click OK.





Tip

Moving verticies

You can move polygon vertices of a zone as needed to reshape it. See 'Updating information about zones' in this chapter.

Creating a polygon zone

1. Click File on the Main toolbar and select Zones.

   The Zones window opens. The map opens by default to the extent that your main map is open.

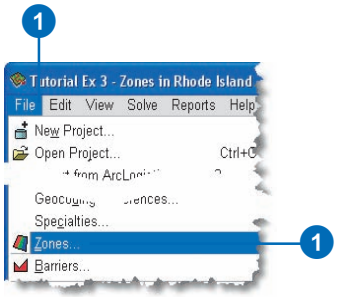
2. Select New Polygon Zone on the Zones toolbar.

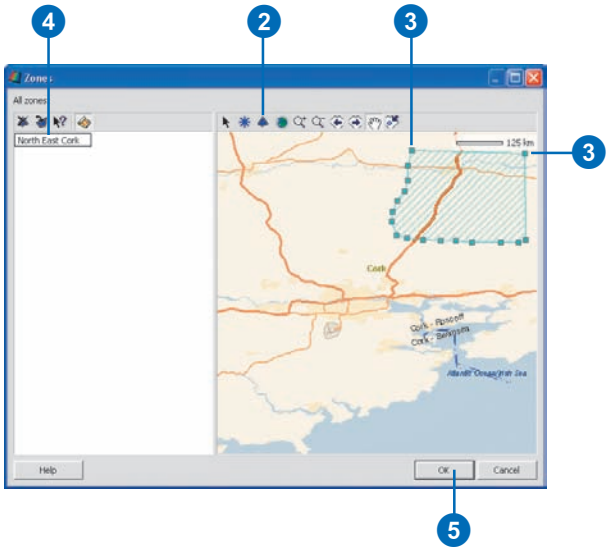
3. Click one vertex of your polygon zone. Click additional verticies of your polygon to create the area you want. Double-click the final vertex to finish the polygon.

   The polygon zone will be shown on the zones map as a dark grey hashed polygon and given a default name of Zone 1, Zone 2, and so on. While the polygon is selected it will be light blue in color and you will be able to see the polygon verticies.

4. Enter a name for your zone before creating another polygon zone.

5. Click OK.





Updating information about zones

Once you have created your zones you may want to duplicate, reshape, move them, or change their names.

Zones can have their names changed at any time, even when vehicles and routes have been assigned to them.

You can also move zones, but you cannot move a zone if it has a vehicle or route assigned to it.

Zones can also be duplicated at any time. Usually, a duplicated zone is moved to an adjoining area to preserve its shape.

Polygon zones can be reshaped by moving their vertices if they do not have any assigned vehicles or routes.

Tip

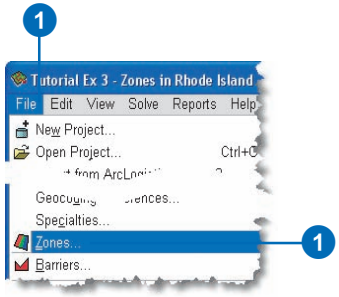
Zoom to a zone

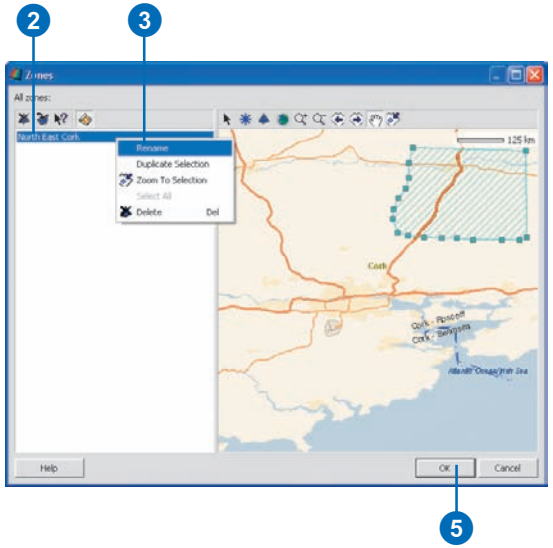
You can quickly zoom to a zone by double-clicking the zone name in the Zones window.

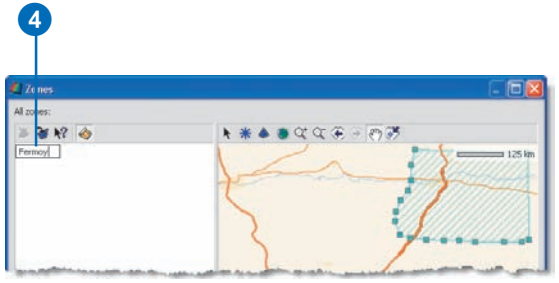
Renaming a zone

1. Click File on the Main toolbar and select Zones.

   The Zones window opens.
2. Right-click the zone name.
3. Click Rename.
4. Type in the new name for your zone.
5. Click OK.





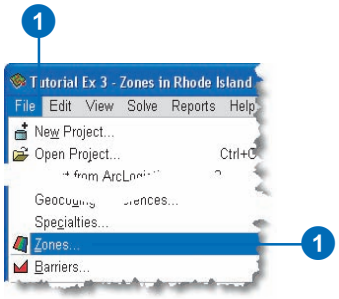


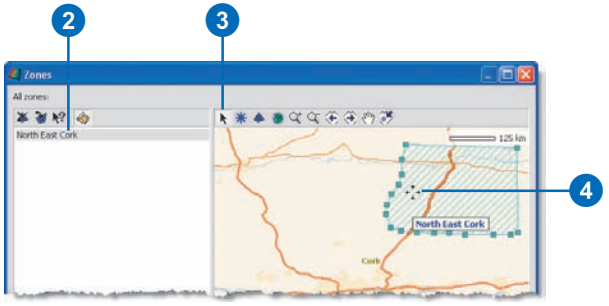
Moving a zone

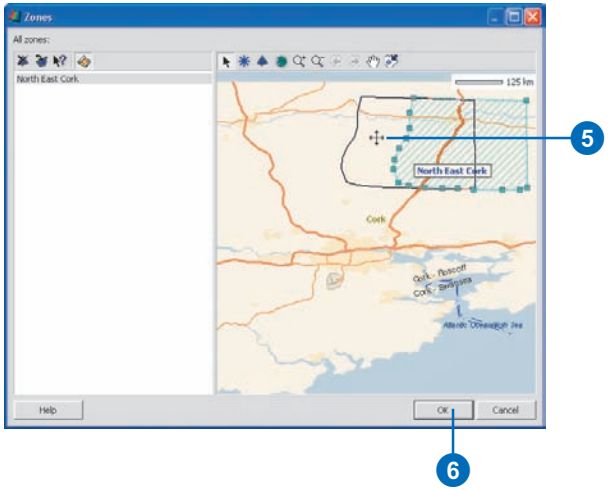
1. Click File on the Main toolbar and select Zones.

   The Zones window opens.

2. Click the zone name you want to move.
3. Click Select on the Zones toolbar.
4. Move your mouse over the zone you want to move. The cursor changes into four directional arrows if the zone can be moved. If the zone cannot move because it is assigned to a vehicle or route, the cursor will change to a circle with a diagonal line through it.
5. Left-click the zone on the map and drag it to the new location.
6. Click OK.





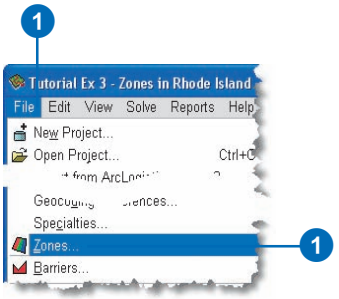


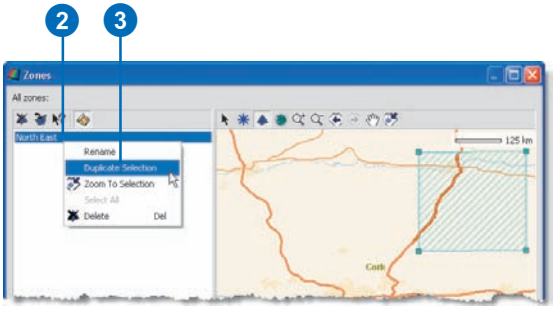
Duplicating a zone

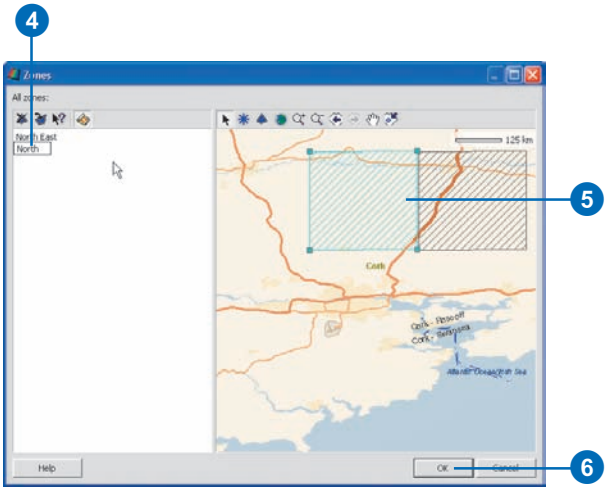
1. Click File on the Main toolbar and select Zones.

   The Zones window opens.

2. Right-click the zone name you want to duplicate.
3. Click Duplicate Selection.
4. Type in the name for the new zone.
5. Move the zone to a new location, if desired (see the previous section in this chapter).
6. Click OK.





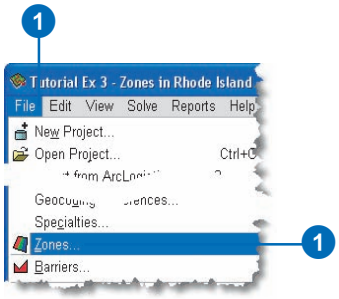


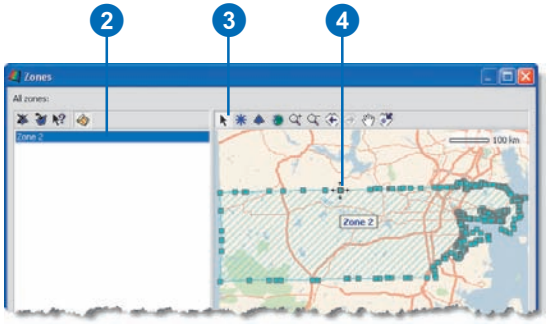
Reshaping a polygon zone

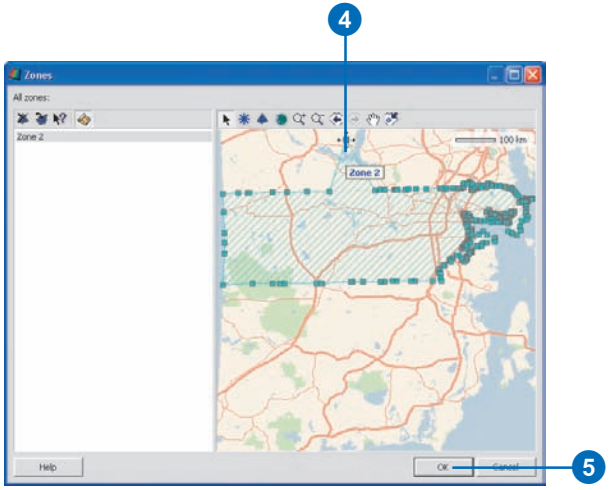
1. Click File on the Main toolbar and select Zones.

   The Zones window opens.

2. Click the zone to be reshaped.
3. Click Select on the Zones toolbar.
4. Move your mouse so the cursor is directly over a polygon vertex. Left-click the vertex and drag it to its new position.
5. Click OK.







Assigning zones to vehicles

Once zones are created it is a simple process to associate vehicles to them. Vehicles can have more than one associated zone, but can only have one geographic type of zone associated to them (i.e., either a polygon or a point zone, not both.)

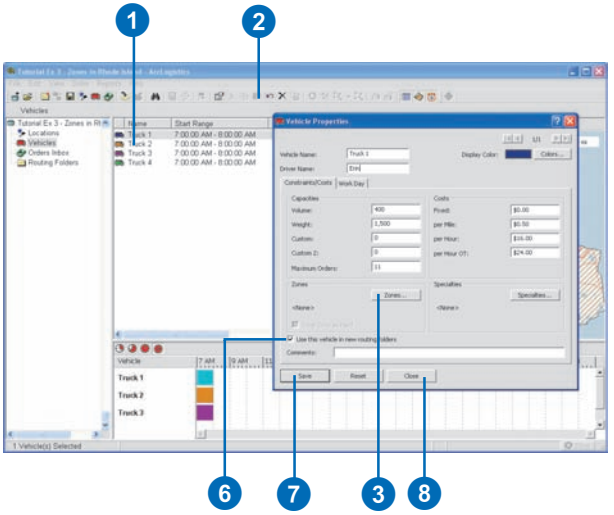
Tip

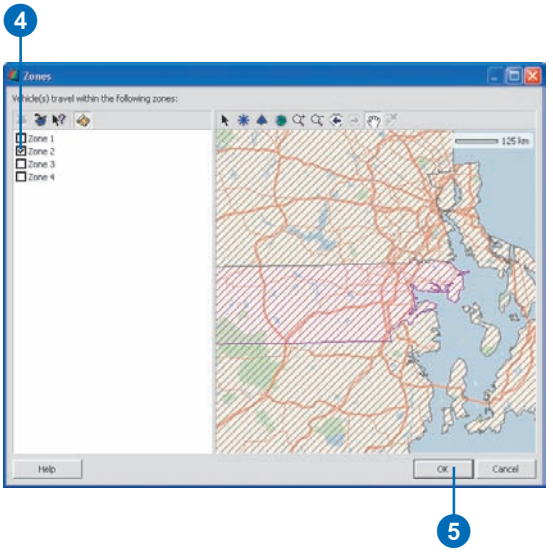
Using hard zones

Use hard zones when you do not want vehicles servicing orders that are outside the assigned zone.

1. Click a vehicle without any orders on it.
2. Click Properties on the Main toolbar.
3. Click Zones on the Vehicle Properties dialog box.

   The Zones window opens.
4. Check the zone you wish to associate with the vehicle you have selected.
5. Click OK.
6. Check Treat Zone as Hard if you want to use hard zones.
7. Click Save.
8. Click Close.





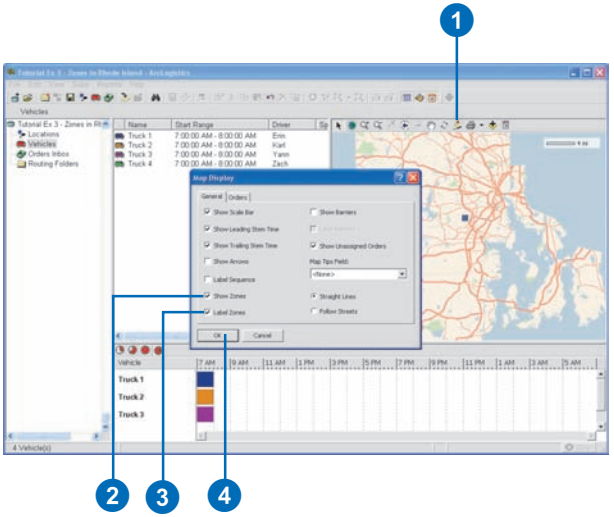
Displaying zones

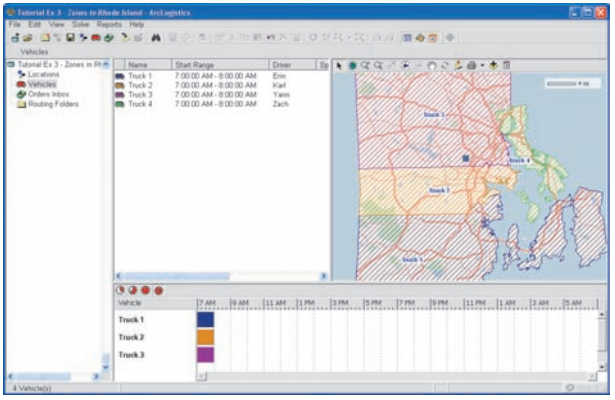
You can easily visualize your zones on the Map View by using the Control Map Display function. Zones will be colored to match the vehicles with which they are associated. Points are displayed as large asterisks and polygons are hashed with thin lines across them.

1. Click Control Map Display on the Map View toolbar.

   The Map Display dialog box opens.

2. Check Show Zones to see the zones in the Map View.
3. Check Label Zones to see zone names in the Map View. Label Zones can only be used if Show Zones is checked.
4. Click OK.





Map View showing polygon zones assigned to vehicles and colored accordingly.

Deleting zones

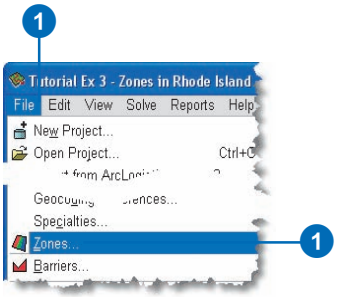
Zones can only be deleted if there are no vehicles associated with them.

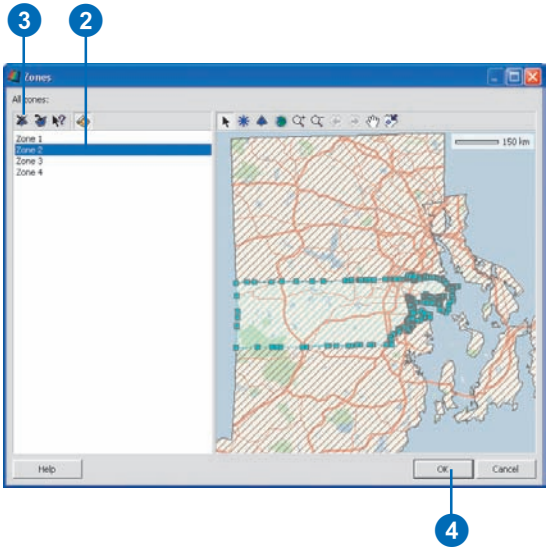
You can delete a zone by using the Zones window.

1. Click File on the Main toolbar and click Zones.

   The Zones window opens.

2. Click the zone you want to delete.
3. Click Delete Selected Zones on the Zones toolbar. If the selected zone is assigned to a vehicle, this option will not be active.
4. Click OK.





Working with barriers

9

IN THIS CHAPTER

- Importing barriers
- Creating barriers
- Activating barriers
- Updating information about barriers
- Displaying barriers
- Deleting barriers

Barriers are blockages to street segments that prohibit routes from using those streets. Barriers can represent many types of blockages to the street network such as flooded areas, hazardous materials areas, closed bridges and tunnels, road works, restricted roads, and many others.

Barriers can be drawn directly in ArcLogistics using a drawing tool, or they can be imported as a shapefile or a geodatabase. They can be either polygons that block complete areas or as points that block individual street segments.

Once barriers are created they can be renamed and associated to any routing folder

When you no longer need a barrier, you can delete it as long as it is not being used by a vehicle.

You can see your barriers in the Map View, where they will be colored red to show they are active in the selected item in the Tree View, or black to show they are not currently active in the selected item in the Tree View.

Importing barriers

Zones can easily be imported into ArcLogistics as either a shapefile or a geodatabse. Imported barriers can be either points or polygons. Typically, imported barriers have been created in a Geographic Information System that will have the advantage of being very accurate. Barriers can be imported with a name field, allowing for easy recognition and assignment to routing folders.

1. Click File on the Main toolbar and click Barriers.

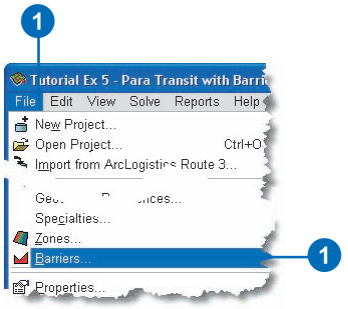
   The Barriers window opens.

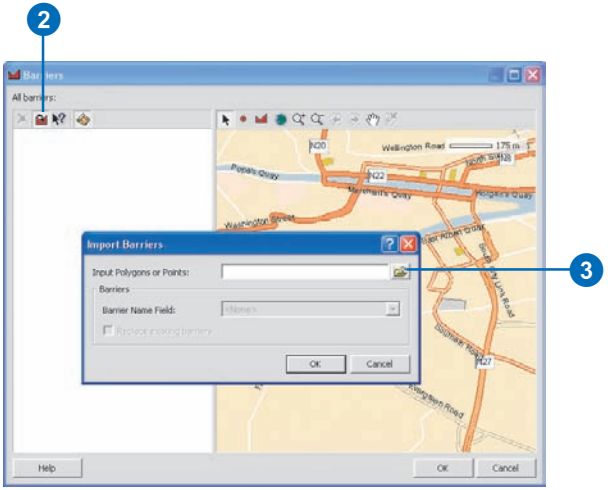
   The map opens by default to the extent that the Map View is open.

2. Click Import Barriers on the Barriers toolbar.

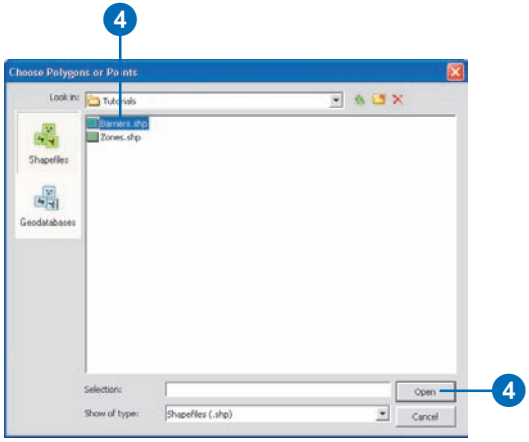
   The Import Barriers dialog box opens.

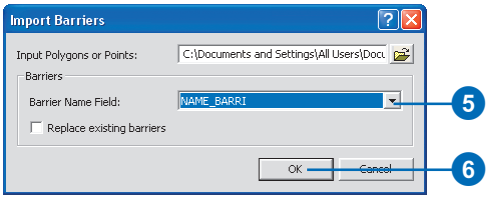
3. Browse to the location of your barrier shapefile or geodatabase. ►

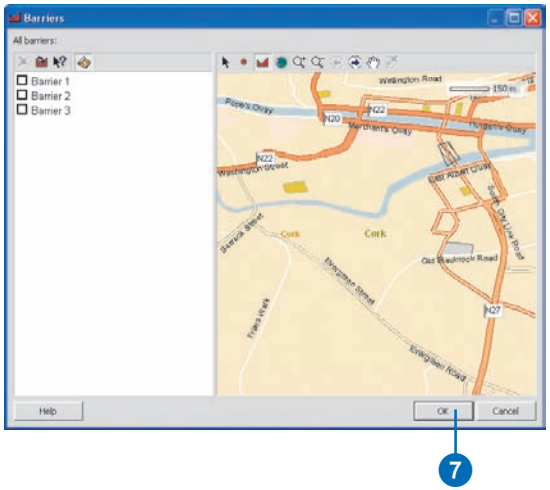




4. Select your barrier file and click Open.
5. If your barrier file has a name field you can select that to preserve the barrier names in ArcLogistics. If not, your file will be imported and given default names of Barrier 1, Barrier 2, and so on.
6. Click OK.
7. Click OK to close the Barriers user interface.







Creating barriers

You can easily create barriers in the Barriers window by using either the New Point Barrier or the New Polygon Barrier tools on the Barriers toolbar. When manually creating barriers you should pay special attention to how accurate the barriers are.

Tip

Creating barriers in routing foplders

Barriers can also be created directly in the property page of a routing folder.

Tip

Accuracy is important for point Barriers

Point Barriers only block the street segment that the Point Barrier is directly on. You should zoom in and view the Point Barriers to make sure they are on a street segment, and if necessary create additional Point Barriers.

Creating a Point Barrier

1. Click File on the Main toolbar and select Barriers.

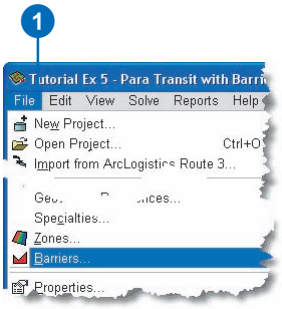
   The Barriers window opens.

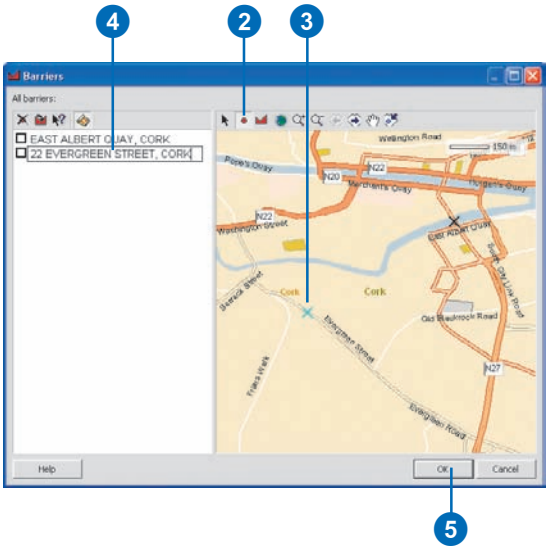
   The map opens by default to the current extent of the Map View.

2. Click New Point Barrier.
3. Using you mouse, left-click to place your point barrier on the street segment you want.

   The Point Barrier will be given a default name of its street address.

4. Enter a name for your barrier if you want.
5. Click OK.





Tip

Barriers in routing folders

You cannot create a barrier or activate a barrier in a routing folder that has a routing solution.

Creating a Polygon Barrier

1. Click File on the Main toolbar and select Barriers.

   The Barriers window opens.

   The map opens by default to the current extent of the Map View.

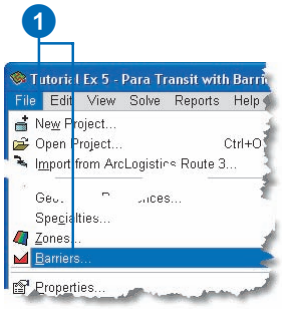
2. Click New Polygon Barrier.
3. Using your mouse, left-click the first vertex of your Polygon Barrier.

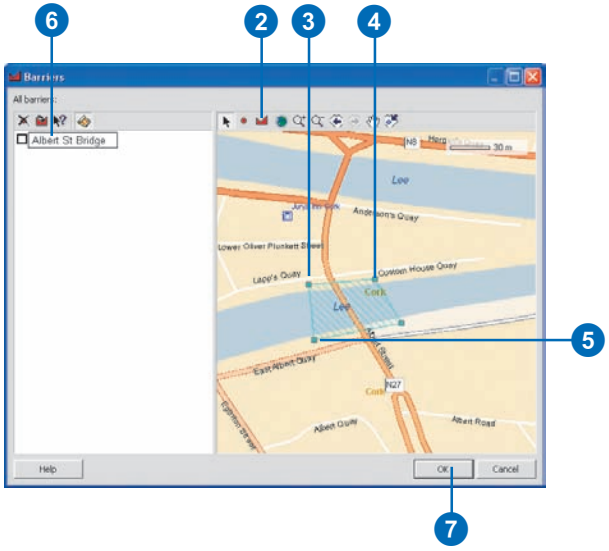
   This will also be your final vertex.

4. Click at least one more vertex of your Polygon Barrier.
5. Double-click the final vertex of your Polygon Barrier.

   The Polygon Barrier will be given a default name of Barrier 1, Barrier 2, etc.

6. Enter a name for your barrier if you want.
7. Click OK.





Activating barriers

By default barriers are inactive when they are created. You need to explicitly make barriers active either for the routing project or in individual routing folders.

Tip

Routing project or routing folders

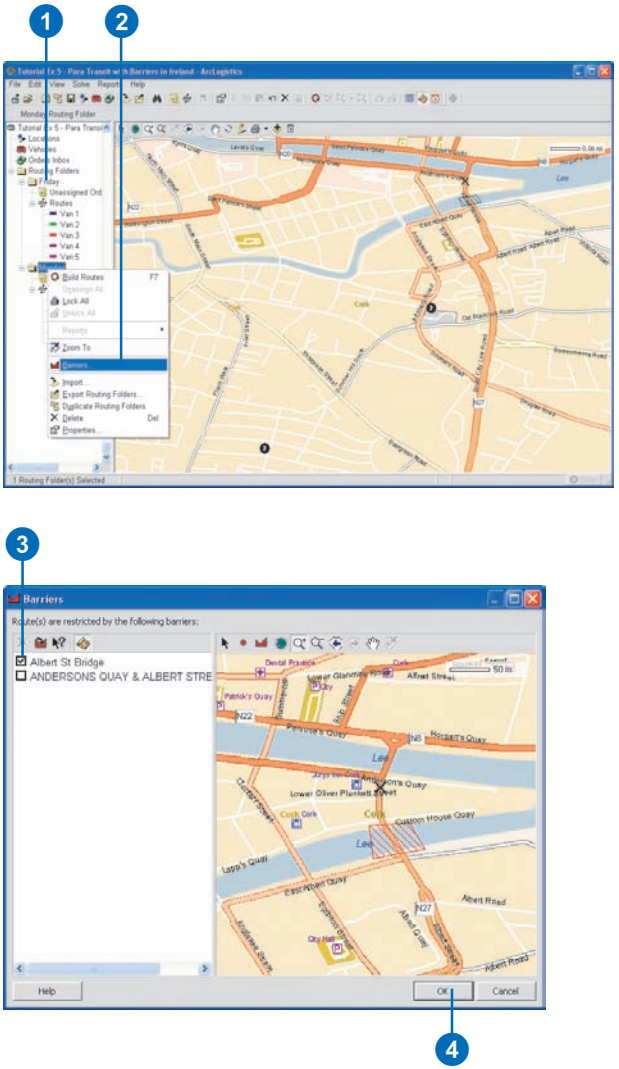
If you make a barrier active in the routing project properties, it will be active in all new routing folders. If you make a barrier active in a routing folder, it will only be active for that routing folder.

Tip

Barrier colors

Active barriers are colored red and inactive barriers are colored black.

1. Right-click a routing folder name.
2. Click Barriers.
3. Check the barrier you want to make active.
4. Click OK.



Updating information about barriers

Once you have created your barriers you may want to change their names, move, or reshape them.

Barriers can have their names changed at any time, even when they have been activated in a routing folder and routes have been created.

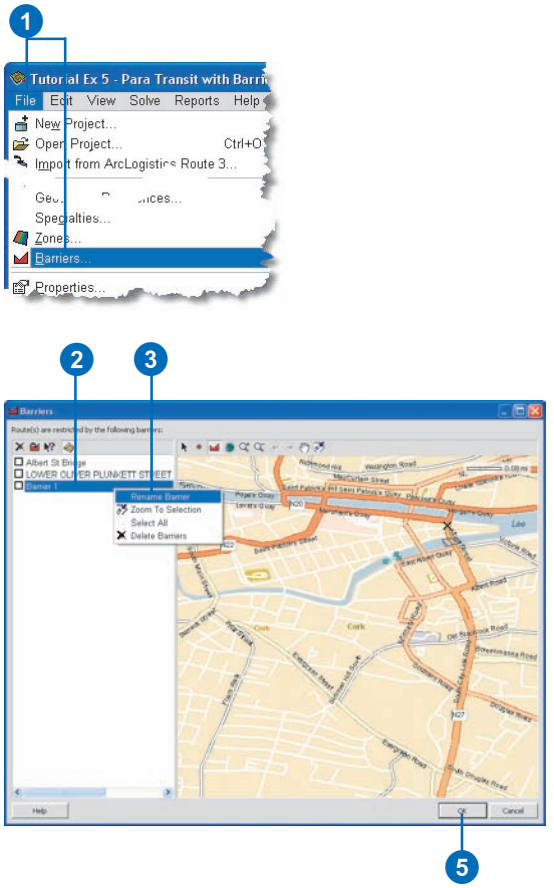
You can also move barriers, but you cannot move a barrier if it has been activated in a routing folder.

Polygon barriers can be reshaped by moving their vertices if they have not been activated in a routing folder.

Renaming a barrier

1. Click File on the Main toolbar and select Barriers.

   The Barriers window opens.
2. Right-click the barrier name.
3. Click Rename.
4. Type in the new name for your barrier.
5. Click OK.



Tip

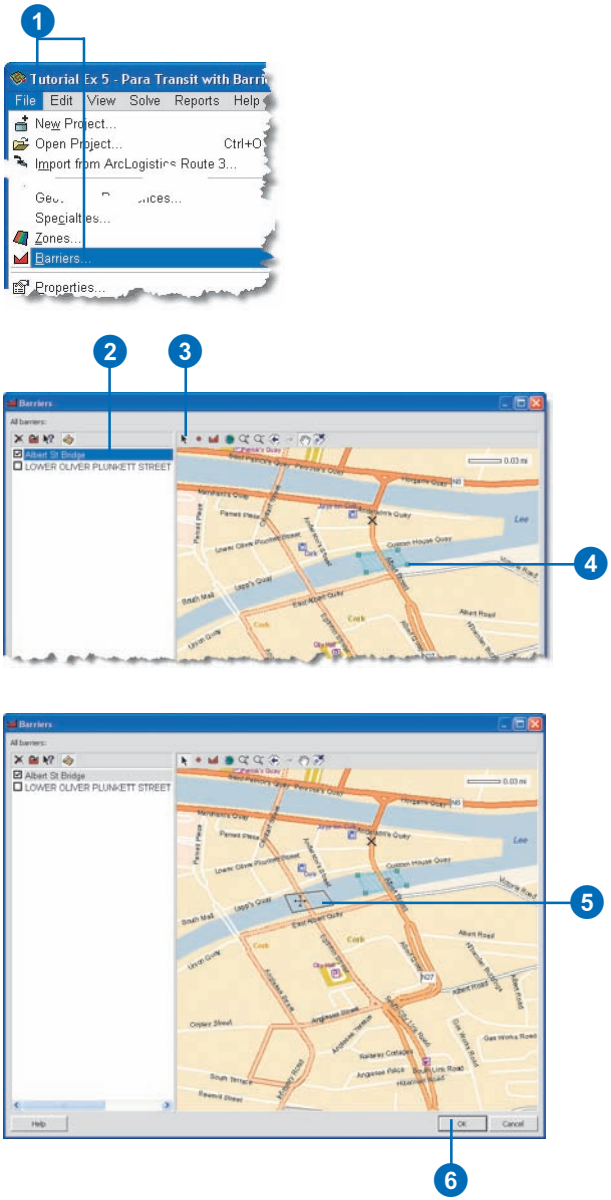
Rename your moved barrier

You may want to rename bariers that have been moved to aviod confusion if they are associated with an address or area.

Moving a barrier

1. Click File on the Main toolbar and select Barriers.

   The Barriers window opens.
2. Click the barrier name you want to move.
3. Click Select on the Barriers toolbar.
4. Move your mouse over the barrier you want to move. The cursor changes into four directional arrows if the zone can be moved. If the zone cannot move because it is active in a routing folder, the cursor will change to a circle with a diagonal line through it.
5. Left-click the barrier on the map and drag it to the new location.
6. Click OK.

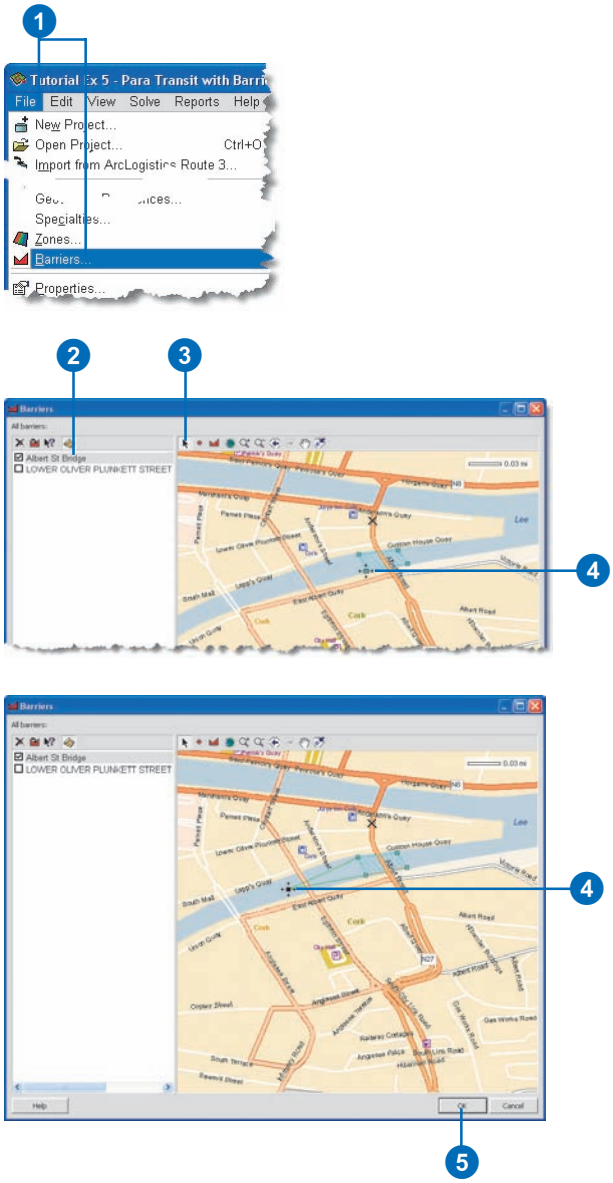


Reshaping a polygon barrier

1. Click File on the Main toolbar and select Barriers.

   The Barriers window opens.

2. Click the barrier to be reshaped.
3. Click Select on the Barriers toolbar.
4. Move your mouse so the cursor is directly over a polygon vertex. Left-click the vertex and drag it to its new position.
5. Click OK.



Displaying barriers

You can easily visualize your barriers on the Map View by using the Control Map Display function. Barriers will be colored red when they are active in the selected item in the Tree View. A point barrier is displayed as a large ex (X), and polygons are hashed with thin lines across them.

Tip

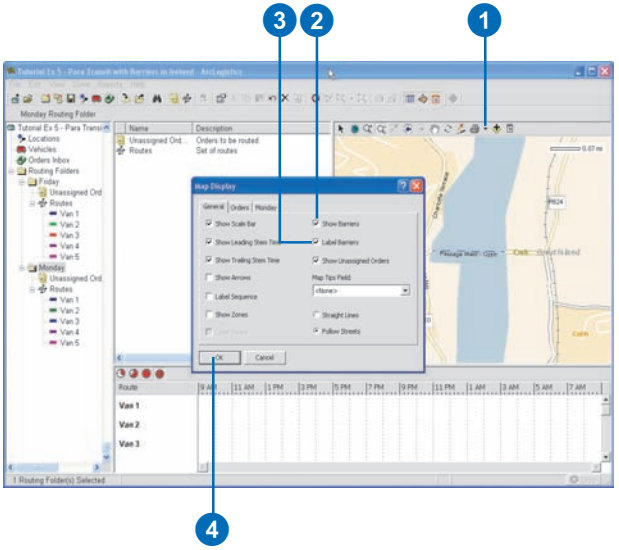
Zoom to a barrier

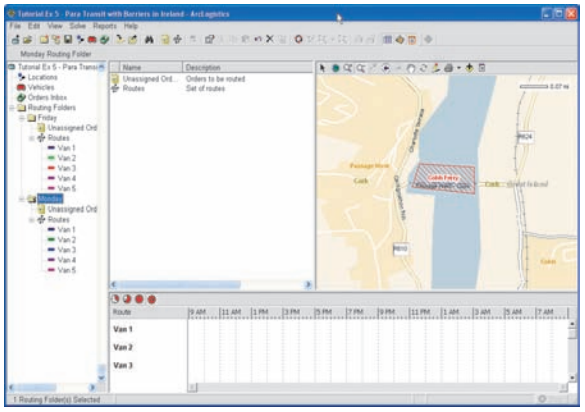
You can quickly zoom to a barrier by double-clicking the barrier name in the barrier window.

1. Click Control Map Display on the Map View toolbar.

   The Map Display dialog box opens.

2. Check Show Barriers to see the barriers in the Map View.
3. Check Label Barriers to see barrier names in the Map View. Label Barriers can only be used if Show Barriers is checked.
4. Click OK.





Map View showing an active polygon barrier blocking a ferry crossing.

Deleting barriers

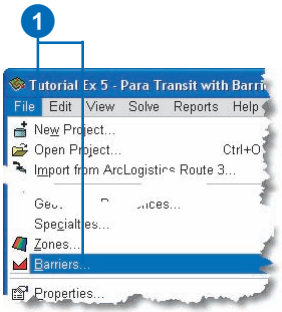
Barriers are typically temorary features that will be removed from a routing project when it is no longer needed.

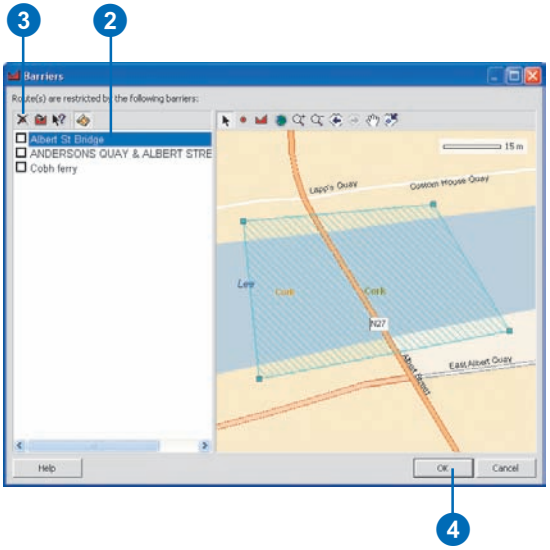
Deleting a Barrier

1. Click File on the Main toolbar and click Barriers.

   The Barriers window opens.

2. Click the barrier you want to delete.
3. Click Delete Selected Barriers on the Barriers toolbar. If the selected barrier is active in a routing folder, this option will not be active.
4. Click OK.





Working with vehicles

10

IN THIS CHAPTER

- About vehicles
- Adding a vehicle
- Displaying vehicles
- Updating information about a vehicle
- Deleting a vehicle

Once you have a service area, you need to provide ArcLogistics with information about your vehicles.

A vehicle can be any truck, van, or car in your fleet that you use to service your orders.

Vehicles have properties that are very important when building efficient routes. The next topic, 'About vehicles', explains the numerous vehicle properties that you can set. Make sure that you take the time to carefully collect and specify the relevant information for each of your vehicles.

Vehicles can be displayed in the List View, Map View, and Time View. In the Map View, the locations where the vehicles start and end are shown.

After adding a vehicle, you may want to update information about it. You can update a vehicle's properties at any time, but you should know that the properties of routes that have already been set up using the vehicle are not updated. Changes you make to a vehicle's properties are only applied to new routes that you create based on this vehicle.

If you've added a vehicle that you no longer need, you can delete it from the routing project.

About vehicles

Setting the properties of your vehicles is one of the most important tasks you have when working with ArcLogistics. The properties you set have a direct impact on how ArcLogistics builds routes. There are several groups of properties that you must set. These include Capacities, Costs, Zones, Specialties, Work Day details, Lunch break details, and Location details.

Capacities

You can set up to five capacities for your vehicles: *Weight*, *Volume*, *Custom*, *Custom 2*, and *Maximum orders.*

Volume, Weight, Custom and Custom 2 are the maximum volume, weight, and custom capacity the vehicle can carry. Custom and Custom 2 provide an option to specify any other capacity that affects how much your vehicles can carry (e.g., pallets, cases, wheelchairs, and so on). Volume, weight, custom and custom 2 can be in any units, such as cubic feet, pounds, pallets, cases, or just the number of items, but be consistent. Use the same units you'll use to specify the weight, volume, and custom value of individual orders—for example, if you'll be using cubic feet and pounds for orders, use cubic feet and pounds for your vehicles. If you don't keep track of the volume, weight, or a custom value for your orders, you can leave these capacities of your vehicles set to 0.

Maximum orders is the number of orders a vehicle can handle. If your vehicles don't have a maximum number of orders that they can handle, set maximum orders to a high number, such as the maximum number of orders that your fleet handles in a day.

ArcLogistics never exceeds these capacities when assigning orders to routes.

Costs

ArcLogistics builds routes that attempt to minimize costs, while meeting order time windows. There are five vehicle costs you can specify.

Fixed cost is what you pay each time you use the vehicle, such as a daily rental fee. But if you pay a daily rental fee regardless of whether or not you use the vehicle, do not specify it as a fixed cost. If you have vehicles that are less preferable to operate, you can set a higher fixed cost, so that ArcLogistics is less likely to use them.

Per Mile or per kilometer cost can include the cost of fuel, maintenance, depreciation, and mileage-based wages, fees, or taxes.

Per Hour cost can include the hourly wage of the driver, the cost per hour of operating the vehicle, or both. The cost per hour must be greater than zero.

Per Hour OT is per hour cost of operating the vehicle once overtime begins. This cost can include the hourly wage of the driver, the cost per hour of operating the vehicle, or both. The cost per hour must be greater than or equal to the per hour cost.

Zones

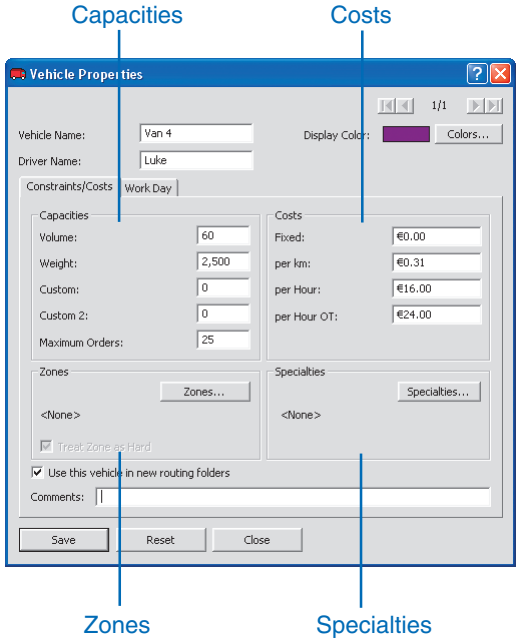
Zones are geographic map features that are associated to vehicles in order to send that vehicle into a preferred area. Zones are very useful when your operation has fixed routes with distinct geographies, or for when you want to favor routes to specific areas based on your own business logic.

A zone can be a polygon (area) feature or a point feature. Polygon zones can be either hard zones or soft zones, while point zones can only be soft zones.

A hard zone is an area constraint that does not allow a vehicle to be routed to an area outside of its assigned hard zone boundary. A soft zone is a preferred area of operation for a vehicle but will still send it to other areas as required. Point zones are soft zones and act like gravity points drawing routes to that point.

Vehicles can have multiple polygon zones associated to them, or multiple point zones associated to them, but cannot have a combination of polygon and point zones associated to them.

See also ‘Working With Zones’.



Specialties

Does the vehicle or vehicle’s driver have any specialties that need to be matched to order specialties? For example, does only one of your vehicles have a lift gate making it the only vehicle able to service some customers? If so, set a vehicle specialty of Lift Gate. A vehicle or driver can have many specialties. For more information about specialties, see ‘Setting up a list of specialty codes’.

Workday

Set the start range to control when routes can begin. Per hour cost begins accumulating for the route no later than the end of the start range.

Earliest Start is the earliest time that you want to allow the vehicle to begin its route. ArcLogistics never schedules a route to begin before this time.

Latest Start is the latest time that you want to allow the vehicle to begin its route.

The larger the start range, the more flexibility ArcLogistics has to vary the start time of your routes so that unproductive time can be reduced. If you compensate your drivers from the earliest start time on, regardless of when they begin to service orders, set the latest time to the same time as the earliest.

Maximum Travel Distance is the maximum distance that a route can travel. The vehicle must return to its end location within this distance.

Maximum Travel Duration is the maximum number of hours that a route can be driving for. The vehicle must return to its end location within this many drive hours.

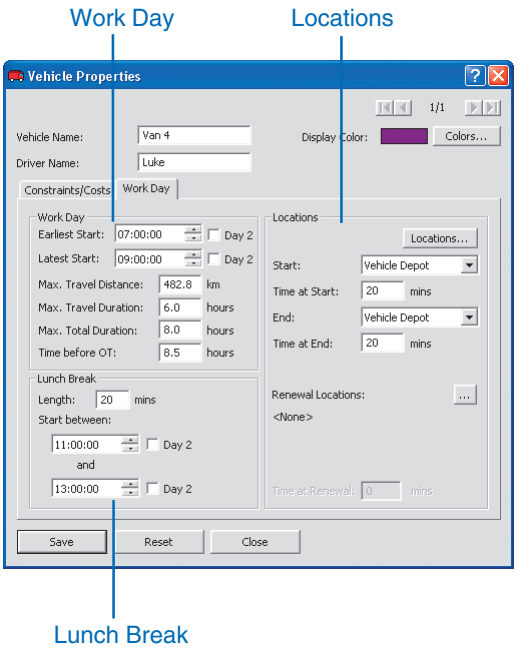
Maximum Total Duration is the maximum number of hours that a route can extend and includes all travel time, lunch, order service

time, wait time, and time at the start and end of the route. The vehicle must return to its end location within this many hours.

Time before OT is the number of hours into a route before the overtime hourly rate applies.

Lunch break

Length is the length of the lunch break in minutes. The time at lunch is included in the cost of the route. If your drivers don't take lunch, set the length to 0.



You set lunch to be taken within a specific time window. ArcLogistics will try to schedule lunch at a time that doesn't jeopardize order time windows.

Locations

Start and *End* are the locations where the vehicle begins and completes routes. Click the drop-down arrow and click a location from the list. If you have not already set up a location, click Locations and add it.

Time at Start is the average amount of compensated time spent at the beginning of the route, for example, preparing or loading a vehicle.

Time at End is the average amount of compensated time spent at the end of the route, for example, servicing the vehicle or preparing it for the next day.

Renewal Locations are also optional. For more information about renewal locations, see 'About locations' in Chapter 6.

Time at renewal is the average amount of time spent reloading or unloading the vehicle while at a renewal location.

Adding a vehicle

Add your vehicles by entering their properties into ArcLogistics.

The vehicles you set up can be copied into routing folders. Once in a routing folder, a route is set up. Only one route can be set up per vehicle.

If needed, you can change the properties of a route to be different from the vehicle that the route is based on. You might want to do this to meet the requirements of a specific routing problem.

If you need to make a permanent change to a vehicle, such as an increase to the per hour cost or a capcity increase, make the change to the vehicle's properties. Only subsequent routes that are created based on this vehicle inherit the updated properties.

See Also

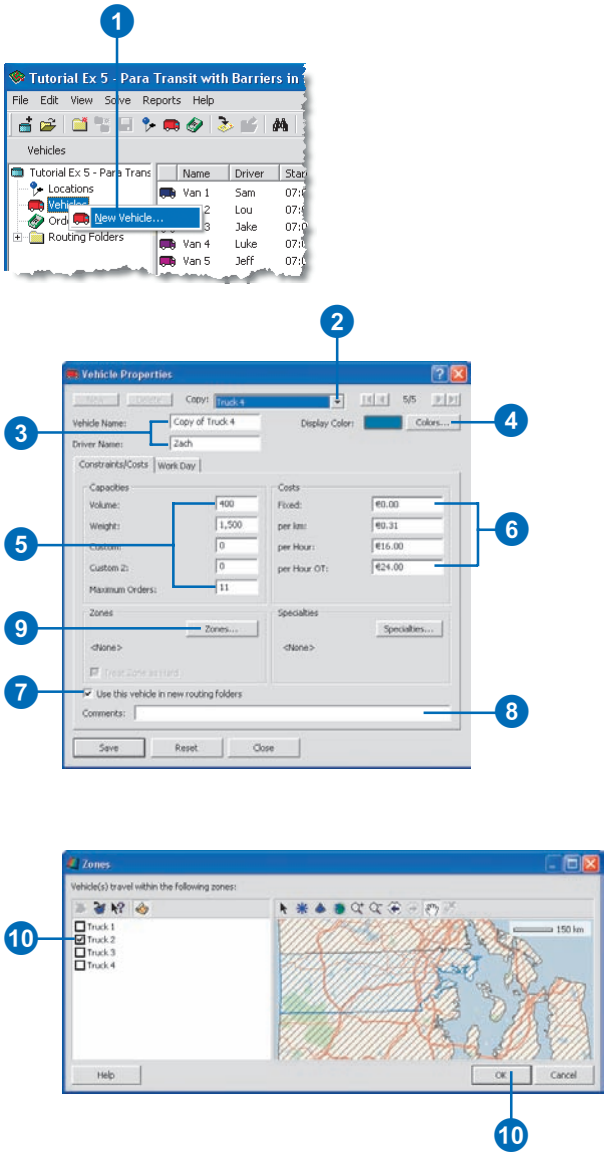
For more information about what to enter in each field, see the topic 'About vehicles' in this chapter.

Tip

Adding a vehicle

You can also click Add/Edit Vehicles on the Main toolbar to create a new vehicle.

1. Right-click Vehicles in the service area tree, then click New Vehicle.
2. If you already have at least one vehicle set up, you can make single copy of it by clicking the Copy drop-down arrow and picking the vehicle you want to copy from the list. Then change information to represent the new vehicle.
3. Type the vehicle name and driver name.
4. If you don't like the default color, click Colors to choose one. The color you choose is used to symbolize orders and routes for this vehicle.
5. Enter the capacities of the vehicle.
6. Enter the costs of operating the vehicle, including the driver's wages.
7. If you use the vehicle regularly, check Use the vehicle in new routing folders to automatically add the vehicle to each new routing folder you create.
8. If you wish, type comments about the vehicle.
9. To assign a zone, click Zones.
10. Click the checkbox beside each of the vehicle zones and click OK. ▸



Tip

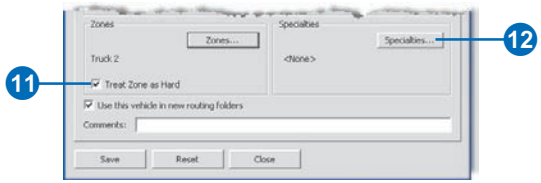
Adding multiple vehicles

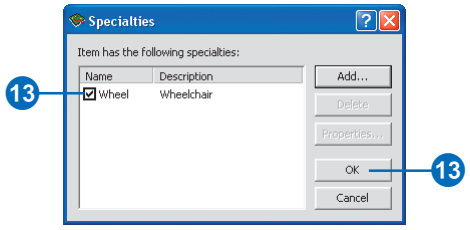
If you need to create many vehicles with the same properties, you can duplicate one vehicle and make as many copies as needed.

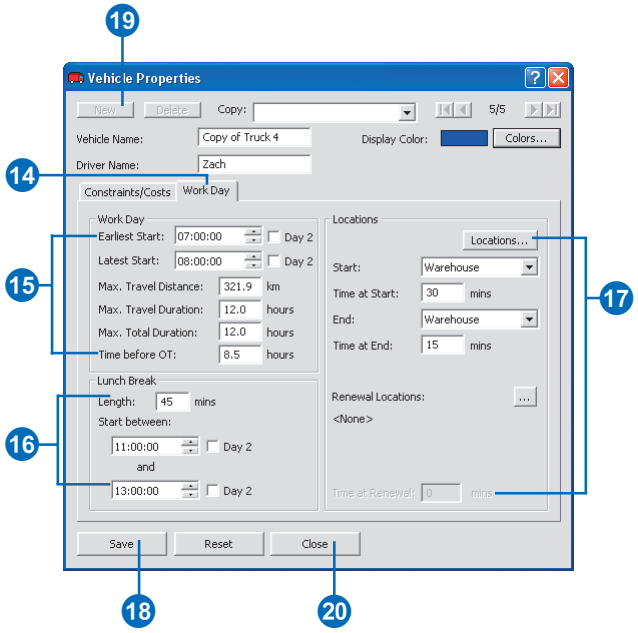
See Also

For more information on duplicating multipple vehicles see 'Adding multiple vehicles' in this chapter.

11. If you are using polygon zones and you want to make them hard zones, click Treat Zones Hard.
12. To assign specialties, click Specialties.
13. Click the checkbox beside each of the vehicle or driver's specialties and click OK.
14. Click the Work Day tab.
15. Enter work day information.
16. Enter lunch information.
17. Enter location information.
18. Click Save.
19. To set up another vehicle, click New and repeat steps 2 through 18.
20. When you've finished, click Close.



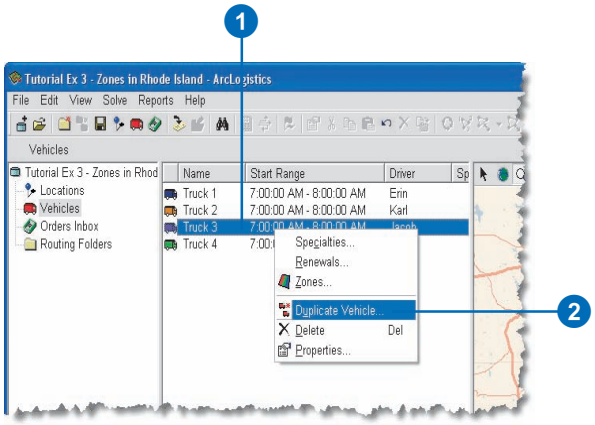


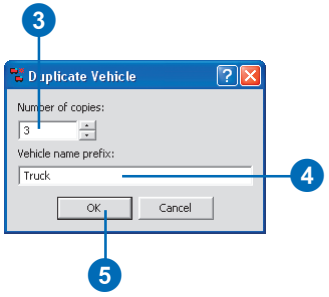


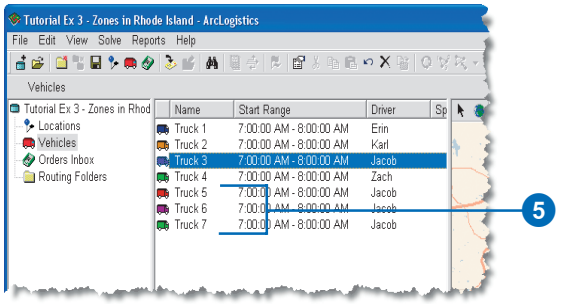
Adding multiple vehicles

If you have many vehicles to create with the same properties you can easily duplicate the vehicle and create as many copies as you need.

1. Right-click the vehicle to be duplicated in the List View.
2. Click Duplicate Vehicle.
3. Type in the number of copies to be made.
4. Type in the vehicle name prefix, if necessary. ArcLogistics will automatically add the text name of the vehicle to be duplicated.
5. Click OK. ArcLogistics will add an incremental suffix number based on the highest number in the current list of vehicles (e.g., if you are making three copies of Van 3, and you currently have a Van 4, it will create Van 5, Van 6, and Van 7).





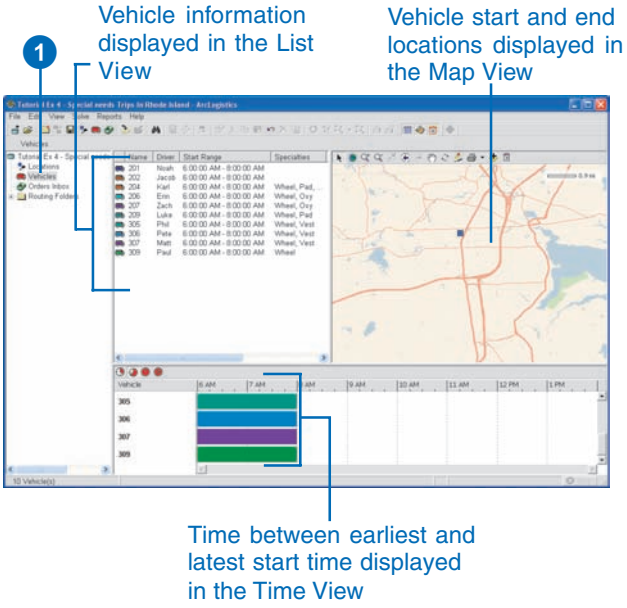


Displaying vehicles

You can display vehicles in the List View, Map View, or Time View.

1. Click Vehicles in the Tree View.

   Information about each vehicle displays in the List View. In addition, the start and end locations of each vehicle are displayed in the Map View, and the time between the earliest start and latest start time of each vehicle is shown along a time line in the Time View.



Updating information about a vehicle

Once you've set up your vehicles, you can edit their properties. Remember that vehicles are like templates for routes, so changes you make to a vehicle will only apply to future routes that you set up based on this vehicle. If you want to edit properties of routes that have already been set up, use the Route Properties dialog box.

Tip

If you want to be able to add or delete vehicles

Click Add/Edit Vehicles on the Main toolbar or click the File menu and click Vehicles.

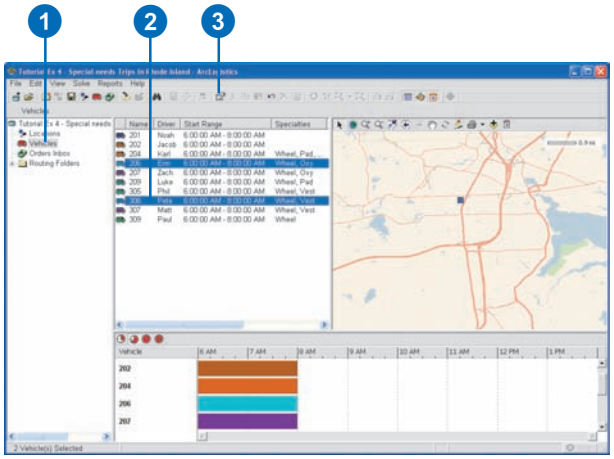
See Also

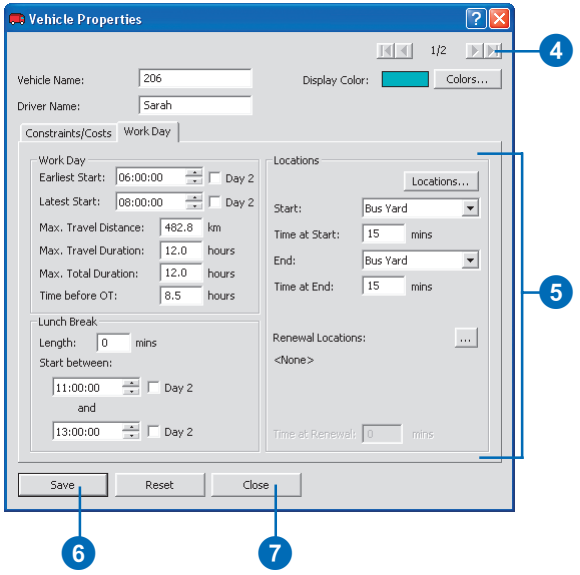
For more information about setting up a route based on a vehicle, see 'Specifying which vehicles to use' in Chapter 12.

1. Click Vehicles in the Tree View.
2. Select one or more vehicles in the List View, Map View, or Time View.
3. Click Properties on the Main toolbar.

   The Vehicle Properties dialog box displays.
4. Use the arrows at the top of the dialog box to move to the vehicle you want to edit.
5. Enter the changes in the dialog box.
6. Click Save.

   If you want to update information about another vehicle, repeat steps 4 through 6.
7. When you've finished, click Close.





Deleting a vehicle

You can delete a vehicle by using the List View, Map View, Time View, or the Vehicle Properties dialog box.

You can only delete a vehicle if it is not being used in an existing routing folder.

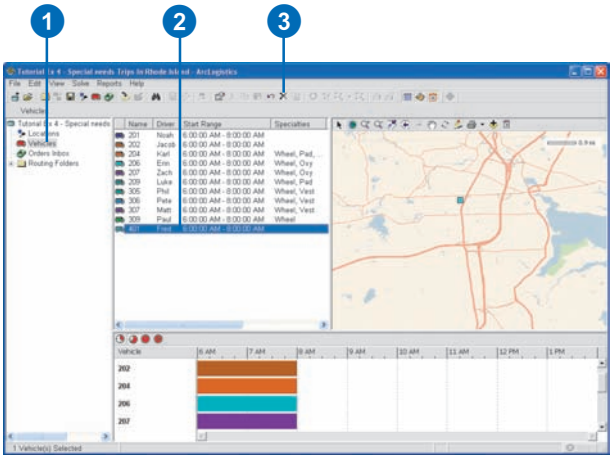
Tip

Delete by right-clicking a vehicle

You can also delete a vehicle by right-clicking a vehicle, then clicking Delete.

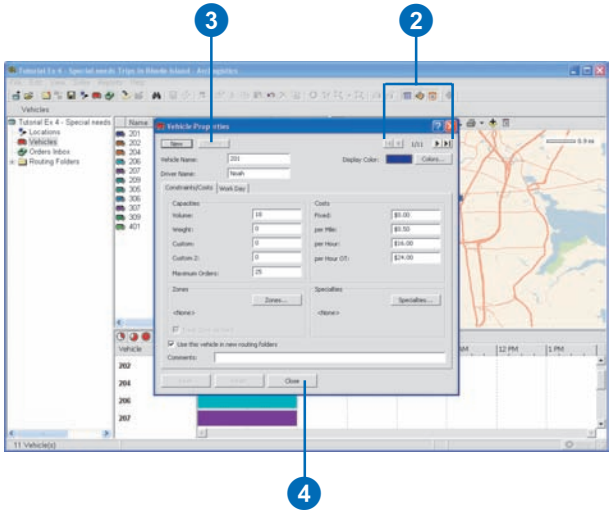
Deleting a vehicle using the List View, Map View, or Time View

1. Click Vehicles in the Tree View.
2. Click the vehicle(s) you want to delete in the List View, Map View, or Time View.
3. Click Delete.



Deleting a vehicle using the Vehicle Properties dialog box

1. Click the File menu, then click Vehicles. This opens the Vehicle Properties dialog box for all vehicles.
2. Use the arrows to navigate to the vehicle you want to delete.
3. Click Delete.
4. Click Close to close the dialog box.



Working with routing folders

11

IN THIS CHAPTER

- Adding a routing folder
- Updating information about a routing folder
- Exporting information from a routing folder
- Deleting a routing folder

ArcLogistics solves routing problems defined in routing folders. A routing folder can represent a day of the week, a date, a territory, a period of time, order types, or any other method you use to organize orders for routing. You can name them whatever you want or they can be created automatically from fields in your order database.

Each routing folder contains two items: unassigned orders, and routes.

You can set the preferences for each routing folder to be different from the default preferences you've set for your routing project.

You can also export the information in your routing folders to a database, an ESRI *shapefile*, or a text file.

When you no longer need a routing folder, you can delete it from the routing project.

Adding a routing folder

You can add routing folders by using the Routing Folder Wizard or by creating a duplicate of an existing routing folder.

The Routing Folder Wizard guides you through the process of creating new routing folders. You can click Finish at any step while using the wizard. You can always add more information to the routing folder after you've created it.

Once you're familiar with the capabilities and work flow of ArcLogistics, it's possible to complete almost all your routing tasks from within this wizard.

See Also

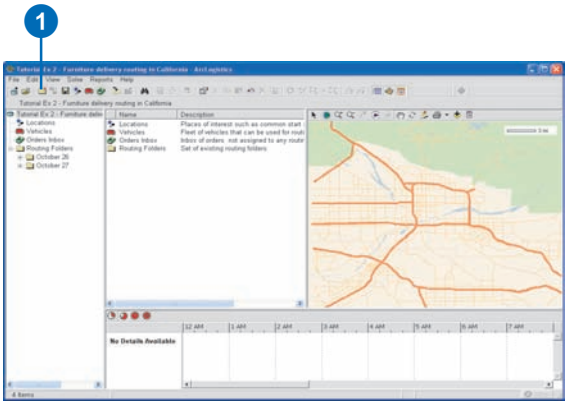
If your orders are in a database, ArcLogistics can automatically create routing folders using the data in a field in your database. For more information, see 'Importing Orders' in Chapter 11.

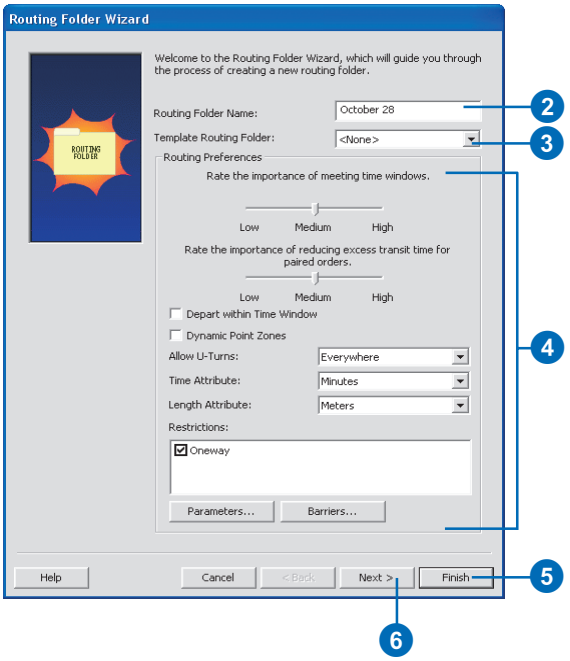
See Also

Default routing folder properties are based on what you've set for your routing project. For more information, see 'About routing project default property settings' in Chapter 5.

Adding a routing folder using the Routing Folder Wizard

1. Click New Routing Folder on the Main toolbar.
2. Type a name for the routing folder.
3. Click the drop-down list and choose a routing folder to serve as a template for this new routing folder. The properties of the template routing folder and the vehicles that are available for routing are applied to the new routing folder you've created.
4. Adjust the routing folder properties if you don't want to use the defaults that have been set.
5. Click Finish to add the routing folder.
6. Click Next to continue. ►





Tip

Adding a vehicle to the routing project

You can add a new vehicle to the routing project by clicking Add/Edit Vehicles.

See Also

For more information about adding vehicles, see 'Adding a vehicle' in Chapter 9.

Tip

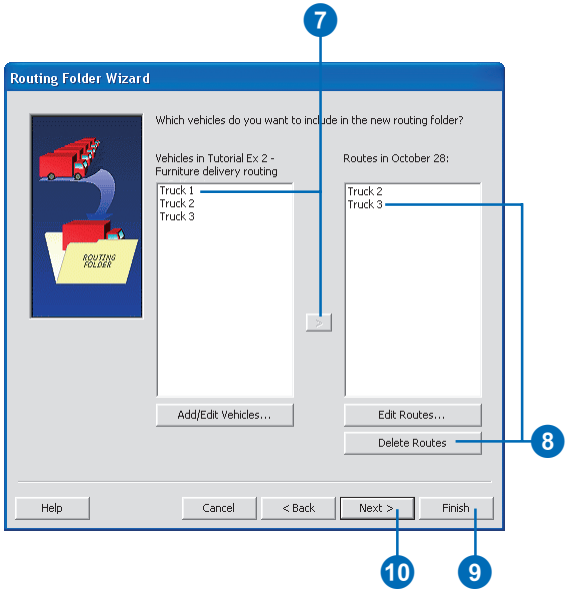
Editing route properties

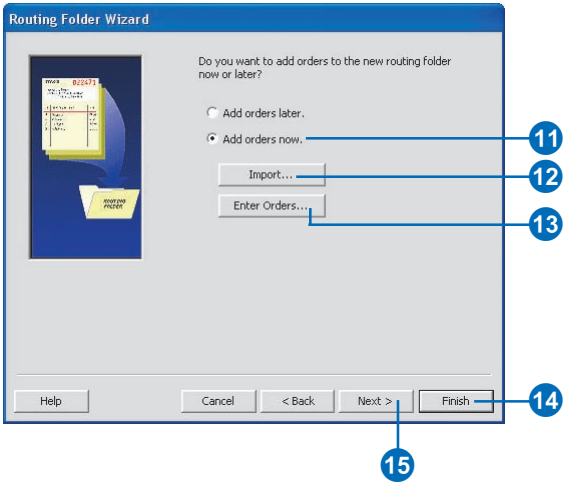
You can edit route properties to be different from the vehicle on which they're based. Select the route(s) you want to edit, then click Edit Routes.

See Also

For more information on editing route properties, see 'Specifying which vehicles to use' in Chapter 12.

7. Click a vehicle in the left list, then click the > button if the list on the right doesn't contain all the names of the vehicles that you want included in the new routing folder.
8. Click the vehicle name in the right list, then click Delete Routes if the list on the right contains a vehicle name that you do not want in the routing folder.
9. Click Finish to add the routing folder.
10. Click Next to continue.
11. Click Add orders now if you want to add orders to the routing folder.
12. Click Import if you want to use the Order Import wizard to add orders to the routing folder.
13. Click Enter orders to use the Order Properties dialog box to add orders to the routing folder.
14. Click Finish to add the routing folder.
15. Click Next to continue. ▸



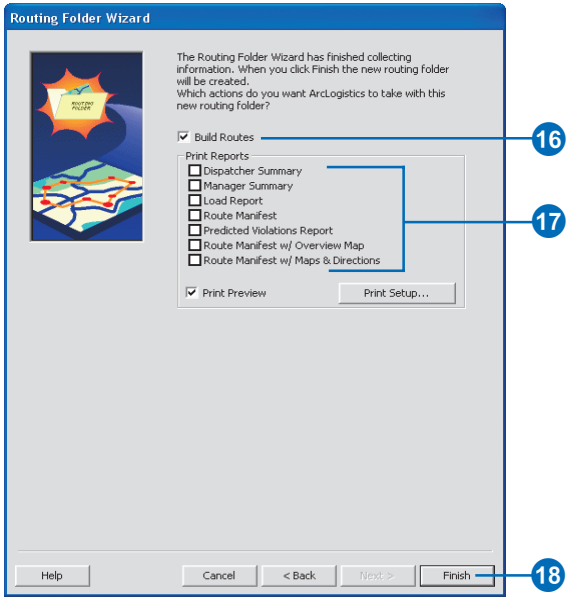


Tip

Sending reports directly to the printer

Uncheck the Print Preview option to send the reports directly to the printer.

16. Check Build Routes to build routes upon completing the wizard.
17. Check the reports you want to print to print reports.
18. Click Finish.



Tip

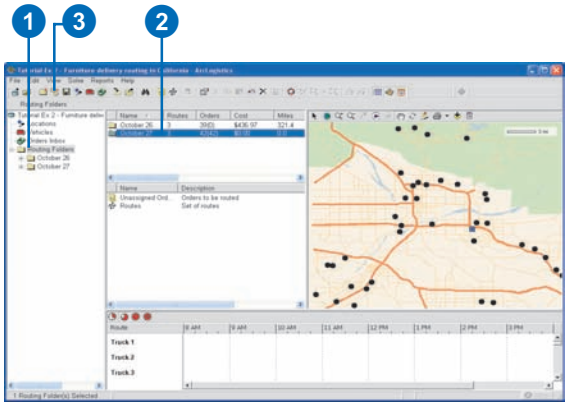
Renaming a duplicate routing folder

Rightjt-click the routing folder and click Properties. Type a new name and click OK.

Adding a routing folder by creating a copy of an existing routing folder

1. Click Routing Folders in the Tree View.
2. In the List View, select the routing folders you want to duplicate.
3. Click Duplicate Routing Folders on the Main toolbar.

   A new routing folder named Copy of <original routing folder name> is added to the routing project.



Updating information about a routing folder

After you've added a routing folder, you can edit its properties. By default, the properties of the routing folder are the same as the properties of the routing project. You can change the routing folder's properties to be different if you want.

After using ArcLogistics Route for some time, you may find that a routing folder property seems to work best for your routing problems. If this is the case, you can set it as the default used in all new routing folders by updating the routing project properties.

See Also

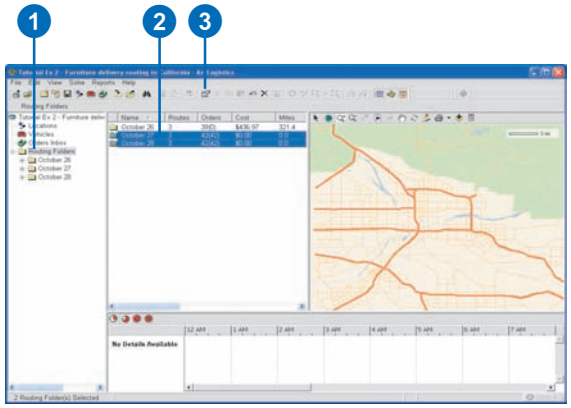
For more information about setting routing project properties, see 'Updating default property information about a routing project' in Chapter 5.

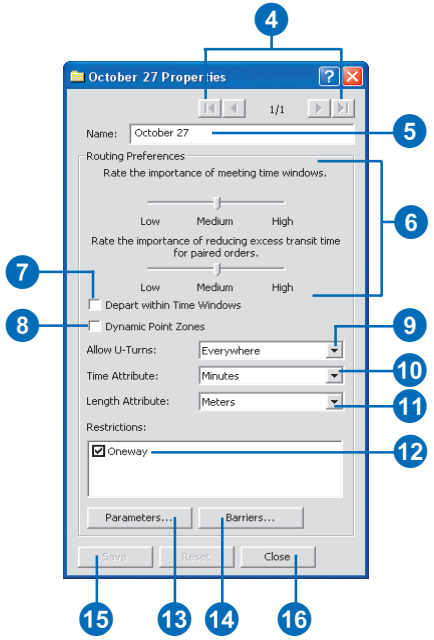
Tip

You cannot update all properties if routes have been created.

Steps 7 through 11 cannot be updated if the routing folder contains routes that have alreday been created.

1. Click Routing Folders in the Tree View.
2. Select one or more routing folders in the List View.
3. Click Properties on the Main toolbar.
4. Use the arrows at the top of the dialog box to move to the routing folder that you want to edit.
5. Type in a new name for the routing folder if you want to change the name.
6. Click the slider bar and move it to the setting that matches your routing strategy.
7. Check Depart within Time Windows if you want to use this setting.
8. Check Dynamic Point Zones if you want to use this setting.
9. Click the down arrow and select your Allow U-Turns policy.
10. Click the down arrow and select your Time Attribute.
11. Click the down arrow and select your Length Attribute.
12. Check any Restrictions, if available.
13. Edit parameters, if necessary.
14. Manage barriers, if needed.
15. Click Save.
16. Click Close.





Exporting routing folder information

You can export routing folder information to different types of files. These include Access database files, shapefiles, or text files.

Access database files can be used in Microsoft Access or another application that can use the Microsoft Jet database engine. Since the Access database files can have multiple tables, route and order information are exported into the database file.

Two types of shapefiles can be exported. Route line shapefiles contain one line for each route in the exported routing folders. Order point shapefiles contain one point for each order in the exported routing folders.

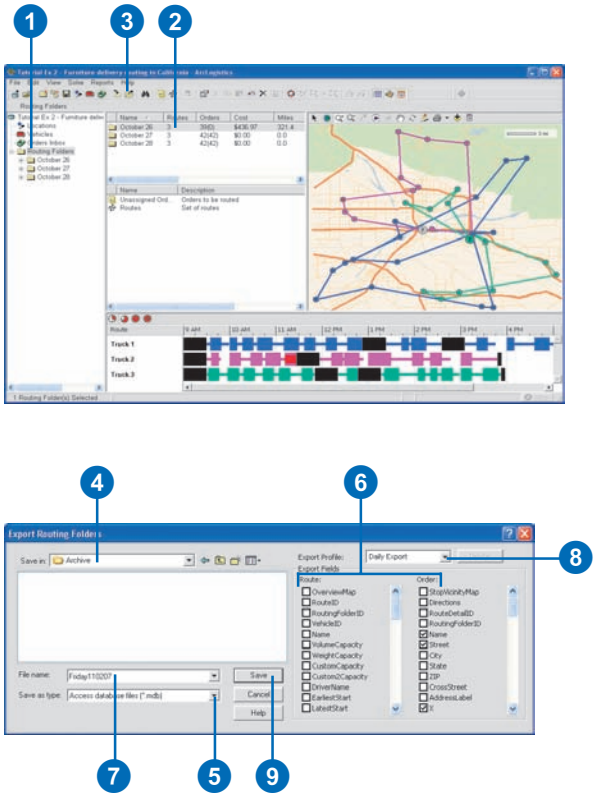
Two types of text files can be exported. Route text files contain comma-delimited or comma-separated information about each route. Order text files contain comma-delimited or comma-separated information about each order.

See Also

For more details about what information is exported, see Appendix A.

Exporting to an Access database

1. Click Routing Folders in the Tree View.
2. Select one or more routing folders in the List View.
3. Click Export Routing Folders on the Main toolbar.
4. Navigate to where you want to save the export file.
5. Click the Save as type drop-down arrow and click Access database files (*.mdb).
6. Check the route and order fields that you want to export.
7. Type a name for the export file.
8. Type a name for the Export Profile if you want to keep the settings for future use.
9. Click Save.



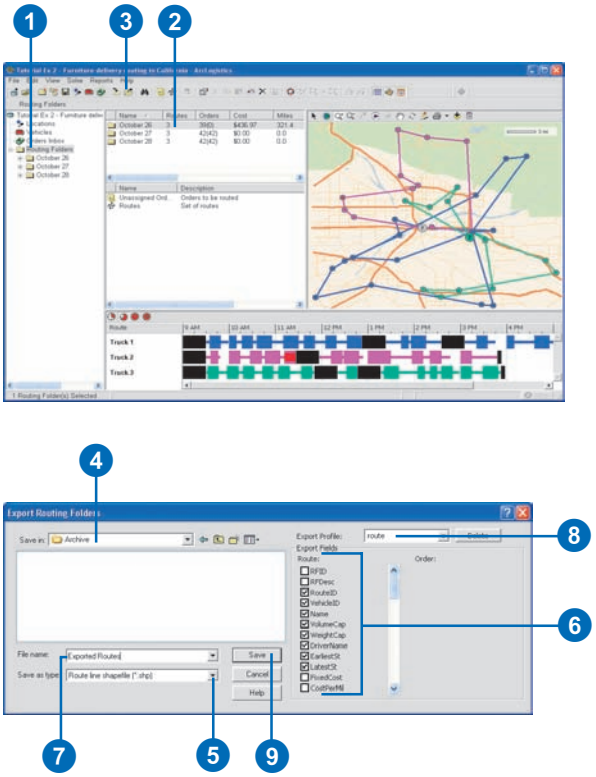
Tip

Viewing spatial data

Shapefiles are a common format for storing and working with spatial data. You can view shapefiles using most ESRI software products.

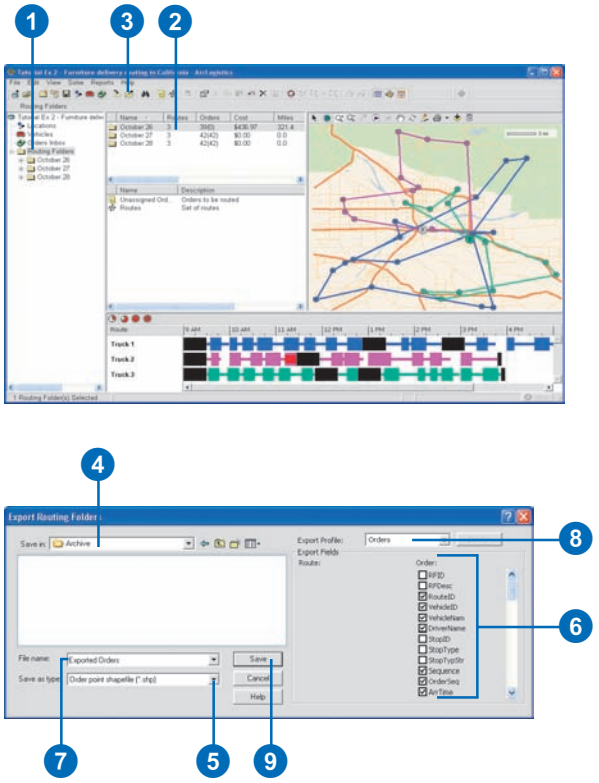
Exporting routes to a shapefile

1. Click Routing Folders in the Tree View.
2. Select one or more routing folders in the List View.
3. Click Export Routing Folders on the Main toolbar.
4. Navigate to where you want to save the export file.
5. Click the Save as type drop-down arrow and click Route line shapefile (*.shp).
6. Check the fields that you want to export.
7. Type a name for the export file.
8. Type a name for the Export Profile if you want to keep the settings for future use.
9. Click Save.



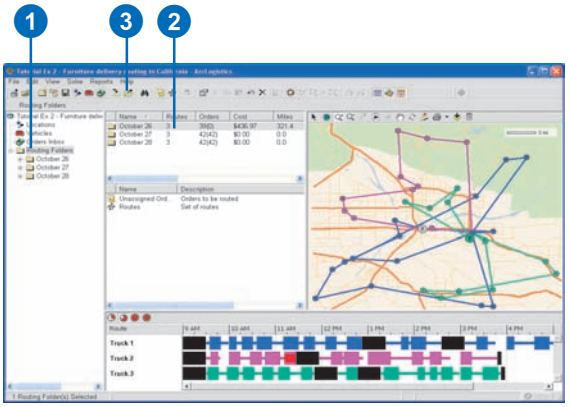
Exporting orders to a shapefile

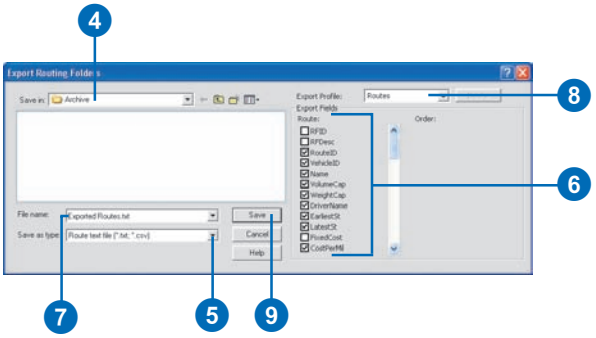
1. Click Routing Folders in the Tree View.
2. Select one or more routing folders in the List View.
3. Click Export Routing Folders on the Main toolbar.
4. Navigate to where you want to save the export file.
5. Click the Save as type drop-down arrow and click Order point shapefile (*.shp).
6. Check the fields that you want to export.
7. Type a name for the export file.
8. Type a name for the Export Profile if you want to keep the settings for future use.
9. Click Save.



Exporting route information to a text file

1. Click Routing Folders in the Tree View.
2. Select one or more routing folders in the List View.
3. Click Export Routing Folders on the Main toolbar.
4. Navigate to where you want to save the export file.
5. Click the Save as type drop-down arrow and click Route text file (*.txt, *.csv).
6. Check the fields that you want to export.
7. Type a name for the export file, including the three-character suffix: .txt or .csv.
8. Type a name for the Export Profile if you want to keep the settings for future use.
9. Click Save.





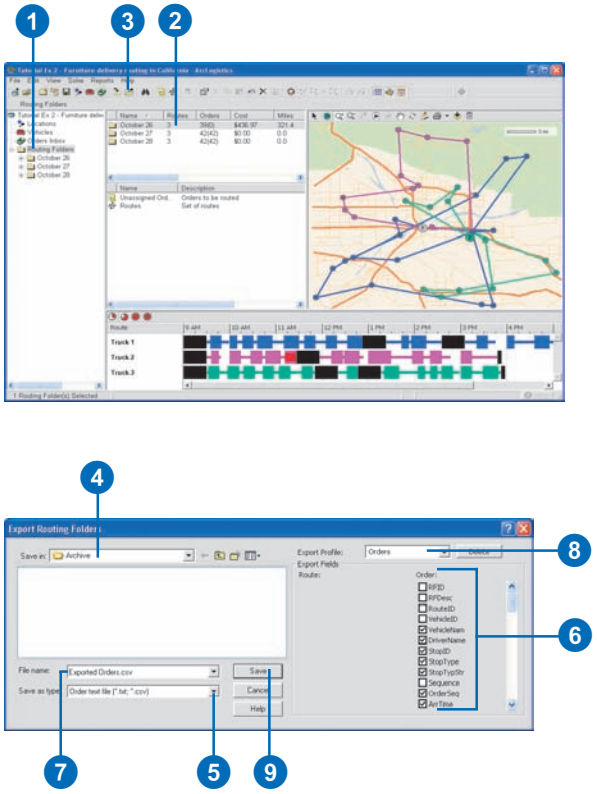
Tip

Using exported order information

You can use exported order information to update your customer database—for example, you may want to export the x,y coordinates for your orders and upload this information into your customer database.

Exporting order information to a text file

1. Click Routing Folders in the Tree View.
2. Select one or more routing folders in the List View.
3. Click Export Routing Folders on the Main toolbar.
4. Navigate to where you want to save the export file.
5. Click the Save as type drop-down arrow and click Order text file (*.txt, *.csv).
6. Check the fields that you want to export.
7. Type a name for the export file, including the three-character suffix: .txt or .csv.
8. Type a name for the Export Profile if you want to keep the settings for future use.
9. Click Save.

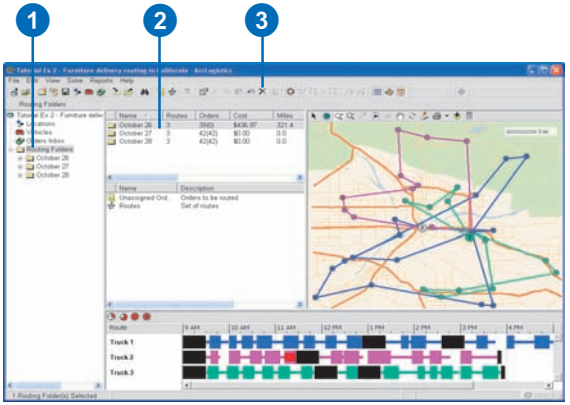


Deleting a routing folder

Deleting a routing folder

1. Click Routing Folders in the Tree View.
2. Select one or more routing folders in the List View.
3. Click Delete on the Main toolbar.

   The routing folders, including all orders and routes, are deleted.



Working with orders

12

IN THIS CHAPTER

- About orders
- About trip requests
- An overview of how orders are geocoded
- Adding or importing orders and trip requests
- Displaying orders that haven't been assigned to a route
- Automatically regeocoding orders that aren't assigned to a route
- Interactively geocoding orders
- Updating order information
- Finding an order
- Moving orders in and out of routing folders
- Deleting an order

Once you've set up locations and vehicles, you can start setting up the orders that you want to route. To set up an order, you specify the customer's name and address, time windows, service time, specialties needed by a vehicle or driver, and other information.

You can import orders, including paired orders and trips, from an external database or you can enter the information directly into ArcLogistics. Paired orders and trip requests consist of a pickup and delivery and are usually associated with para-transit operations. Para-transit is an alternative mode of flexible passenger transportation that does not follow fixed routes or schedules and typically uses vans or mini-buses to provide service.

After adding or importing orders, you should make sure that all your orders are geocoded. If ArcLogistics was unable to automatically geocode some of the orders, you'll want to use the Geocode Address dialog box to manually geocode the orders. Alternatively, you can relax the geocoding preferences so that more of your addresses can be automatically matched. You should carefully review any addresses that have been matched with less strict geocoding rules to make sure that the order is in the correct position within the routing project.

Once you have orders in your routing project, you can use the Find Order dialog box to find a specific order.

ArcLogistics provides several ways to move orders in and out of folders within your routing project. To prepare to build routes, you'll need to make sure the group of orders you want to service is in a routing folder.

About orders

Setting the properties of your orders is an important task. The properties you set have a direct impact on how ArcLogistics builds routes. There are three types of order information: customer and order details, address information, and routing parameters.

Orders can also be paired as a pickup and delivery, meaning that one order contains pickup information, the other order contains the corresponding delivery information, and both orders must be on the same route.

Customer and order details

These properties are the basic information you use to identify the customer's order. These include customer number, order number, customer name, phone numbers, descriptions of the order, and any additional comments.

Address information

To route your vehicles, the location of each order must be known. Typically, the location of the customer can be found by geocoding the customer's address information. The address fields used for geocoding may vary based on the country you are in and the address locator being used.

If you're importing orders from a database and have the x,y coordinates for the customer, you can specify the fields that contain the x,y coordinates. By providing x,y coordinates, ArcLogistics doesn't have to attempt to match the customer address to the street dataset. As a result, your orders are imported more quickly.

Routing parameters

There are several order properties that you can set that ArcLogistics takes into consideration when building routes. These include the order's time windows, service time, capacities, specialties, priority, curb approach, delivery type, and the maximum amount of time an order can be on a vehicle if it is a paired order.

The order time windows are the time ranges that the order should be serviced. An order can have two time windows. Hard time windows means that an order cannot be serviced (late) after the latest time window. Max. Violation Time is the number of minutes an order can be serviced after the time widnow ends.

Service time is the number of minutes it takes to service the order.

Capacities are numeric fields and correlate directly with the vehicle's capacity fields. These are labeled Volume, Weight, Custom, and Custom 2. If capacity constraints are not a concern, leave them set to zero.

Does the order have any specialties that can be matched to vehicle/driver specialties? If so, specify the specialties of the order.

Orders can have High or Normal priority. ArcLogistics always tries to route all orders, but in situations where this can't be done, High priority orders will get routed at the expense of Normal priority orders.

Curb approach specifies which side of the street a vehicle must approach the order.

Delivery type can be either Pick up or Delivery. Route capacities are tracked throughout the route if the orders are a mix of both pickups and deliveries.

Paired orders

If orders are paired, one order has a delivery type of Pickup, its pair has a delivery type of Delivery, and both orders must have the same Order Number. Maximum Time on Vehicle is only available for paired orders and restricts the time between the pickup and delivery. Paried orders can only have one time window.

About trip requests

Trip requests is an order import format where a single row of import data contains all the information needed to create a paired order. When the data is imported, ArcLogistics creates paired orders from each row of information. The field names are different from orders and are more in tune with the para-transit industry. This method of importing orders is slower than importing orders because ArcLogistics calculates the direct transit time between the two addresses During import. This information is then used in calculating the Ride Time Flexibility in relation to the direct transit time.

Typically, people want to arrive at a specific time or they want to be picked up and depart at a specific time. During import or when manually creating trips, they are considered as either an Arrive or Depart Trip type. Arrive type is where the most important trip time window to be met is the delivery time, and a Depart type is when the most important trip time window is the pickup time.

Trip details

These properties are the basic information you use to identify the trip. These include customer number, order number, and name.

From and To information

A trip request must contain two unique addresses or x,y coordinates. From fields are for the pickup, and To fields are for the delivery.

In addition, there are From and To fields available for phone numbers, descriptions, curb approach, and any additional comments.

Routing parameters

There are several trip request properties that you can set that ArcLogistics takes into consideration when building routes. These include the trip request's pickup departure time, delivery arrival time, pickup load time, delivery unload time, capacities, specialties, priority, curb approach, and the maximum amount of time a trip can take.

A trip's Arrival Time is the latest time that a delivery can be made and considered on time. Hard Dropoff Time means that the delivery cannot be late. Earliest Arrival is the number of minutes a trip can arrive before the Arrival Time at a delivery address.

A trip's Depart Time is the earlierst time a pickup can be made. Latest Depart is the number of minutes a trip can depart after the Depart Time of a pickup address and still be considered on time. Hard Pickup means that the pickup cannot be made late.

Ride Time Flexibility is the percentage of additional time a trip can take in relation to the most direct route between the two addresses (e.g., 50 means 50 percent additional time can be taken). This will calculate the pickup time window for an Arrive Trip type or the delivery time wondow for a Depart Trip type.

Pickup From Time is the start of the pickup time window for an Arrive Trip type. This overrides Ride Time Flexibility. Pickup To Time is the end of the pickup time window for an Arrive Trip type. This overrides Ride Time Flexibility

Load is the service time for a pickup and unload is the service time for a delivery.

An overview of how orders can be geocoded

To assign an order to a route, ArcLogistics must know the position of the order along the street network. Determining the position is referred to as geocoding.

There are several ways that the position of an order can be determined. These include x,y coordinates specified in the order database, address or intersection information, or other sources of location data. If, by applying these methods, an order is not geocoded accurately enough, you can manually point to the coordinates you want using the Geocode Address dialog box.

Importing x,y coordinates

The fastest way to geocode orders is to provide the x,y coordinates for the orders you're importing. ArcLogistics checks to make sure that the coordinates of the order fall within the extent of the street dataset and then identifies the position along the street network closest to the coordinate pair.

Using address or intersection matching

Address matching is a process that compares the address information to a street dataset. The process determines whether the address falls on a street, and if so, which side of the street, and approximately at what location along the street.

To geocode an order using the order's address or intersection, ArcLogistics compares components of an order's address with the information contained in the street dataset. ArcLogistics then uses certain standards to determine whether addresses match. Address matching involves interpolation; it is not an exact science.

Falling back to other sources of location data

In some cases, ArcLogistics will not be able to find a suitable match in the street data. When this occurs, ArcLogistics looks for other possible sources of location data that can be applied to the input address information.

Cross streets

If you've specified the nearest cross street to the address, ArcLogistics can attempt to find the intersection of the street specified in the address field and the street specified in the cross street field. If the intersection is found in the street dataset, the coordinates of the intersection can be used to geocode the order.

Alternate x,y coordinates

ArcLogistics lets you import two types of coordinates. The alternate coordinates can be used in the event that the order cannot be geocoded using address information.

Postal codes

Typically, as a last resort, a location can be found for an address by using the coordinates of the center of the address' postal code (e.g., ZIP Code). This is not ideal, but in some cases may be close enough to get the driver in the right area.

Manually geocoding an order

In the event that an order cannot be geocoded accurately enough using the above methods, use the Geocode Address dialog box to manually point to the position along the street network where the vehicle should stop to service the order.

Adding or importing orders and trip requests

You can add orders by typing them into the Order Properties dialog box, New Trip Request dialog box, or you can import them from an existing file.

Tip

Geocode status

After you've typed the address information and moved the cursor to a field other than an address field, ArcLogistics attempts to geocode the address. The Geocode Status frame displays information about how the address is geocoded. If the address is ungeocoded or if you want to review how it was geocoded, click Geocode to open the Geocode Address dialog box.

Tip

Not sure what to type in?

Point to the item you need help with and press F1.

See Also

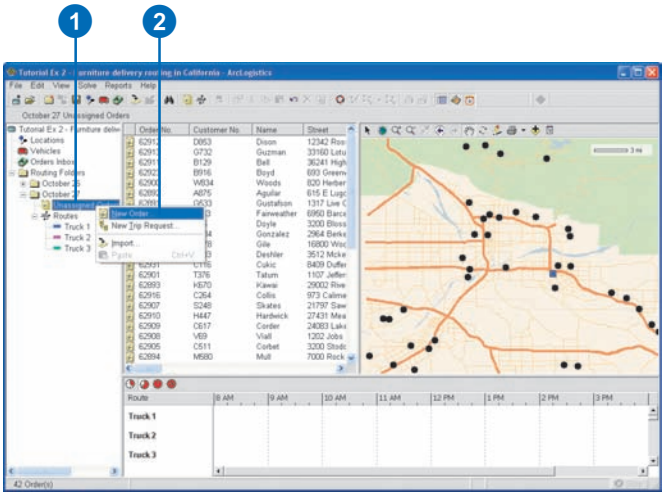
For more details about what to enter in each field, see 'About orders' in this chapter.

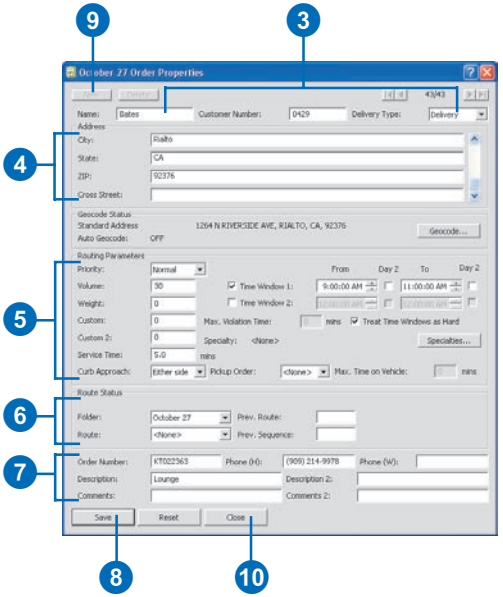
See Also

To learn how to manually geocode an order, see 'Interactively geocoding orders' in this chapter.

Adding an order

1. Right-click Orders Inbox in the Tree View, or right-click Unassigned orders in a routing folder.
2. Click New Order.
3. Type the customer name and number, and choose the Delivery type.
4. Type the address information.
5. Type the routing parameters.
6. Optionally, specify the route status.
7. Type the remaining order details.
8. Click Save.
9. To add another order, click New, then repeat steps 2 through 8.
10. When you're finished adding orders, click Close.





See Also

For more details about what to enter in each field, see 'About trip requests' in this chapter.

Tip

What is the From and To information?

The From address and additional information will be converted into a pickup order, and the To address and additional information will be converted into the pickup order's corresponding delivery order. This information will be converted into two separate orders and create a Paired Order.

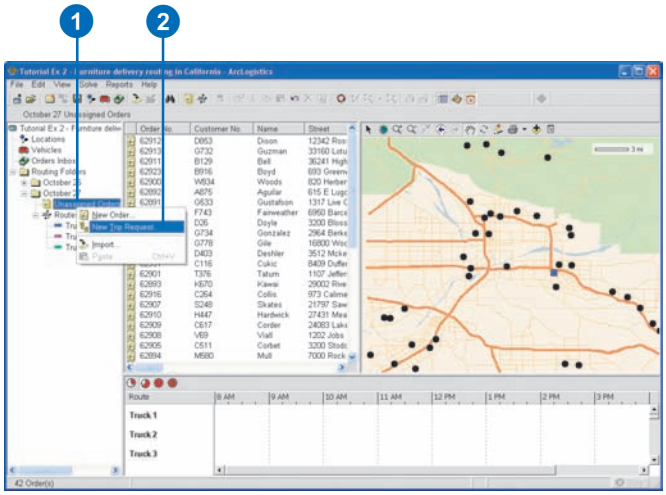
Tip

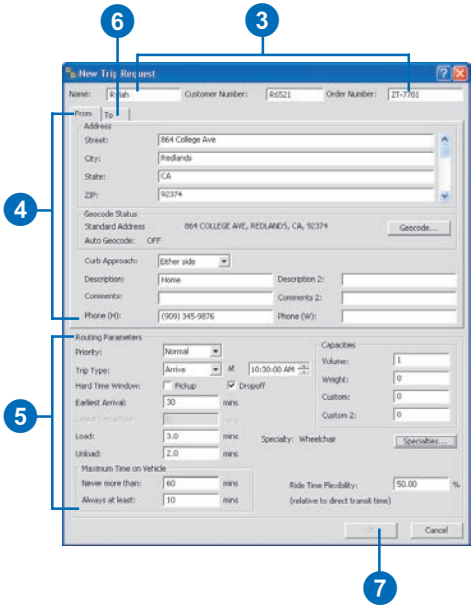
Right-click in the List View

You can also right-click in the List View to create a trip request.

Adding a trip request

1. Right-click Orders Inbox in the Tree View, or right-click Unassigned orders in a routing folder.
2. Click New Trip Request.
3. Type the customer name, customer number, and order number.
4. Type the From address information and any additional information for the From (Pickup) order.
5. Type the routing parameters.
6. Click the To tab and type the To address information and any additional information for the To (Delivery) order.
7. Click OK.





Tip

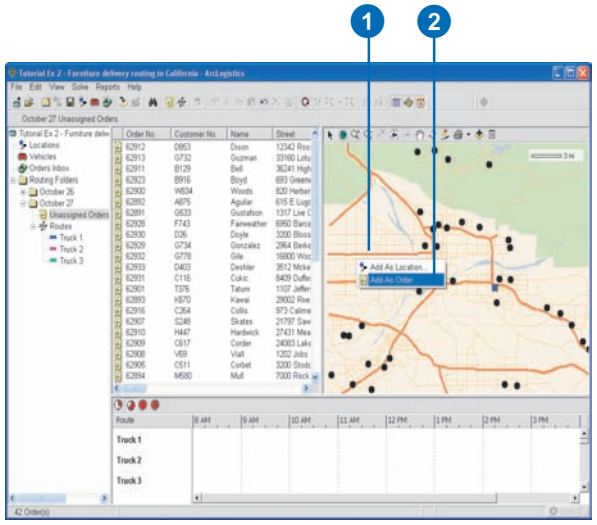
How does ArcLogistics generate the address?

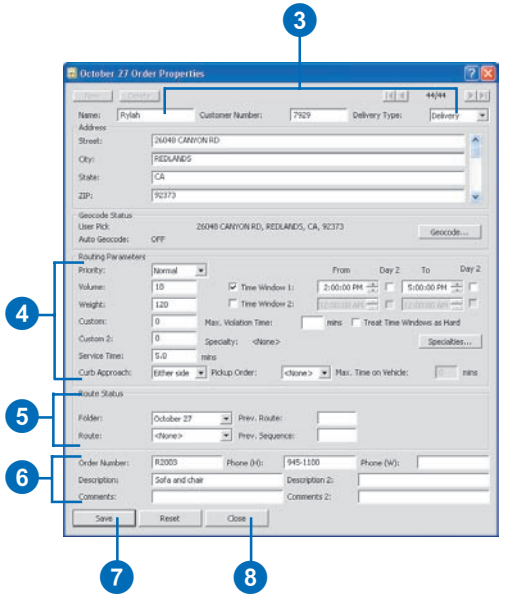
When you right-click in the Map View, ArcLogistics will reverse geocode the point where you clicked. This means that ArcLogistics will search for the closest point on the nearest street segment to that point and inform you of the address.

Adding an order in the Map View

1. Right-click in the Map View.
2. Click Add As Order.
3. Type the customer name and number, and choose the Delivery type.

   You will notice that the address information has been completed for you by ArcLogistics.
4. Type the routing parameters.
5. Optionally, specify the route status.
6. Type the remaining order details.
7. Click Save.
8. Click Close.





Tip

What is an order import profile

An Order Import profile is a way of saving the parameters you specify while stepping through the Order Import Wizard. You can save the profile on the last panel of the wizard. The next time you use the wizard, choose the profile from the list on the first panel of the wizard. All your choices are restored so you can click Finish to import the orders right away.

Tip

Deleting an import profile

Click the drop-down arrow, then click the profile. Click Delete.

Tip

Importing orders with specialties

If you have specialties in a field, make sure that you've already added these specialties to the routing project.

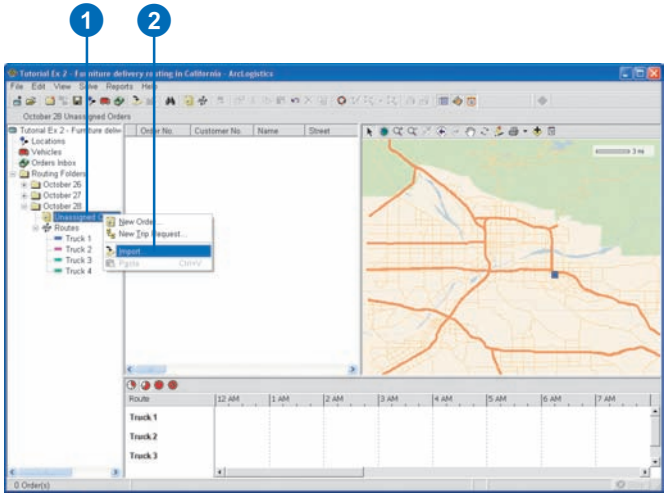
Tip

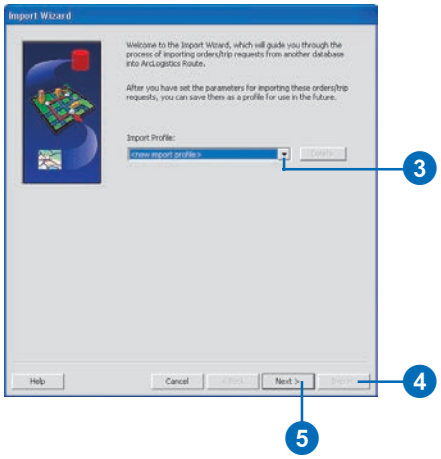
Using default order properties

If your orders always contain the same values for capacities, time, delivery type, curb approach, and priority, you can preset them using the defaults dialog box in the File menu. Once these values are set, ArcLogistics will always apply these values to orders unless you import data into the same fields.

Importing orders or trip requests

1. In the Tree View, right-click Orders Inbox, or right-click Unassigned orders in a routing folder.
2. Click Import.
3. To use an existing Order Import profile, click the drop-down arrow and click the name of the profile; otherwise, click <new import profile>.
4. To import orders based on the profile, click Import.
5. Click Next to continue. ►



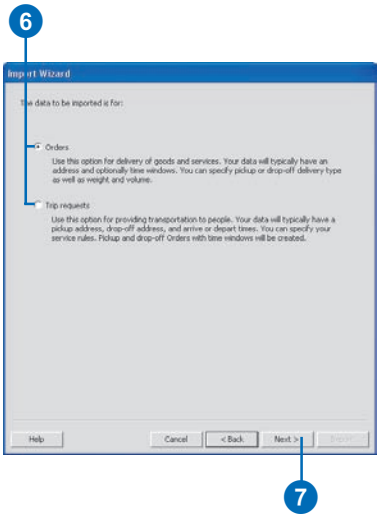


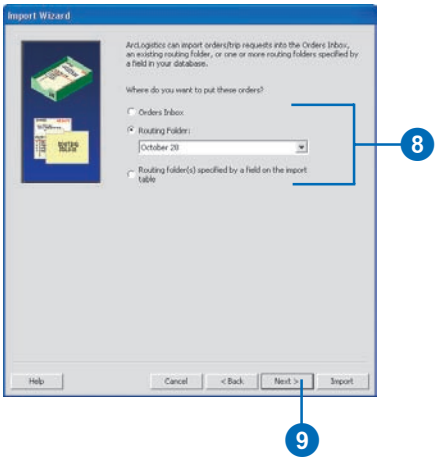
Tip

Routing folder(s) specified by a field on the import table

If your database contains a field, such as the day of the week, date, area, vehicle type, order type, work shift, and so on, that identifies the name of the routing folder you want to put each order in, choose this option. If a routing folder name identified in the database field doesn't exist in your routing project, it is added. If some of the records in the database have no values in this field, then those orders are put into the Orders Inbox.

6. Click Orders or Trip requests.
7. Click Next.
8. Click the option that identifies where you want the orders imported.
9. Click Next. ►





Tip

Setting up a DSN

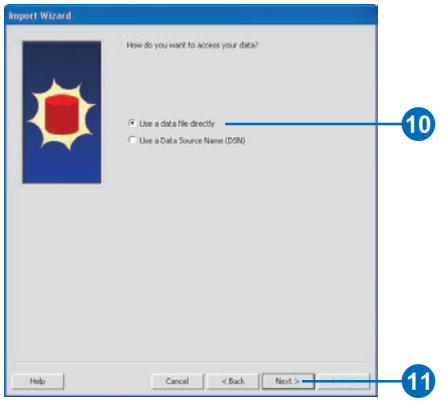
To set up a DSN, click the Windows Start button, point to Settings, then click Control Panel. Double-click ODBC Data Sources. Click Help for more information.

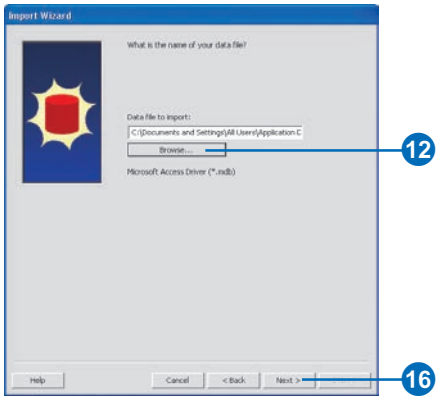
Tip

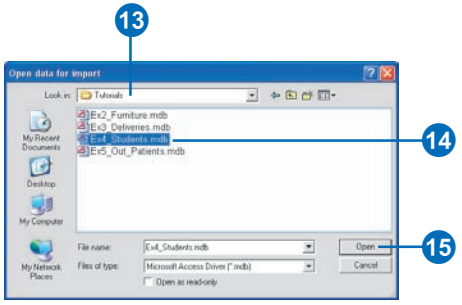
Accessing an orders database using a DSN

Choose the 'Use a Data Source Name (DSN)' option and click Next. Choose whether the DSN is a File DSN or a System or User DSN. Click Browse and choose the DSN from the dialog box that displays.

10. Choose how the database will be accessed.
11. Click Next.
12. Click Browse if you are accessing the file directly.
13. Navigate to the file that contains the order information.
14. Click the file.
15. Click Open.
16. Click Next. ▸







Tip

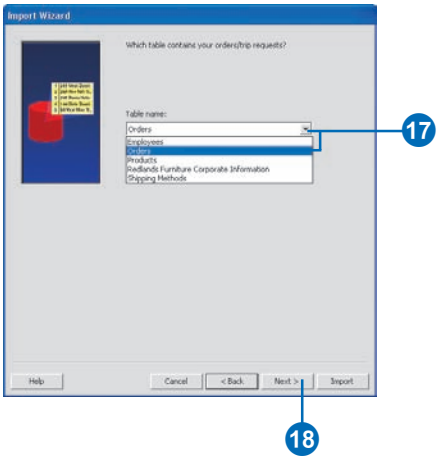
Matching fields in your order database to the fields ArcLogistics uses

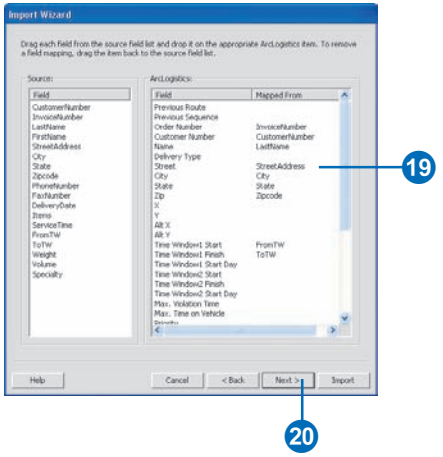
The list on the left is composed of the fields contained in your order database. The list on the right is composed of the fields that ArcLogistics uses to work with your orders or trips. Match as many of your fields as you can by dragging them from the left list to the corresponding field in the right list.

See Also

For more information about the fields that you can match to, see Appendix B.

17. Click the drop-down arrow, then click the table that contains the orders.
18. Click Next.
19. Click and drag each corresponding field from the left list to the matching field in the right list.
20. Click Next. ►





Tip

Handling duplicate order numbers

Orders can be imported into the Orders Inbox or routing folders, even if these folders already contain orders. Before importing an order, ArcLogistics checks to see if the order number already exists in the destination folder. You can choose to import the duplicate orders anyway, skip the orders with duplicate order numbers, or update orders with duplicate order numbers. Updating duplicate orders is used when properties of existing orders have changed in the order database.

Tip

Saving an import profile

Save an import profile so that the next time you want to import orders, you don't have to go through the entire Order Import Wizard again.

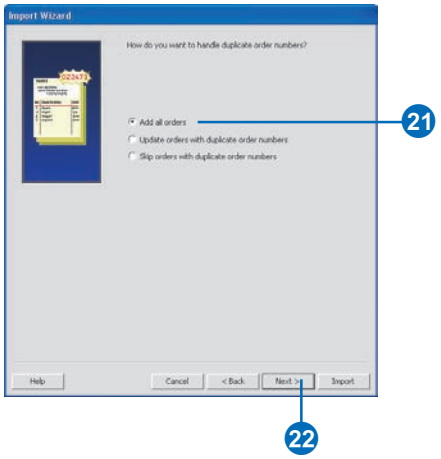
Tip

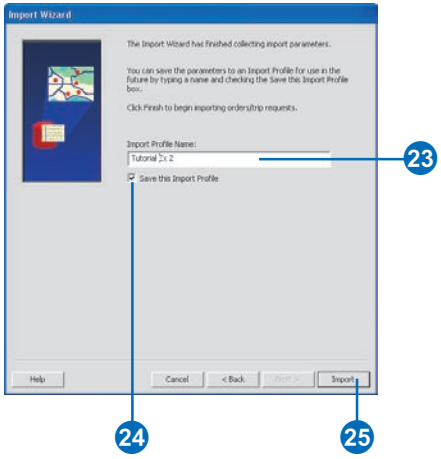
Setting up several import profiles

If you store your orders in several different databases, you can set up a profile for each one. Once you set up profiles, you only need to select the profile name on the first panel of the Order Import Wizard and click Finish.

21. Click the option that identifies how you want to handle duplicate orders.
22. Click Next.
23. Type a name for the import profile, if you want.
24. Check Save this Import Profile to save the profile.
25. Click Finish.

    ArcLogistics saves the profile, if requested, and imports the orders.





Displaying orders that haven't been assigned to a route

Unassigned orders are displayed in the List View, Map View, and Time View.

Before assigning an order to a route, it must be geocoded.

See Also

For information about changing order symbols see 'Changing the display of routing information in the Map View' in Chapter 6.

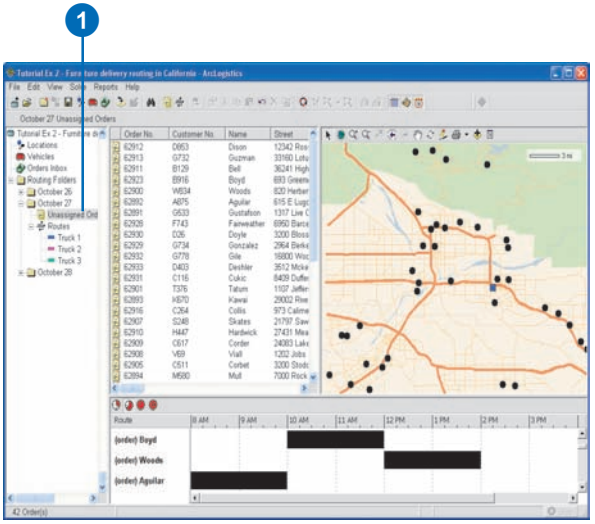
Displaying orders

1. In the Tree View, click Orders Inbox, or click a routing folder.

   In the List View, ungeocoded orders are marked with a red question mark. These orders must be geocoded before they can be assigned to a route.

   In the Map View, each order's position on the map displays as a black dot.

   In the Time View, each order's time window displays as a black band.

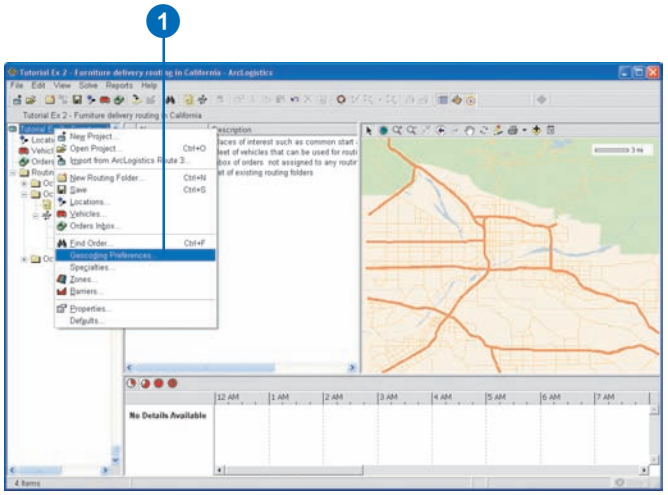


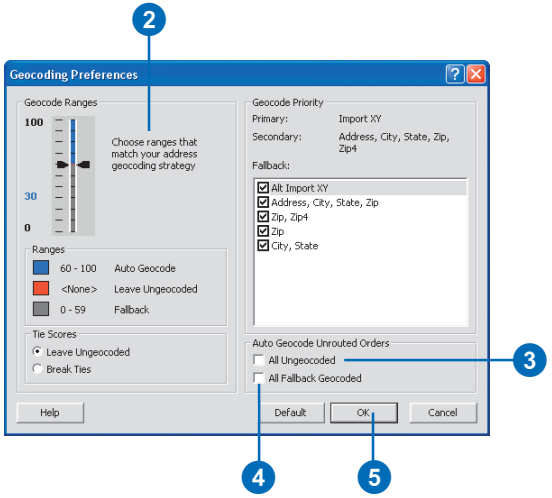
Automatically regeocoding orders that aren't assigned to a route

After importing orders, you may have orders that ArcLogistics was unable to automatically geocode using the current geocoding preferences. Or you may have orders that have been geocoded using fallback options.

You can adjust the preferences and have ArcLogistics attempt to regeocode all ungeocoded orders, all fallback geocoded orders, or both.

1. Right-click the routing project icon in the Tree View and click Geocoding Preferences.
2. Change the preferences.
3. Check All Ungeocoded, if you want.
4. Check All Fallback Geocoded, if you want.
5. Click OK.





Interactively geocoding orders

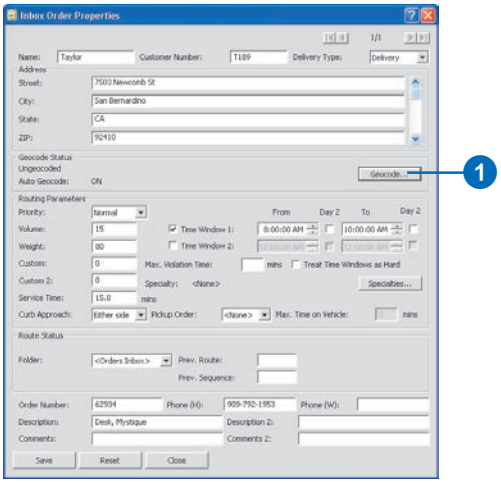
When you add or import orders, ArcLogistics automatically tries to geocode each order's address by finding an address range in the street dataset. If no match can be found, you need to interactively geocode the address using the Geocode Address dialog box.

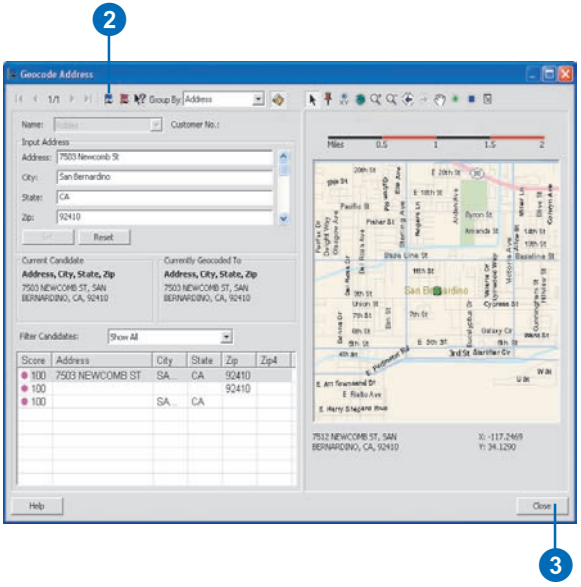
See Also

For more information about interactive geocoding, see 'The Geocode Address dialog box' in Chapter 3.

Geocoding an order from the Order Properties dialog box

1. Click Geocode.
2. Use the Geocode Address dialog box to decide where to geocode the order and then click the Geocode button.
3. Click Close.





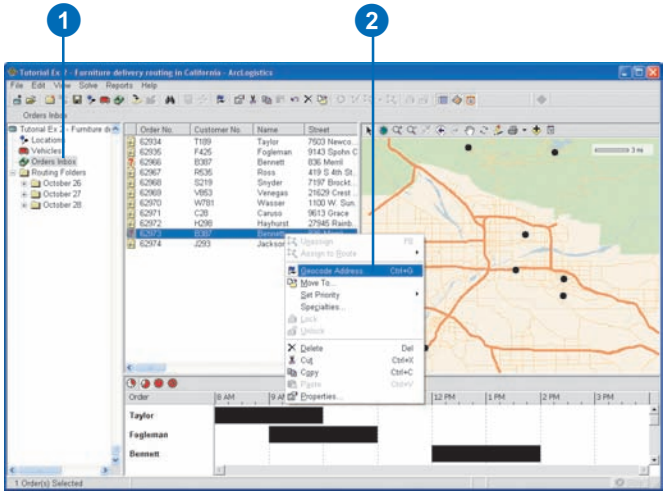
Tip

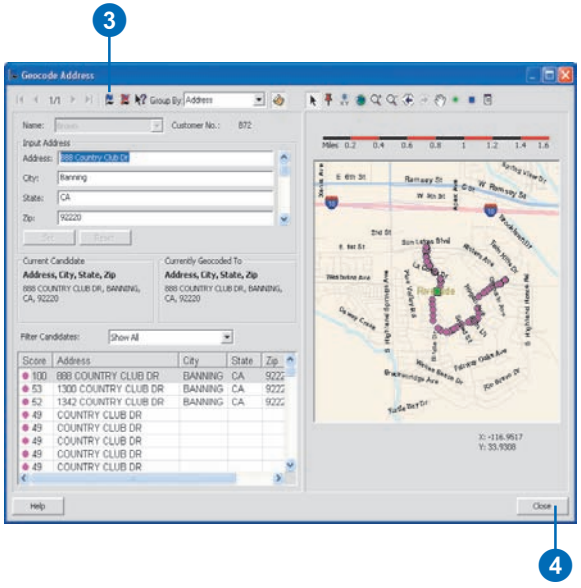
Geocoding in the Map View

You can only regeocode an order in the Map View because an ungeocoded order will not display on the map. Regeocoding allows you to reposition the order.

Geocoding an order from the List View, Map View, or Time View

1. Click Orders Inbox in the Tree View, or click Unassigned Orders in a routing folder.
2. Right-click the order you want to geocode in the List View, Map View, or Time View, then click Geocode Address.
3. Use the Geocode Address dialog box to decide where to geocode the order and then click the Geocode button.
4. Click Close.





Tip

Selecting all ungeocoded orders

To quickly select all the ungeocoded orders in a routing folder or the Orders Inbox, click the folder, click the Edit menu, and then click Select All Ungeocoded Orders.

Tip

Using Group By

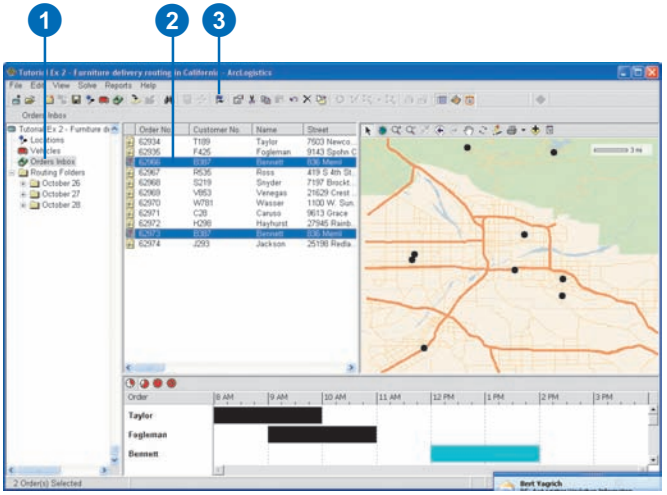
If you have many orders that are all supposed to be at the same position on the map, use the Group By drop-down arrow to choose how to group them.

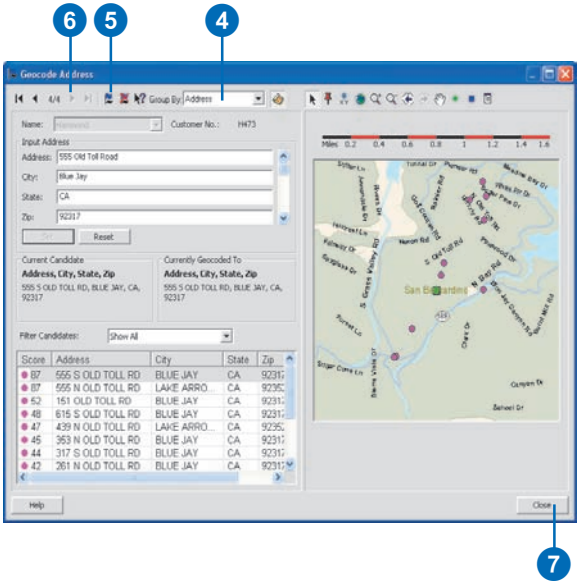
See Also

For more information about interactive geocoding, see 'The Geocode Address dialog box' in Chapter 3.

Geocoding many orders from the List View, Map View, or Time View

1. In the Tree View, click Orders Inbox, or click Unassigned orders in a routing folder.
2. In the List View, Map View, or Time View, select the orders you want to geocode.
3. Click the Geocode Address button on the Main toolbar.
4. If any of the orders can be geocoded to the same position, click the Group By drop-down arrow and click the method you want to use to group orders.
5. Use the Geocode Address dialog box to decide where to geocode the current order and then click the Geocode button.
6. Click the arrow button to move to the next order and repeat step 5.
7. When you're finished geocoding orders, click Close.





Updating information about an order

Before an order is assigned to a route you can change any information you want. If an order is assigned to a route, you must first unassign the order to edit information that may change the route, such as the address or the time window.

Tip

Updating an assigned order

You can unassign an order, update information about it, and then reassign the order using the Order Properties dialog box. Use the Route drop-down arrow in the Route Status section of the dialog box to unassign and reassign the order.

Tip

Adding or deleting Inbox orders

Use the Add/Edit Inbox Orders button, or click the File menu, then click Orders Inbox.

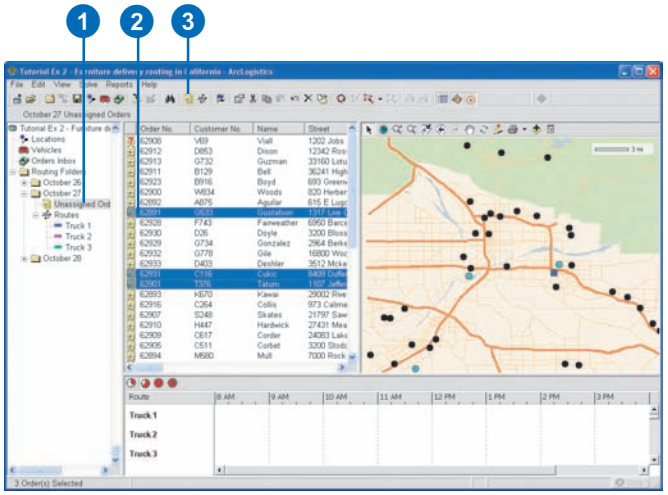
Tip

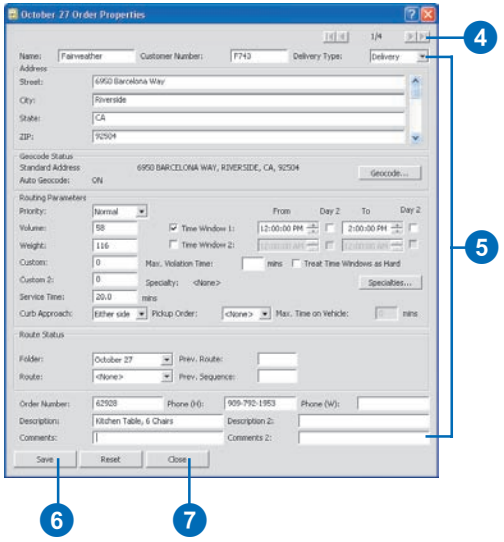
Adding or deleting orders in a routing folder

Click the routing folder in the Tree View. Click the Add/Edit Orders button, or click the File menu, then click Orders.

1. In the Tree View, click Orders Inbox, or click Unassigned Orders in a routing folder.
2. Select one or more orders in the List View, Map View, or Time View.
3. Click the Properties button. The Order Properties dialog box displays.
4. Use the arrows at the top of the dialog box to move to the location that you want to edit.
5. Enter the changes in the dialog box.
6. Click Save.

   If you want to update information about another order, repeat steps 4 through 6.
7. When you've finished, click Close.





Finding an order

Use the Find Order dialog box to find one or more orders containing the text you specify. The Find Order dialog box searches through all the information about each order. If a match is found, ArcLogistics selects the order in the List View, Map View, and Time View.

Tip

Searches are not case-sensitive

It doesn't matter if you type with mixed-case in the Find Order dialog box. Case is ignored when searching for the order.

Tip

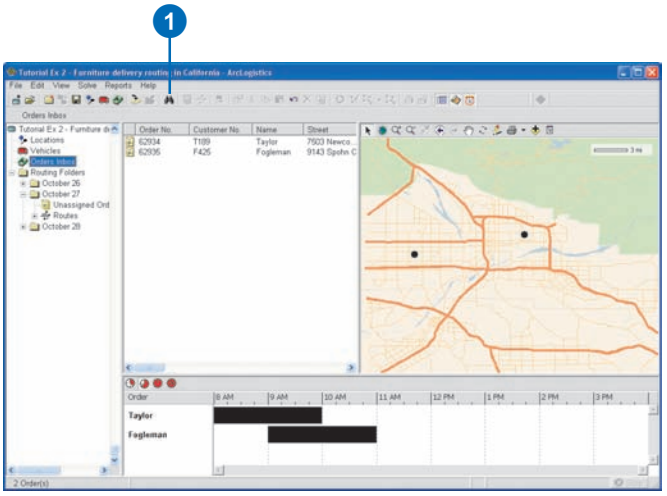
Zooming to the selected order

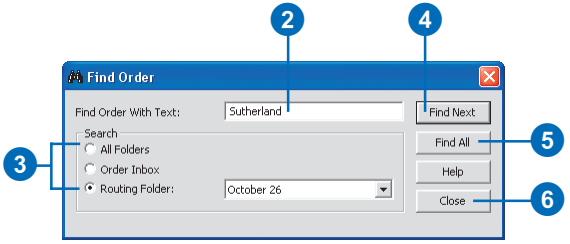
When you've found the order you're looking for, click the Zoom to Selected button on the Map View to zoom to it.

1. Click the Find Order button.

   The Find Order dialog box displays.
2. Type the customer name, the order number, address, or any other information that identifies an order.
3. Click the folder to search.
4. Click Find Next. If ArcLogistics finds a match, the order is selected.

   Continue to click Find Next until you find the order you're looking for.
5. Click Find All if you want ArcLogistics to select all orders containing the text you specify.
6. Click Close.





Moving orders in and out of routing folders

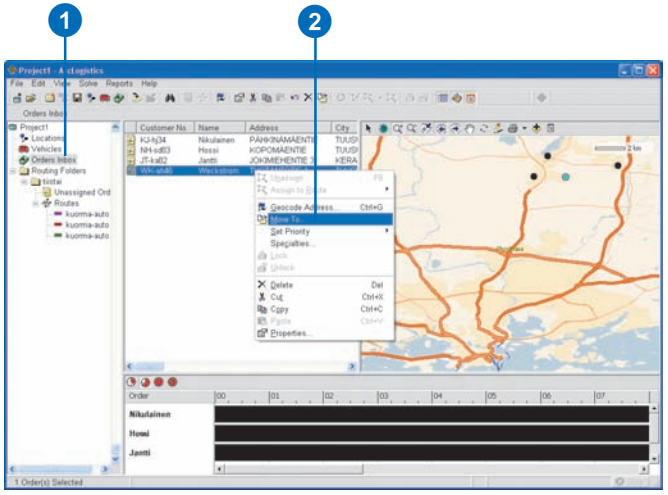
Before building routes, make sure all orders you want to service are in the routing folder. You can move orders between routing folders or between a routing folder and the Orders Inbox using the List View, Map View, Time View, or the Order Properties dialog box.

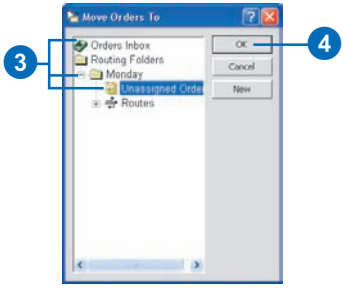
See Also

To learn how to move order's onto routes, or from one route to another, see 'Building Routes' in Chapter 12.

Moving an order using the Move Orders To dialog box

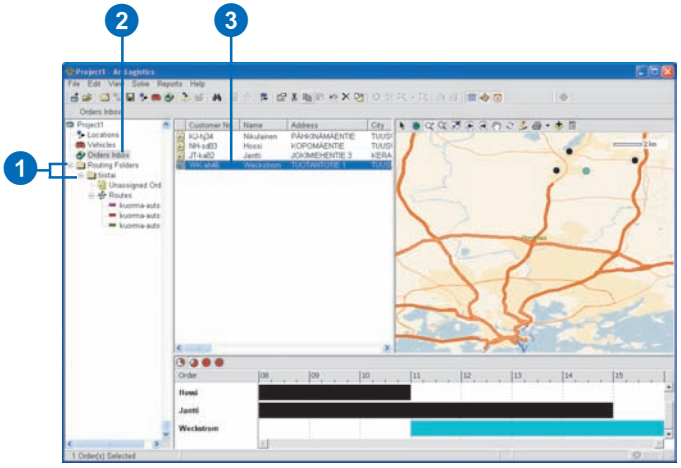
1. Click the folder that contains the order you want to move.
2. In the List View, Map View, or Time View, right-click the order you want to move and click Move To.
3. Click Orders Inbox, or expand the routing folder you want to move the order into, then click Unassigned Orders.
4. Click OK.

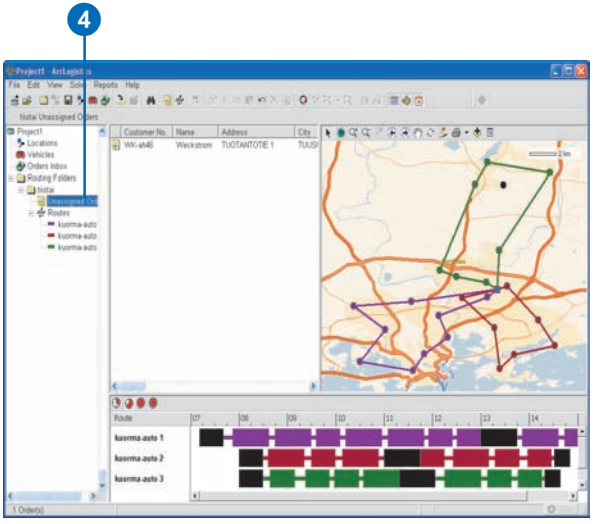




Moving an order using drag and drop

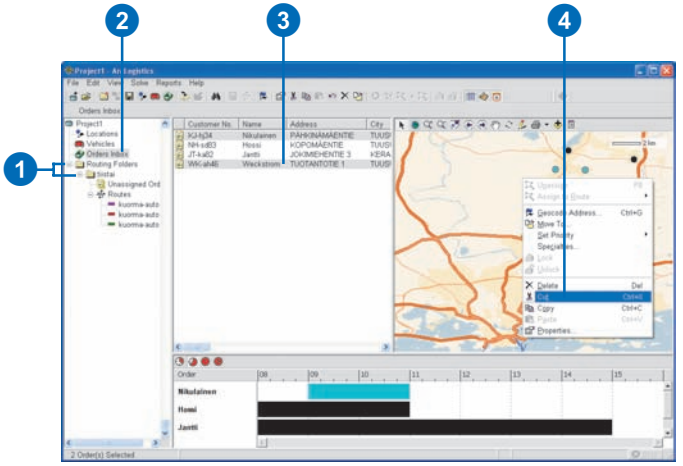
1. Expand the Tree View so that you can see the target folder (the folder you want to move the order(s) into).
2. Click the folder that contains the order you want to move.
3. In the List View or Map View, click and drag the order you want to move.
4. Drop the order on the target folder in the Tree View
5. Drop the order on the target folder in the service area tree.

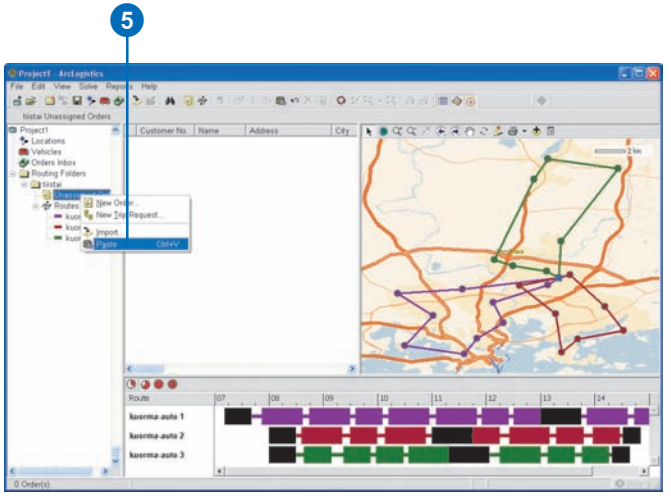




Moving orders using cut and paste or copy and paste

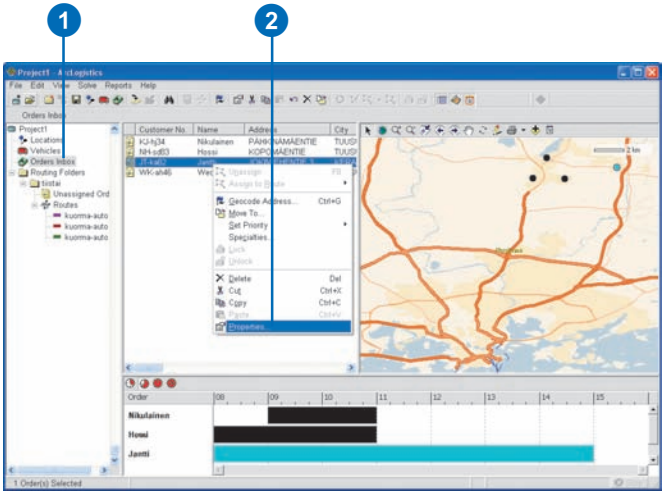
1. Expand the Tree View so that you can see the target folder (the folder that you want to move the orders into).
2. Click the folder that contains the orders you want to move.
3. Select the orders in the List View, Map View, or Time View.
4. Right-click the selection and click Cut or Copy.
5. Right-click the target folder in the Tree View and click Paste.

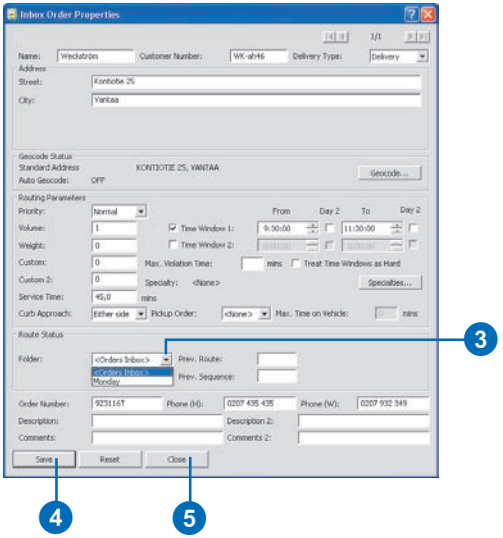




Moving an order using the Order Properties dialog box

1. Click the folder that contains the order you want to move.
2. Right-click the order you want to move in the List View, Map View, or Time View and click Properties.
3. Click the routing folder drop-down arrow and click the folder you want to move the order into.
4. Click Save.
5. Click Close.



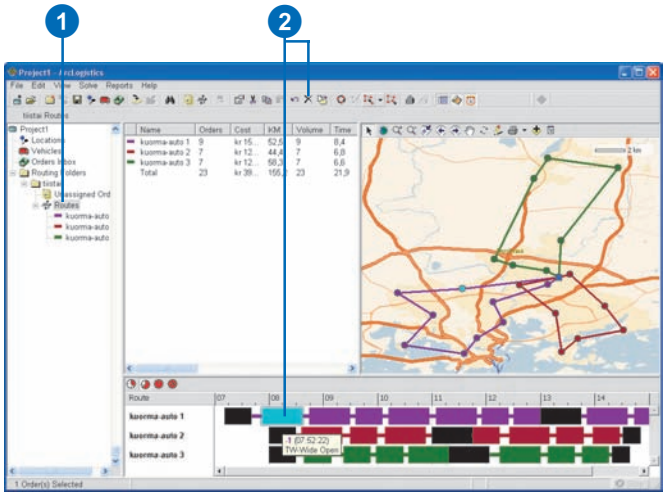


Deleting an order

You can delete an order by using the List View, Map View, Time View, or the Order Properties dialog box.

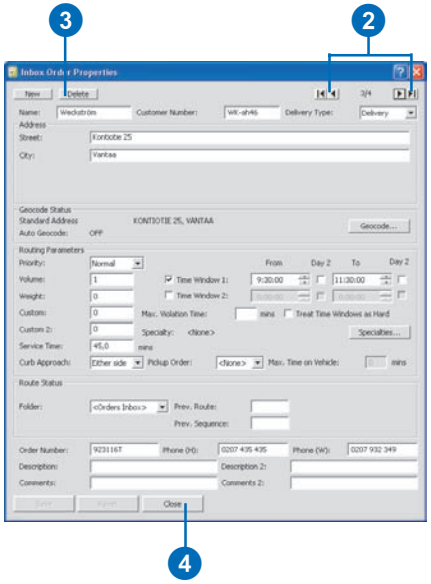
Deleting an order using the List View, Map View, or Time View

1. Click the folder that contains the order you want to delete.
2. Right-click the order you want to delete in the List View, Map View, or Time View, then click Delete.



Deleting an order using the Order Properties dialog box

1. Click the File menu, then click either Orders Inbox or Orders.
2. Navigate to the order you want to delete using the arrows.
3. Click Delete.
4. Click Close to close the dialog box.



Working with routes

13

IN THIS CHAPTER

- Specifying which vehicles to use
- Displaying routes and route details
- An overview of how routes can be built
- The Constraints cannot be met dialog box
- The Routing Results dialog box
- Building routes

Once you have orders in a routing folder, you're ready to create routes. To create routes, you specify which vehicles you would like to use, then assign orders to routes. You can have ArcLogistics assign orders to routes for you based on your routing preferences or, if you want, you can assign orders to routes manually. Once you have assigned orders to routes, you can display and edit the routes using a variety of methods.

Specifying which vehicle to use

You specify which vehicles to use in a routing folder by adding and deleting their routes.

Tip

Changing the properties of a route

When you add a route, you're adding a copy of the vehicle to the routing folder. If you want, you can change the properties of the route to be different from the vehicle it is based on.

Tip

Adding a new vehicle using the Route Properties dialog box

If you want, you can add a new vehicle to your routing project using the Route Properties dialog box. To add a new vehicle, type the name into the Vehicle Name, then press the Tab key.

Tip

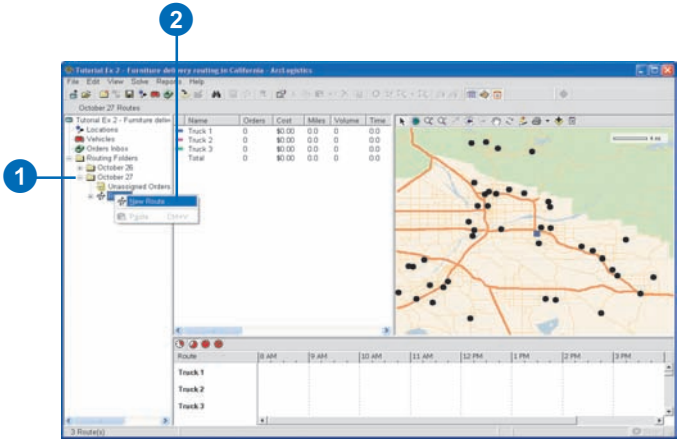
Deleting a route

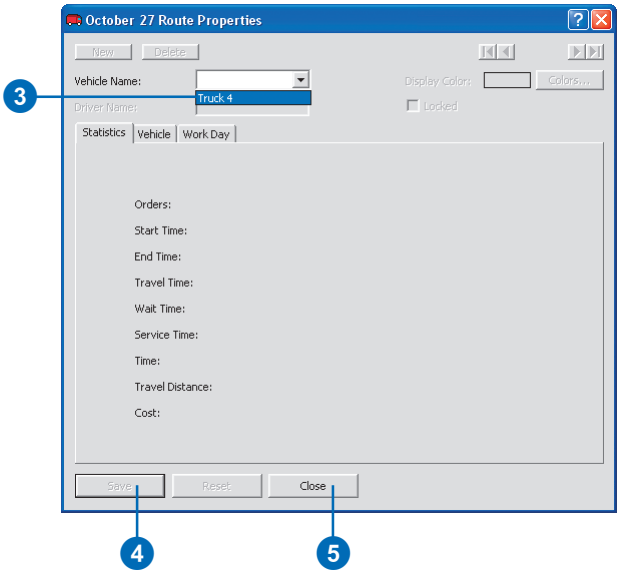
Right-click the route in the Tree View, then click Delete.

Adding a route

1. Expand the routing folder you want to add a route to.
2. Right-click Routes and click New Route.
3. Click the Vehicle Name drop-down arrow and click a vehicle to add.
4. Click Save.

   To add another route, repeat steps 3 and 4.
5. Click Close.





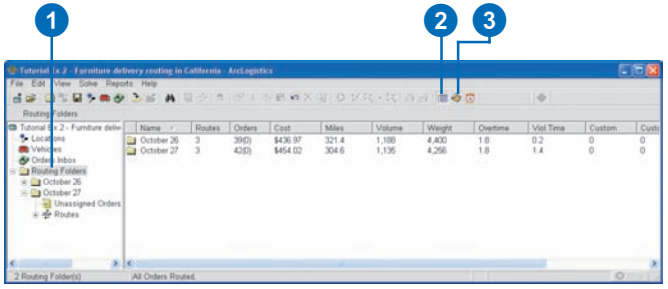
Displaying routes and route details

See Also

To learn about changing how routes display on the map, see 'Changing the display of routing information in the Map View' in Chapter 6.

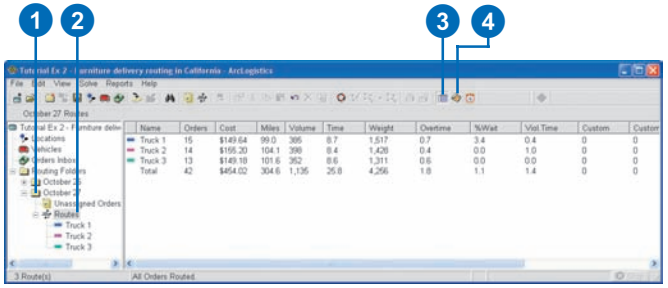
Displaying summary routing folder statistics

1. Click Routing Folders in the Tree View.
2. Click List View on the Main toolbar if the List View isn't visible.
3. Click Map View on the Main toolbar to hide it if the Map View is visible.



Displaying routes in the List View

1. Expand the routing folder that contains the routes you want to display.
2. Click Routes.
3. Click List View on the Main toolbar if the List View isn't visible.
4. Click Map View on the Main toolbar to hide it if the Map View is visible.



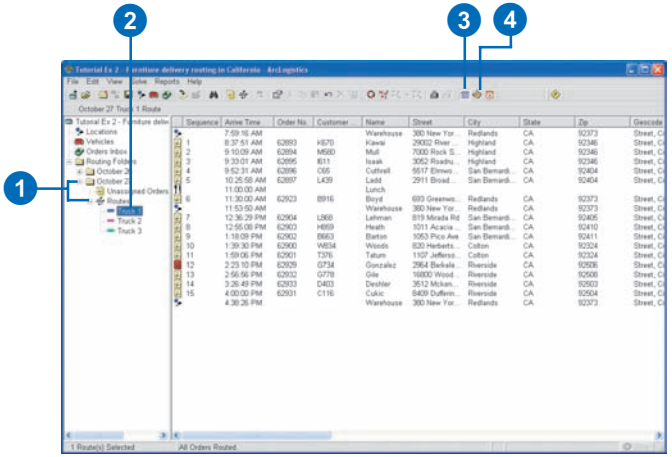
Tip

What's in a route's schedule

Start, end, renewal, and lunch are displayed for reference and are adjusted automatically by ArcLogistics, as needed. Only orders can be selected.

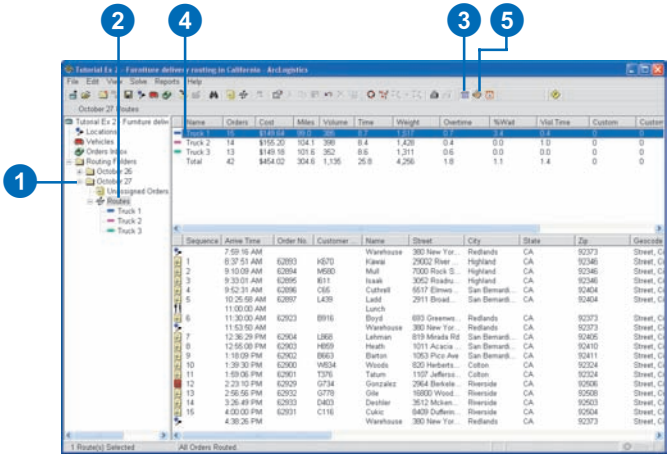
Displaying a route's schedule in the List View

1. Expand the routing folder that contains the route.
2. Click the route.
3. Click List View on the Main toolbar if the List View isn't visible.
4. Click Map View on the Main toolbar to hide it if the Map View is visible.



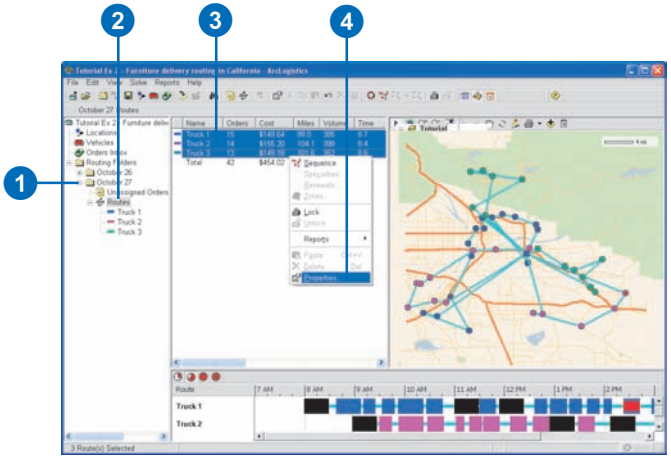
Displaying a route's schedule in the Second List View

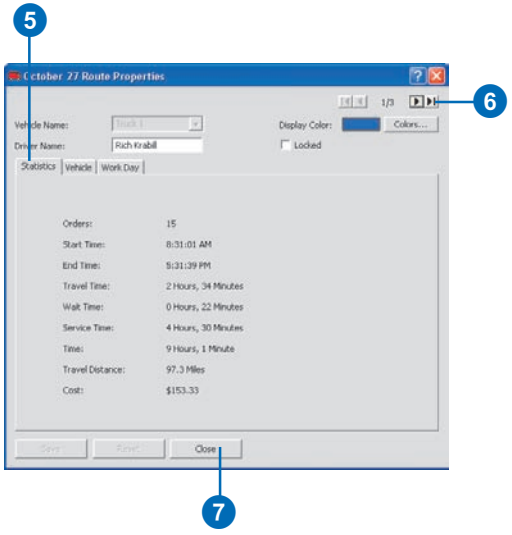
1. Expand the routing folder that contains the route.
2. Click Routes.
3. Click List View on the Main toolbar if the List View isn't visible.
4. Click the route in the List View.
5. Click Map View on the Main toolbar to hide it if the Map View is visible.



Displaying route statistics

1. Expand the routing folder that contains the routes for which you want statistics.
2. Click Routes.
3. Select the routes in any view for which you want statistics.
4. Right-click the selection and click Properties.
5. Click the Statistics tab and review the route statistics.
6. Click the arrows to move to the other routes you want to review.
7. Click Close.

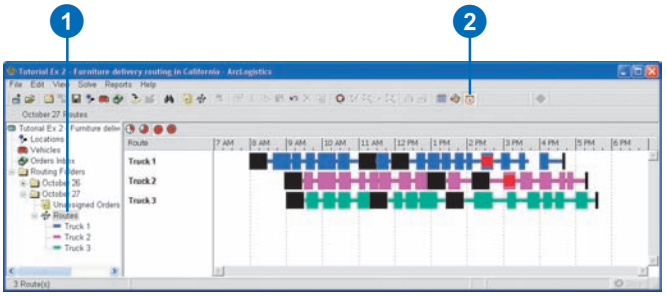




Displaying routes in the Time View

1. Click a routing folder in the Tree View.
2. Click Time View on the Main toolbar if the Time View isn't visible.

   Each route's schedule is shown along a timeline.



An overview of how routes can be built

ArcLogistics provides you with many ways to approach the task of building routes. One approach is to let ArcLogistics do all the work for you. All you need to do is click the Build Routes button. A second approach is to interactively build routes by dragging and dropping orders onto routes. The final, and perhaps best, approach is to use a combination of the automated and interactive tools to come up with a routing solution that best fits your needs.

Building routes automatically

Building routes with ArcLogistics can be as simple as clicking a button. While honoring constraints, such as vehicle capacity and specialties, the ArcLogistics solver takes a group of orders and a group of vehicles and builds routes. When building these routes, the solver balances your objective to minimize the cost of your routes against your objective to meet your customers' time windows. How much importance you give to meeting time windows is up to you. Just set the property for the routing folder.

The ArcLogistics solver builds routes by using a set of heuristics to come up with the best solution it can. To generate an initial set of trial routes the solver analyzes the order locations for clusters. If you don't provide a zone for a vehicle, ArcLogistics uses geometry to find a good center for that vehicle's cluster. The solver then steps through numerous iterations of reassignment and sequencing. Reassignment involves moving orders from one route to another to try to come up with the best assignment of orders to routes. Sequencing involves arranging the orders of each route in the best sequence by moving orders earlier or later on the route.

Clustering is done once, to get a first set of trial routes. Reassignment and sequencing are automatically done many times until ArcLogistics has found the best solution it can based on your costs and time window importance.

Building routes interactively

To build routes interactively, you'll follow the same general steps that the ArcLogistics solver follows. To create effective routes, you initially assign orders to routes, then you reassign and sequence the orders until you decide on the solution that best fits your needs.

Creating existing routes

You can import orders and have ArcLogistics honor their existing route and sequence. Use the Build Previous Routes option and ArcLogistics will place all orders onto the specified routes in their predetermined sequence. This is particularly useful for modeling existing operations or for using master routes as the basis for daily routes, where daily changes may make it necessary to deviate from the master routes.

Locking orders and routes

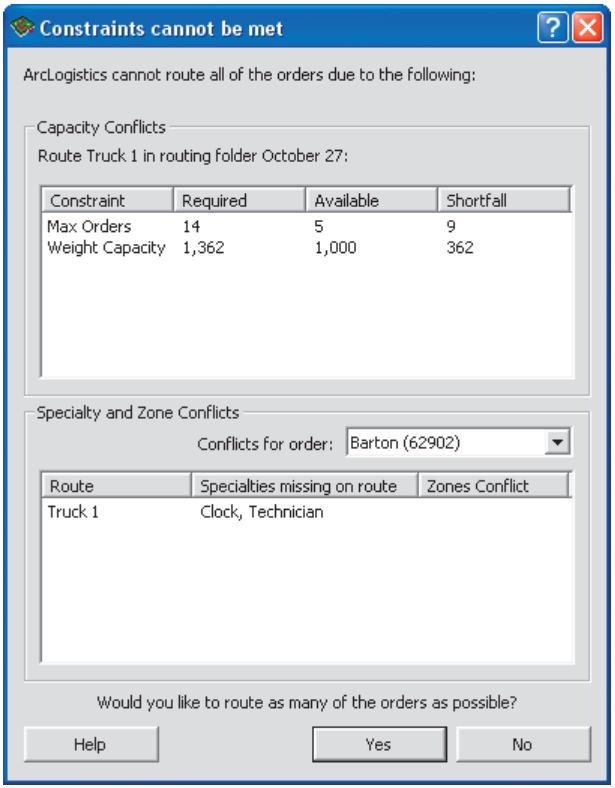
In some cases, you may have orders that you know you want delivered by a specific vehicle. If you haven't set up specialties to enforce the assignment, you can assign the orders manually and then lock them on the route using the Lock button. Then, if you want, click Build Routes to finish building the routes.

If you have one or more routes that you don.t want altered, lock them. No orders can be assigned to or unassigned from a locked route; the sequence of the route is also locked.

The Constraints cannot be met dialog box

This dialog box appears when ArcLogistics detects a conflict before it begins assigning orders to routes. The dialog box is dynamic—only the part that is relevant displays. If the assignment only exceeds route capacities, then the top half of the dialog box appears. If the assignment only has specialty or zone conflicts, then the bottom half of the dialog box displays. In this example, all detectable conflicts are encountered so that you see the dialog box in its entirety.

If you want to let ArcLogistics continue, click Yes; otherwise, study the information on this dialog box and click No. Take the necessary steps to fix the conflicts and then attempt to reassign the orders to routes.



The Routing Results dialog box

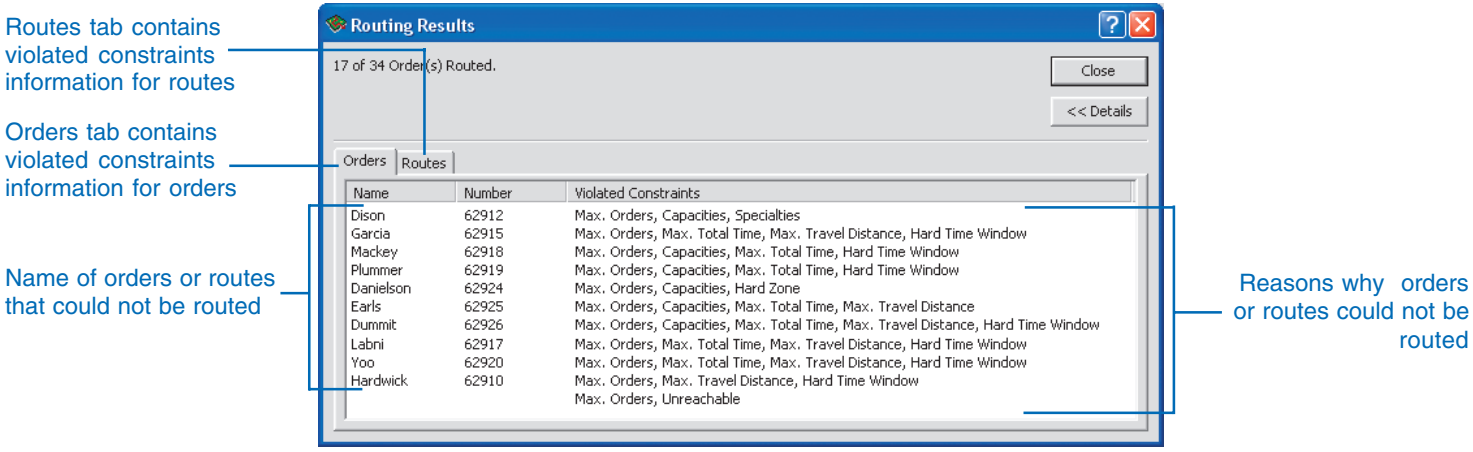
This dialog box only appears when ArcLogistics has finished generating routes and one or more orders or vehicles could not be routed. Select Details to expand the dialog box and see the reasons why orders and routes were not routed. ArcLogistics may not be able to route all orders or use all routes due to various constraints listed below.

Violated Orders Constraints

Max. Orders	A vehicle's Maximum Orders constraint has been met.
Capacities	One or more of a routes's capacities has been met.
Max. Travel Distance	A route has met the Max. Travel Distance set for it.
Max. Total Time	A route has met the Max. Total Duration set for it.
Max. Travel Time	A route has met the Max. Travel Time set for it.
Hard Time Windows	An order cannot be serviced due to the time window being hard.
Unreachable	An order cannot be serviced due to either the street network or the U-Turn and Curb Approach settings.
Hard Zone	An order cannot be routed due to routes being confined to areas where there are no orders.

Violated Routes Constraints

Max. Travel Distance	A route cannot reach the end location due to its Max. Travel Distance setting.
Max. Total Time	A route is infeasible due to its Max. Travel Duration or Max. Total Duration settings.



Building routes

Once you have all the orders you want in the routing folder and have the routes set up based on your routing project vehicles, you're ready to build routes for the routing folder.

Tip

Set the routes to be drawn as straight lines

Build Routes finishes faster if you set the Map View's display properties to draw routes as straight lines.

See Also

For information on building routes, see 'An overview of how routes can be built' in this chapter.

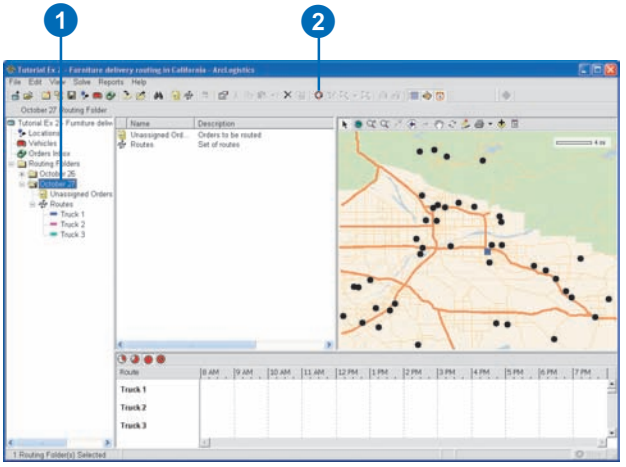
Tip

Unassigning an order

To unassign an order, right-click it, then click Unassign. The order is moved to the Unassigned Orders folder of the routing folder.

Building routes using the ArcLogistics solver

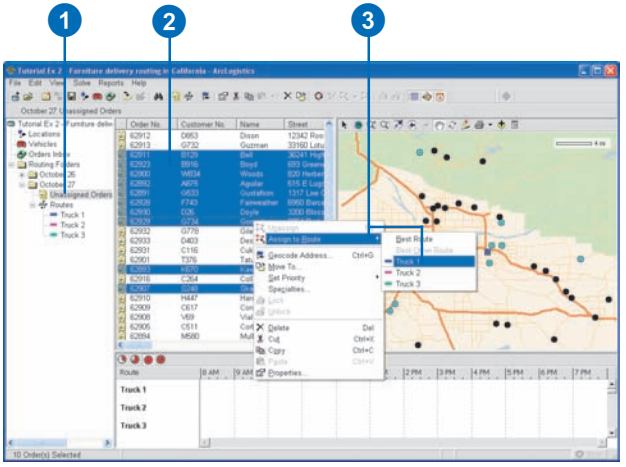
1. Click the routing folder for which you want to create routes.
2. Click Build Routes on the Main toolbar.



Assigning orders using the Assign to Route menu

1. Click the folder that contains the order you want to move.
2. Select the orders you want to assign within the Map View, Time View, or List View.
3. Right-click selected orders, point to Assign to Route, and click the name of the route.

   Or, click Best Route to let ArcLogistics decide which route to assign the orders to.



Tip

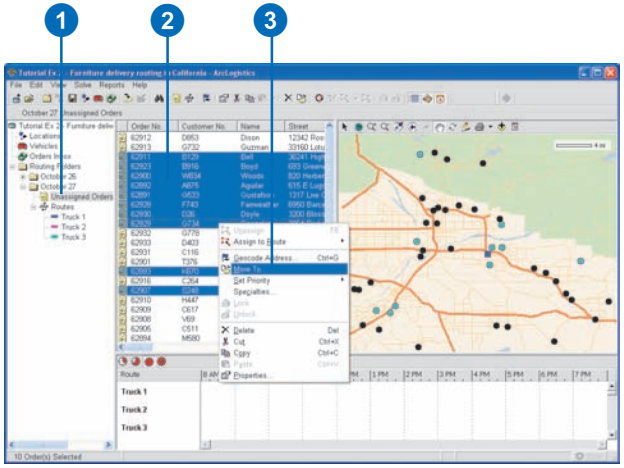
Let ArcLogistics decide which route is best

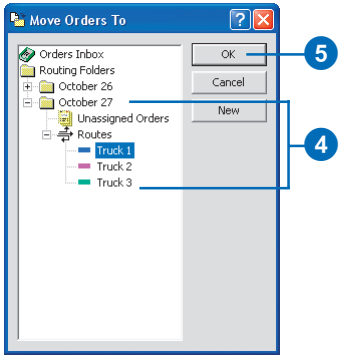
When dragging and dropping orders, you can drop them on the Routes icon in the Tree View. ArcLogistics assigns the order to the best route based on the current routes and your routing folder preferences.

Assigning orders using the Move Orders To dialog box

1. Click the folder that contains the orders you want to assign.
2. Select the orders you want to assign within the Map View, Time View, or List View.
3. Right-click the selection and click Move To.
4. Expand the routing folder so that you can see the target route, then click the route.

   Or, click Routes to let ArcLogistics decide which route to assign the order to.
5. Click OK.





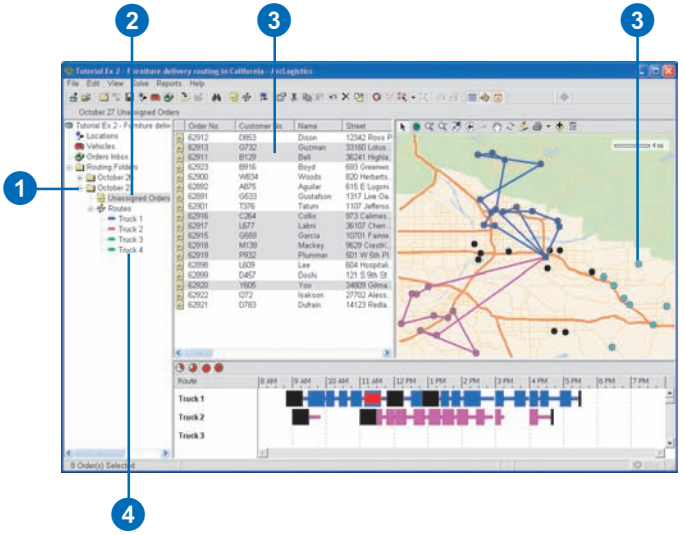
Tip

Assigning orders in the Map View

If you drag and drop orders onto the line of a route in the Map View, ArcLogistics determines the best sequence within that route.

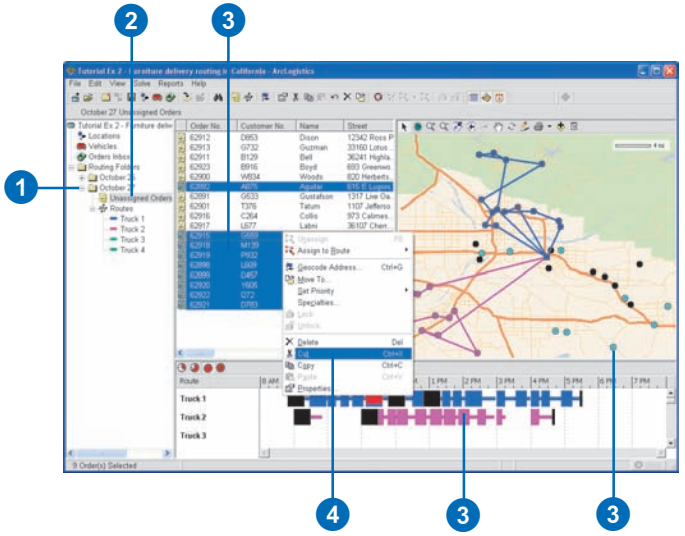
Assigning orders using drag and drop

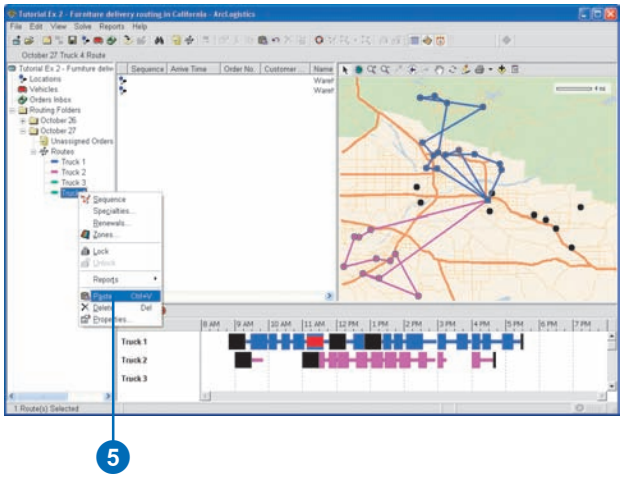
1. Expand the Tree View so that you can see the target route (the route you want to move the orders onto).
2. Click the folder that contains the orders you want to move.
3. Select the orders in the List View or Map View, then while holding down the mouse button, begin to drag the orders.
4. Drop the orders on the target route in the Tree View.



Assiging orders using cut and paste

1. Expand the routing folder so that you can see the target route (the route you want to move the orders onto).
2. Click the folder that contains the orders you want to move.
3. Select the orders you want to move in the List View, Time View, or MapView.
4. Right-click the selection and click Cut.
5. Right-click the target route in the Tree View and click Paste.

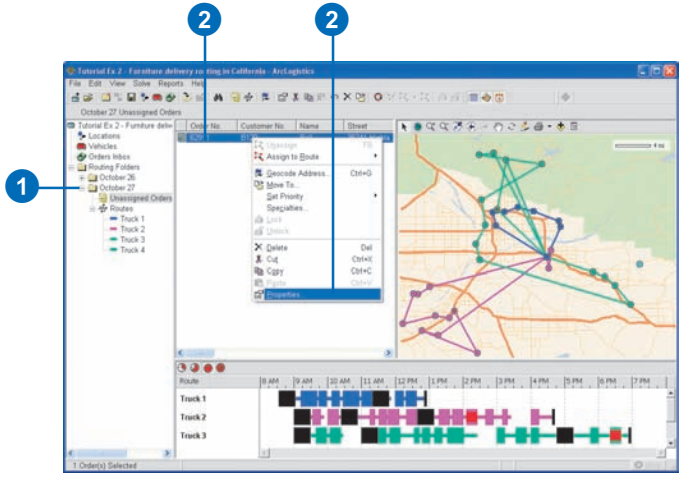


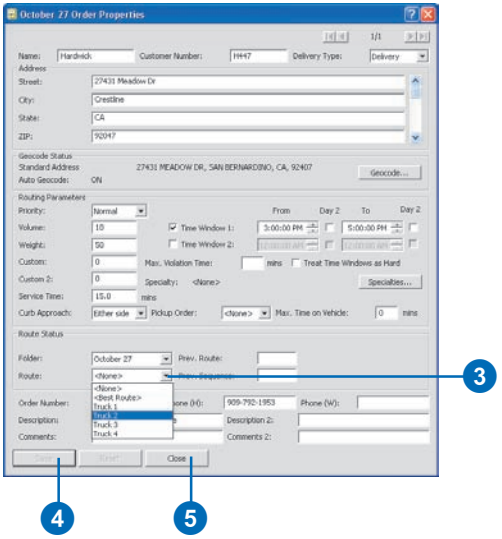


Assiging an order using the Order Properties dialog box

1. Click the folder that contains the order you want to move.
2. Right-click the order you want to move in the List View, Time View, or MapView, and click Properties.
3. Click the Route drop-down arrow and click the route you want to move the order onto.

   Or click <Best Route> to assign the order to the best route as determined by ArcLogistics.
4. Click Save.
5. Click Close.





Tip

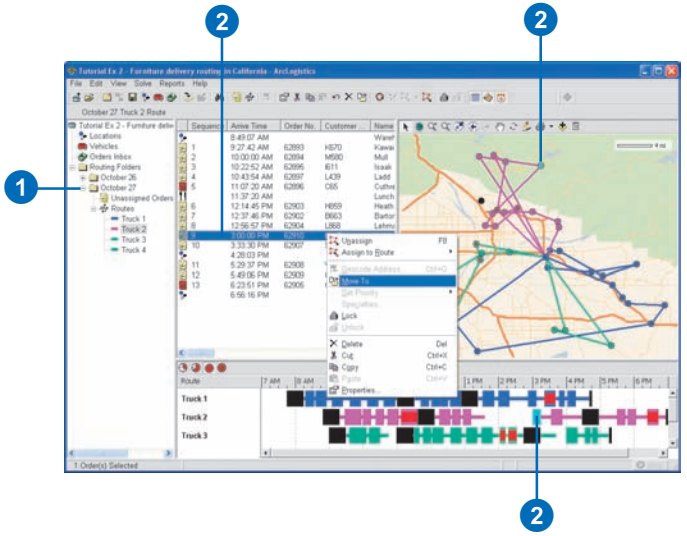
Locking an order onto a specific route

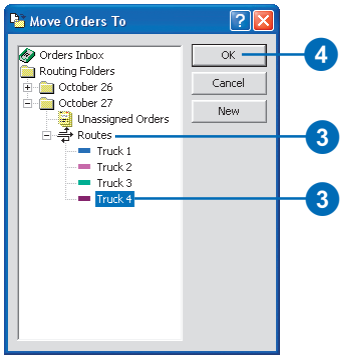
If you know that you definitely want to keep certain orders on a specific route, lock the orders. To lock an order, right-click the order and click Lock.

Reassigning an order using the Move Orders To dialog box

1. Click the folder that contains the order you want to move.
2. Right-click the order you want to move in the List View, Time View, or MapView, and click Move To.
3. Expand the routing folder so that you can see the target route, then click the route.

   Or click Routes to assign the order to the best route as determined by ArcLogistics.
4. Click OK.





Tip

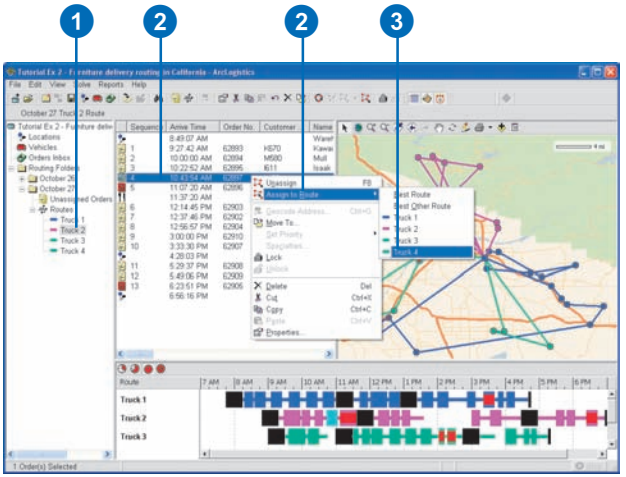
Using Best Other Route

If ArcLogistics has already created routes, you may want to reassign an order to the next best route. To do this, use the Best Other Route option on the Assign to Route menu.

Reassigning an order using the Assign to Route menu

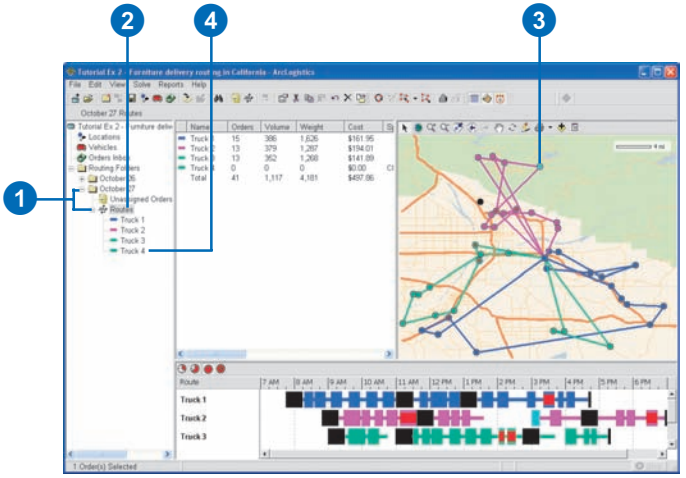
1. Click the route in the folder that contains the order you want to move.
2. Right-click the order and point to Assign to Route in the List View, Time View, or MapView.
3. Click the name of the route.

   Or, click Best Route or Best Other Route to let ArcLogistics decide which route to assign the order to.



Reassigning an order using drag and drop

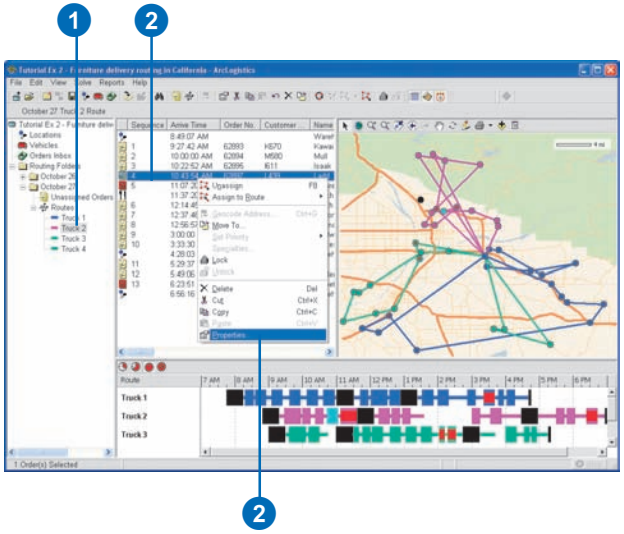
1. Expand the routing folder so that you can see the target route (the route you want to move the orders onto).
2. Click the folder that contains the orders you want to move.
3. Select the orders, then while holding down the mouse button in the List View or MapView, begin to drag the orders.
4. Drop the orders on the route in the Tree View.

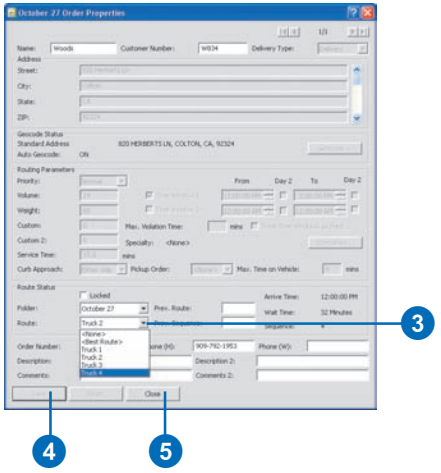


Reassigning an order using the Order Properties dialog box

1. Click the folder that contains the order you want to move.
2. Right-click the order you want to move in the List View, Time View, or MapView, and click Properties.
3. Click the Route drop-down arrow and click the route you want to move the order onto.

   Or click <Best Route> to assign the order to the best route as determined by ArcLogistics.
4. Click Save.
5. Click Close.





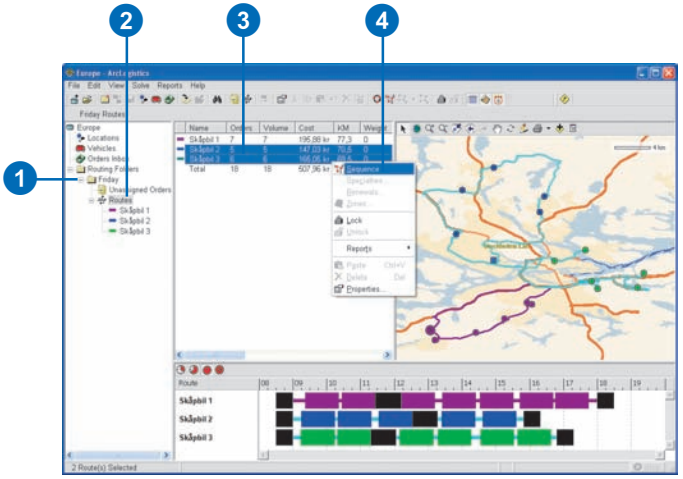
Tip

Locking a route

Once you have all the orders you want on a route, and you have positioned them in the best sequence, lock the route. To lock a route, right-click the route and click Lock.

Sequencing routes using the Sequence option

1. Expand the routing folder so that you can see the routes in the Tree View.
2. Click Routes in the Tree View.
3. Select one or more routes in the List View, Time View, or MapView.
4. Right-click the selection and click Sequence.



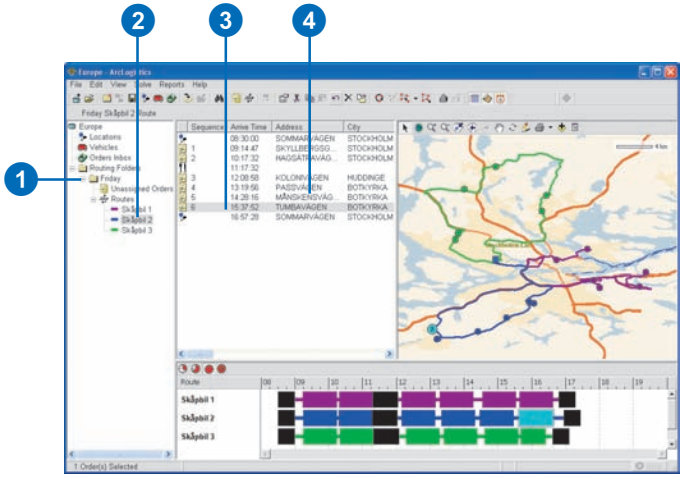
Tip

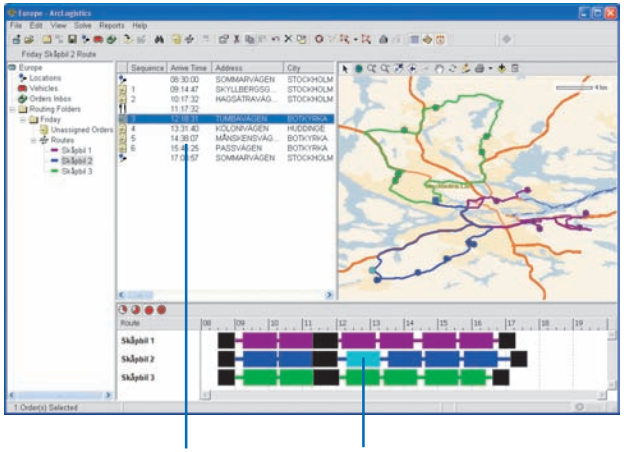
Scheduling an order at the end of a route

To schedule an order at the end of the route, drop it on the route's end location.

Sequencing orders in the List View

1. Expand the routing folder so that you can see the routes in the Tree View.
2. Click the route in the Tree View.
3. Click the order that you want to resequence and begin dragging it.
4. Drop the order on top of the order that you want it scheduled ahead of.





The order is inserted into the schedule before the order that it is dropped on. Arrival times for all subsequent orders are adjusted taking into account the new sequence.

Tip

Change the Map View to show the order sequence

You can change the Map View's display properties so that you can see the sequence in which orders are visited.

Tip

Set the Map View to draw routes using straight lines

When reassigning and sequencing routes, it's best to set the Map View display properties to draw routes using straight lines.

Tip

Display only the routes you're working with

If you have a lot of routes, but are only reassigning and sequencing orders on a few of them, use the Map View display properties dialog box to show only the relevant routes.

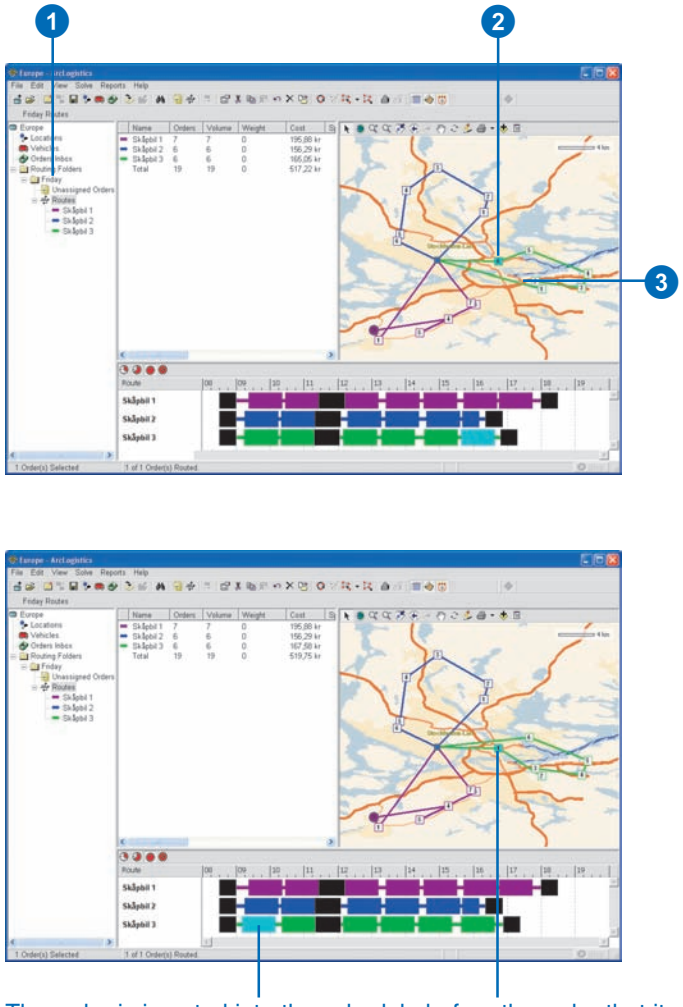
Tip

Scheduling an order at the end of a route

To schedule an order at the end of the route, drop it on the route's end location.

Sequencing an order in the Map View

1. Click the routing folder in the Tree View.
2. Click the order that you want to resequence and start to drag it.
3. Drop the order on the route line in the position you want.



The order is inserted into the schedule before the order that it is dropped on. Arrival times for all subsequent orders are adjusted taking into account the new sequence.

Tip

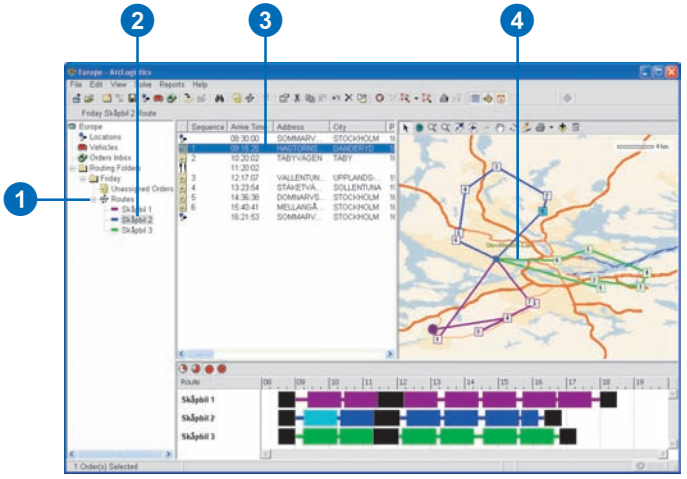
Let ArcLogistics sequence an order when you move it to a new route

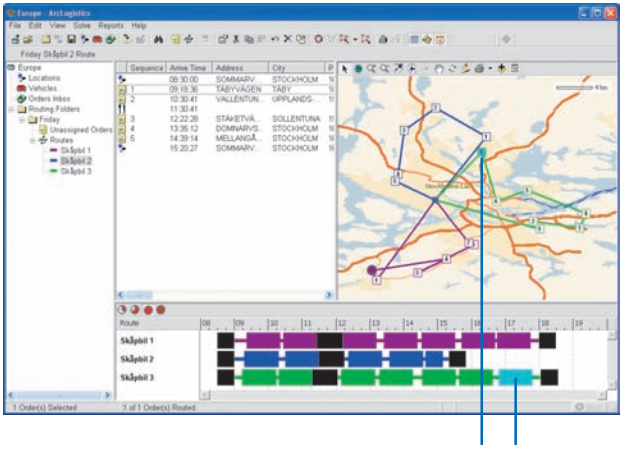
If you drag and drop an order to the Routes icon in the Tree View, ArcLogistics will decide which route to place the order on.

Reassigning and sequencing an order using the List View and Map View

1. Expand the routing folder so that you can see the routes in the Tree View.
2. Click the route in the Tree View that contains the order you want to move.
3. Click the order and drag it over the Map View, onto the line of another route in the List View.
4. Drop the order on the line between two scheduled orders.

   You can do this in reverse by dragging an order from the Map View and dropping it on a route in the List View.





ArcLogistics removes the order from skåplbil 2 and inserts it between the last order and end location of skåplbil 3.

Working with reports

14

IN THIS CHAPTER

- About the standard report templates
- The report window
- Previewing and printing reports
- Searching for text in a report
- Exporting a report
- Custom reporting with ArcLogistics
- Using Business Objects Crystal Reports
- Changing which report templates appear on the Reports menu

ArcLogistics comes with a set of standard report templates that you can print for your routing folders or for individual routes. You can search for text in reports and export them for use with other applications.

You can also use Business Objects® Crystal Reports™ to design your own reports. The Reports menu is customizable so that you can remove, edit, or add new reports to the menu.

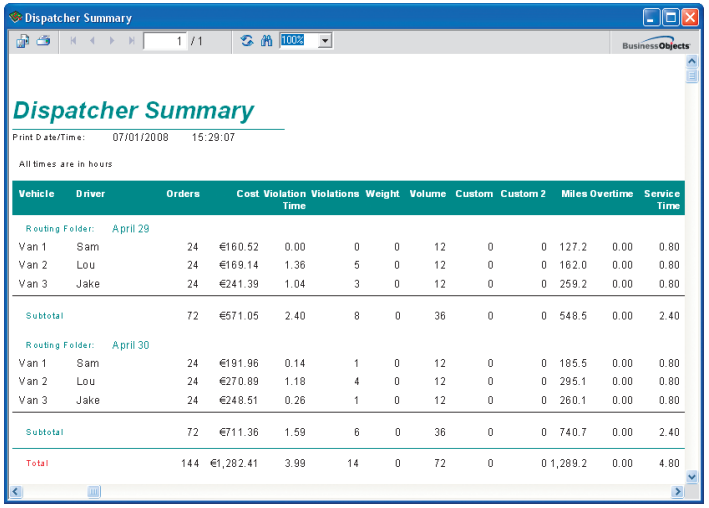
About the standard report templates

To create a report, ArcLogistics passes information contained in the selected routing folders or routes to a report template. The report template takes the information, summarizes it, and presents it in an easy-to-read format.

ArcLogistics comes with several report templates that can be used to preview and print reports about your routes. There are two categories of reports: *routing-folder-context reports* and *route-context reports*.

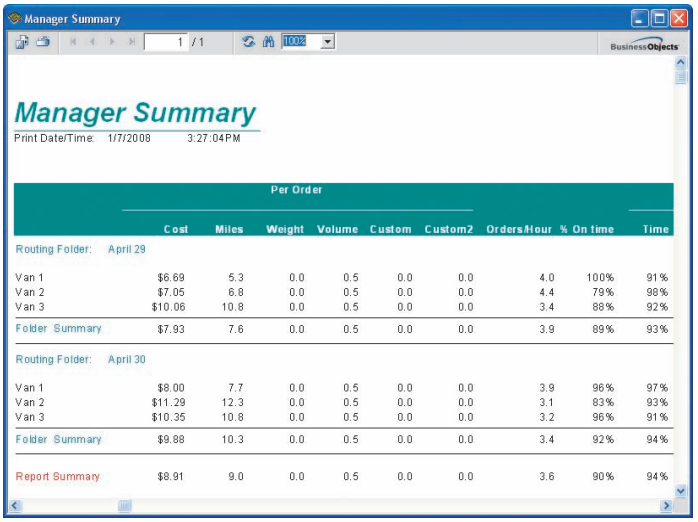
Routing-folder-context reports

Routing-folder-context reports summarize and present information contained in one or more routing folders. There are two routing-folder-context report templates.



Vehicle	Driver	Orders	Cost	Violation Time	Violations	Weight	Volume	Custom	Custom 2	Miles	Overtime	Service Time
Routing Folder: April 29												
Van 1	Sam	24	€160.52	0.00	0	0	12	0	0	127.2	0.00	0.80
Van 2	Lou	24	€169.14	1.36	5	0	12	0	0	162.0	0.00	0.80
Van 3	Jake	24	€241.39	1.04	3	0	12	0	0	259.2	0.00	0.80
Subtotal		72	€571.05	2.40	8	0	36	0	0	548.5	0.00	2.40
Routing Folder: April 30												
Van 1	Sam	24	€191.96	0.14	1	0	12	0	0	185.5	0.00	0.80
Van 2	Lou	24	€270.89	1.18	4	0	12	0	0	295.1	0.00	0.80
Van 3	Jake	24	€248.51	0.26	1	0	12	0	0	260.1	0.00	0.80
Subtotal		72	€711.36	1.59	6	0	36	0	0	740.7	0.00	2.40
Total		144	€1,282.41	3.99	14	0	72	0	0	1,289.2	0.00	4.80

The dispatcher summary report provides dispatchers with an overall view of the workload.

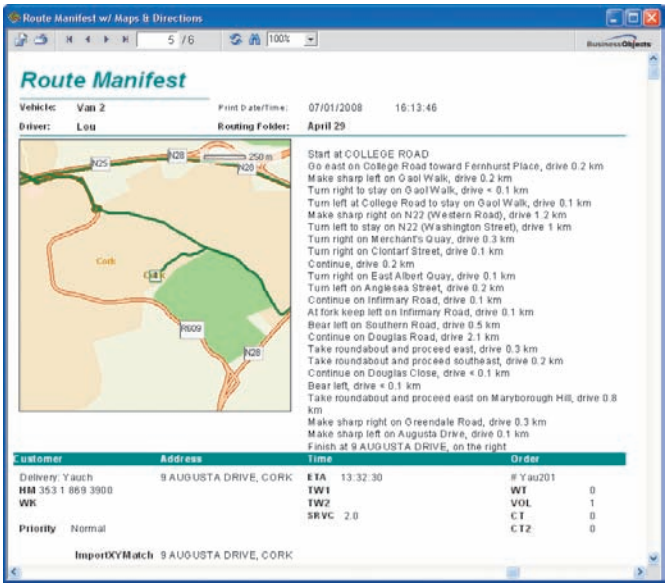


	Per Order								
	Cost	Miles	Weight	Volume	Custom	Custom2	Orders/Hour	% On time	Time
Routing Folder: April 29									
Van 1	$6.69	5.3	0.0	0.5	0.0	0.0	4.0	100%	91%
Van 2	$7.05	6.8	0.0	0.5	0.0	0.0	4.4	79%	98%
Van 3	$10.06	10.8	0.0	0.5	0.0	0.0	3.4	88%	92%
Folder Summary	$7.93	7.6	0.0	0.5	0.0	0.0	3.9	89%	93%
Routing Folder: April 30									
Van 1	$8.00	7.7	0.0	0.5	0.0	0.0	3.9	96%	97%
Van 2	$11.29	12.3	0.0	0.5	0.0	0.0	3.1	83%	93%
Van 3	$10.35	10.8	0.0	0.5	0.0	0.0	3.2	96%	91%
Folder Summary	$9.88	10.3	0.0	0.5	0.0	0.0	3.4	92%	94%
Report Summary	$8.91	9.0	0.0	0.5	0.0	0.0	3.6	90%	94%

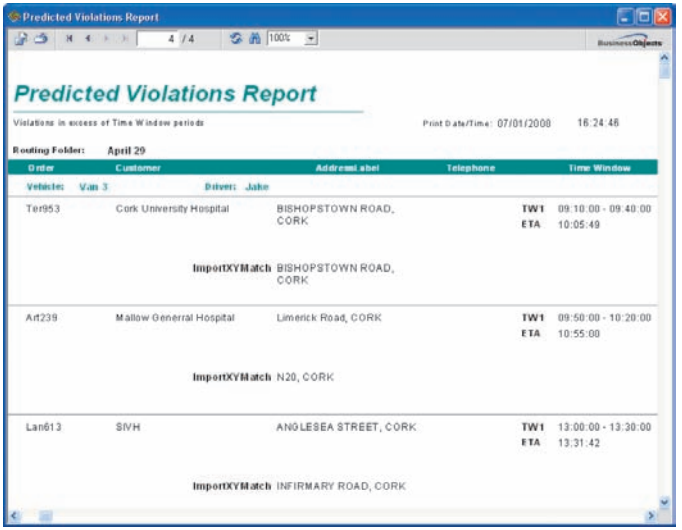
The manager summary report provides management with performance statistics which can be used to analyze overall routing efficiency.

Route-context reports

Route-context reports summarize and present information about one or more routes contained in a single routing folder. There are three types of route-context report templates.

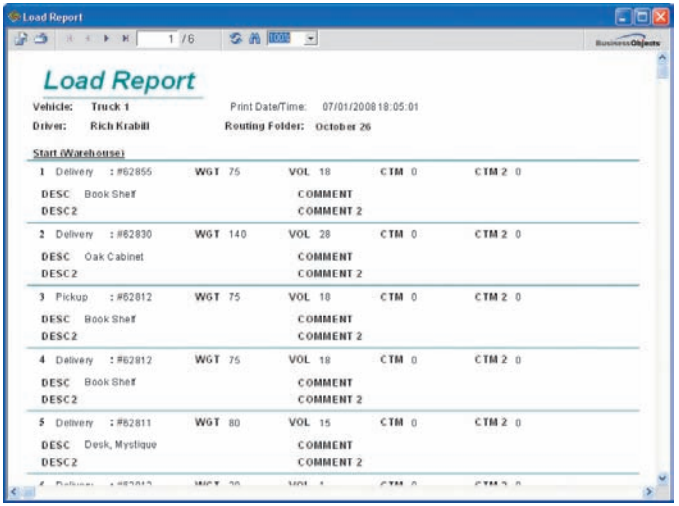


Route manifest reports can be given to your drivers to help them complete their route. Manifests list customers in the sequence they are scheduled to be visited. You can also include travel directions, a map of the entire route, and a map of the vicinity around each customer.



The predicted violations report provides a list of each order on the selected routes that is not scheduled to be visited during its requested time window. You can use this report to inform your customers of the revised expected arrival time.

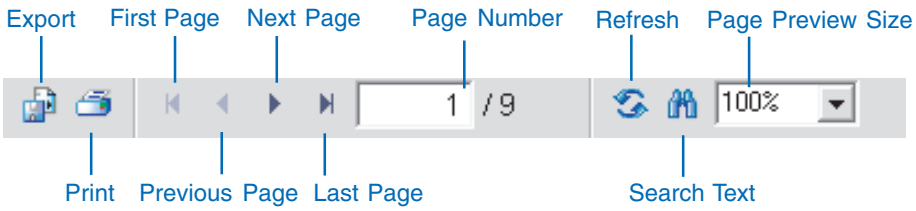
By default, this report shows only orders that have their time windows violated by more than 15 minutes. You can change the grace period by editing the report template with Business Objects Crystal Reports.

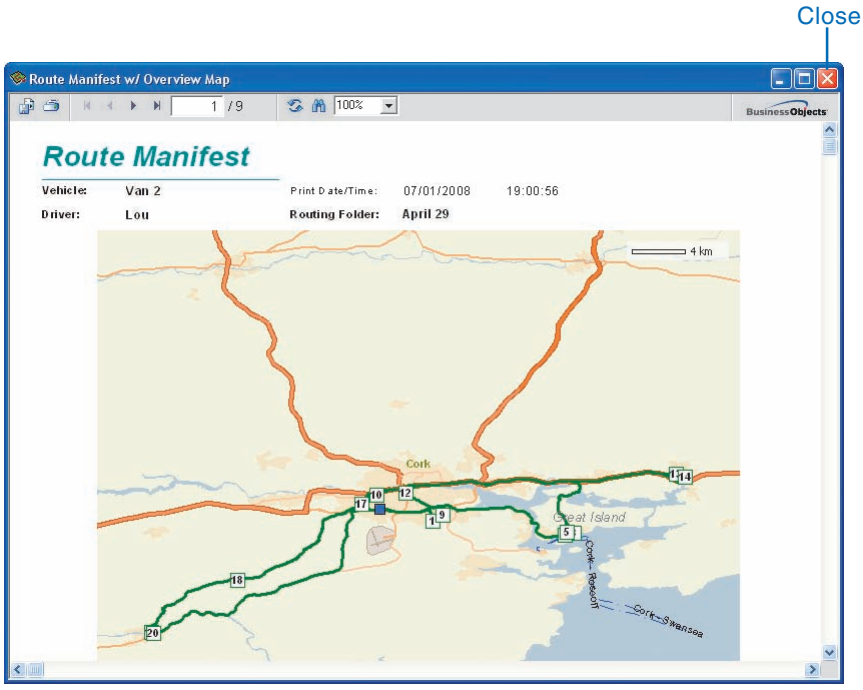


The load report provides a list of the items that are on a route. The report lists each order, its weight, volume, and the contents of the description and comments fields. It is sorted in reverse order so that the last order you put on the vehicle is the first one you are scheduled to service.

The report window

Reports display in a report window. A report window has several buttons that you can use to preview, print, export, or search for text.





Previewing and printing a report

ArcLogistics comes with several report templates that you can use to report information about your routing folders.

You can preview them in the report window and then print them if you want.

Tip

Sending a report directly to the printer

To print a report without previewing it first, uncheck Print Preview in the Reports menu.

Tip

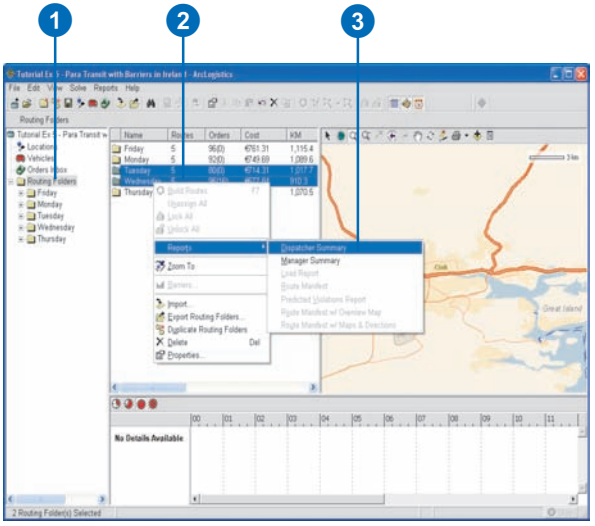
Changing printer options

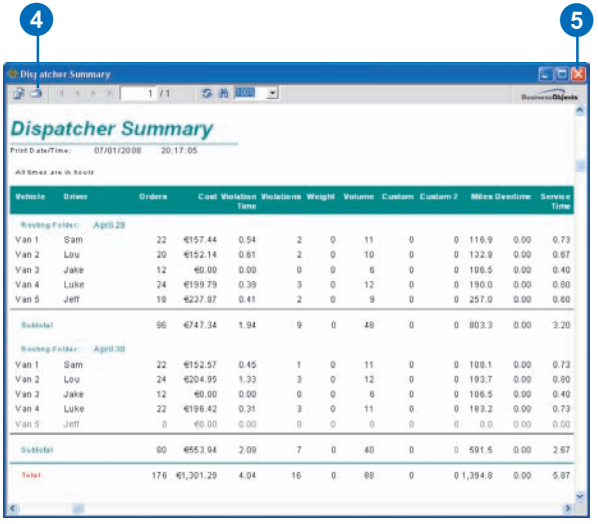
To change print options, click the Reports menu and then click Print Setup. You can change the number of copies to be printed and the printer to be used.

Printing a routing-folder-context report

1. Click Routing Folders in the Tree View.
2. Select the routing folders you'd like a report for in the List View.
3. Right-click the selection, point to Reports, and click the name of the report you want to print.

   ArcLogistics generates the dispatcher or manager summary report for the selected routing folders.
4. Click the Print button to print the report.
5. Click Close to close the report window.





Tip

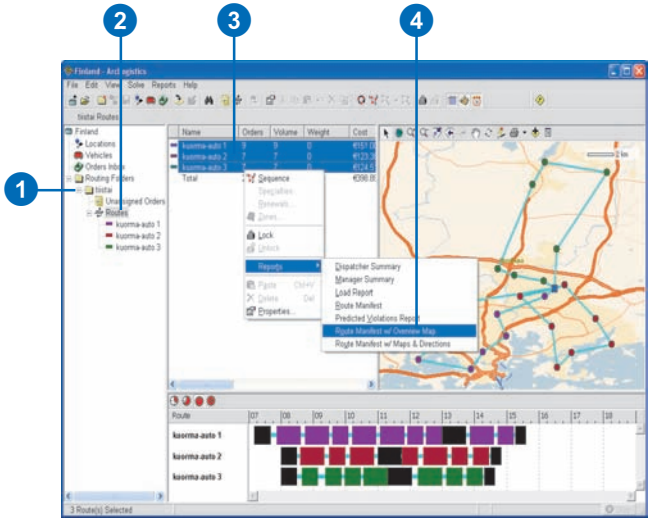
Printing a route manifest with maps and directions

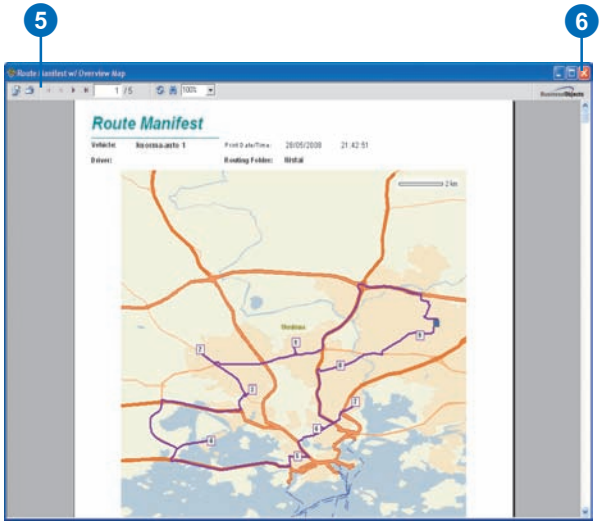
Generating a manifest with maps and directions requires significant resources. You'll need to have at least .5 MB of disk space available in your computer's temp folder for every stop on the route.

Printing a route-context report

1. Expand the routing folder that contains the routes.
2. Click the Routes folder in the Tree View.
3. Select the routes you'd like a report for in the List View, Map View, or Time View.
4. Right-click the selection, point to Reports, and click the name of the route-context report you want to print.

   ArcLogistics generates the manifest, violation, or load report for the selected routes.
5. Click the Print button to print the report.
6. Click Close to close the report window.





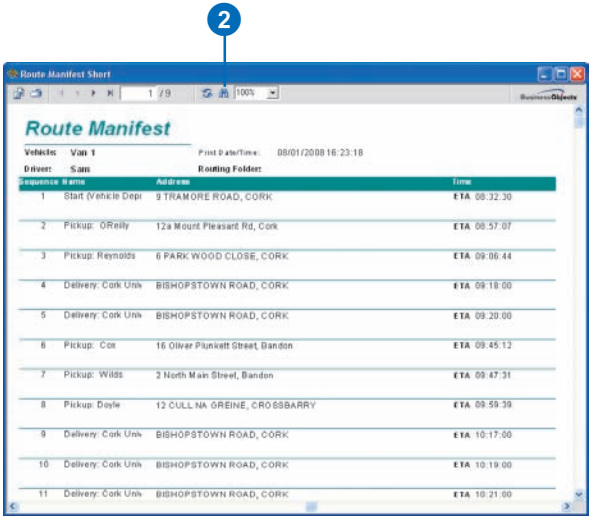
Searching for text in a report

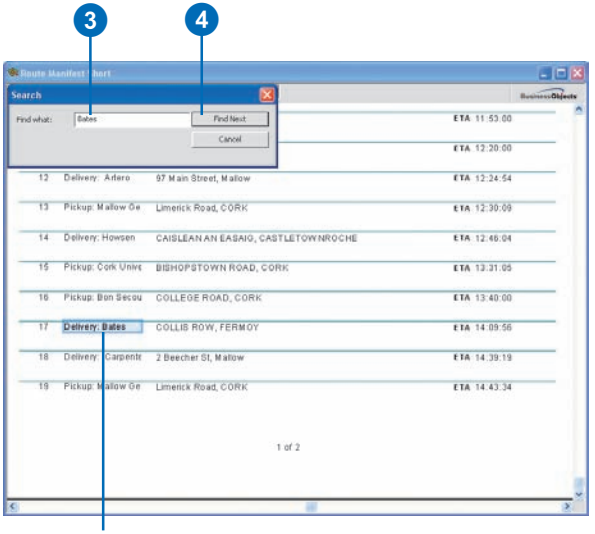
While previewing a report in the report window, you can search for any text, such as an order number or a customer's name.

1. View the report in the report window.
2. Click Search Text.

   The Seach dialog box appears.
3. Enter the text you want to find in the Find what box.
4. Click Find Next.

   If it is found, the text displays with a gray box around it.
5. Click Find Next again to search for another occurrence of the text.





The report scrolls to the text if it finds it and outlines the text with a gray box.

Exporting a report

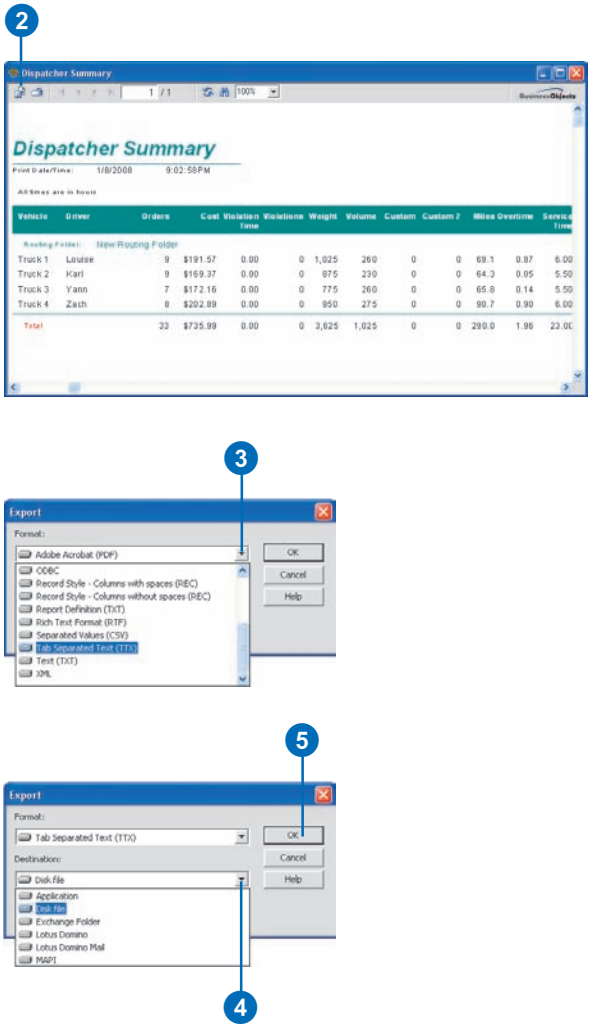
While previewing a report in the report window, you can export the report to many different formats for use with other applications.

Crystal Reports offers many options to export a report. Two common ways to export a report are to export to a file or directly to an application window.

Exporting a report to a file

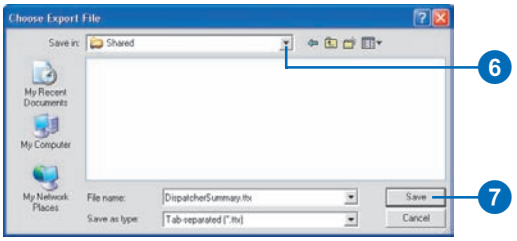
1. Preview the report you would like to export.
2. Click the Export Report button. The Crystal Reports Export dialog box displays.
3. Click the Format drop-down arrow to specify the format to export into.
4. Click the Destination drop-down arrow to specify where the information will be exported to.
5. Click OK.

   Depending on the format you're exporting to, you may be prompted for additional information before you specify the directory to export the file to. If this dialog box appears, specify the information, then click OK. ►



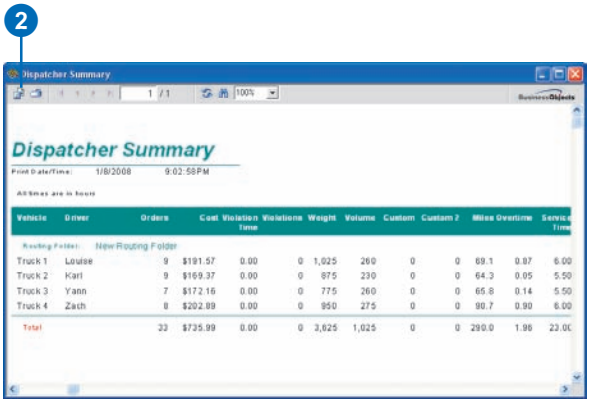
6. Specify the directory and file to export to.
7. Click Save.

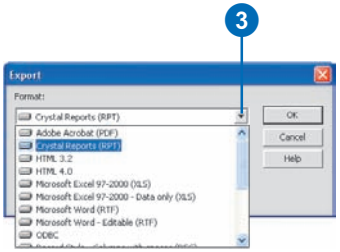
   Crystal Reports exports the report to the file on disk.



Exporting a report to an application

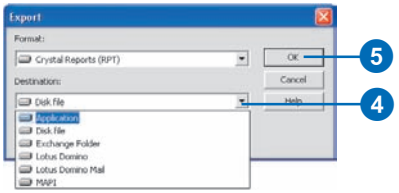
1. Preview the report you would like to export.
2. Click the Export Report button. The Crystal Reports Export dialog box displays.
3. Click the Format drop-down arrow to specify the format to export into. ►

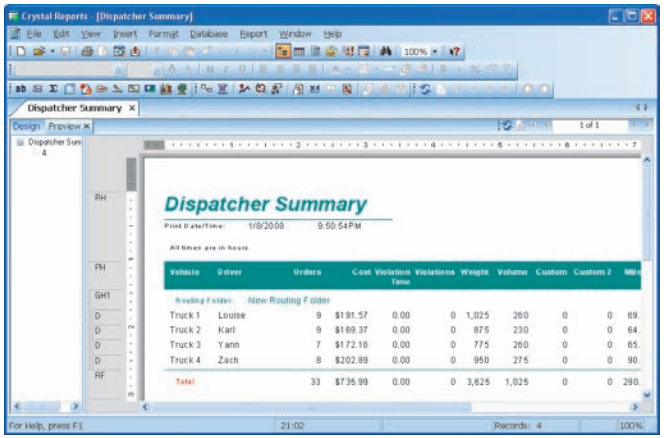




4. Click the Destination drop-down arrow to specify where the information will be exported to.
5. Click OK.

   The report opens in the specified application. You can use any of the application's tools to make changes, save, or print the report.





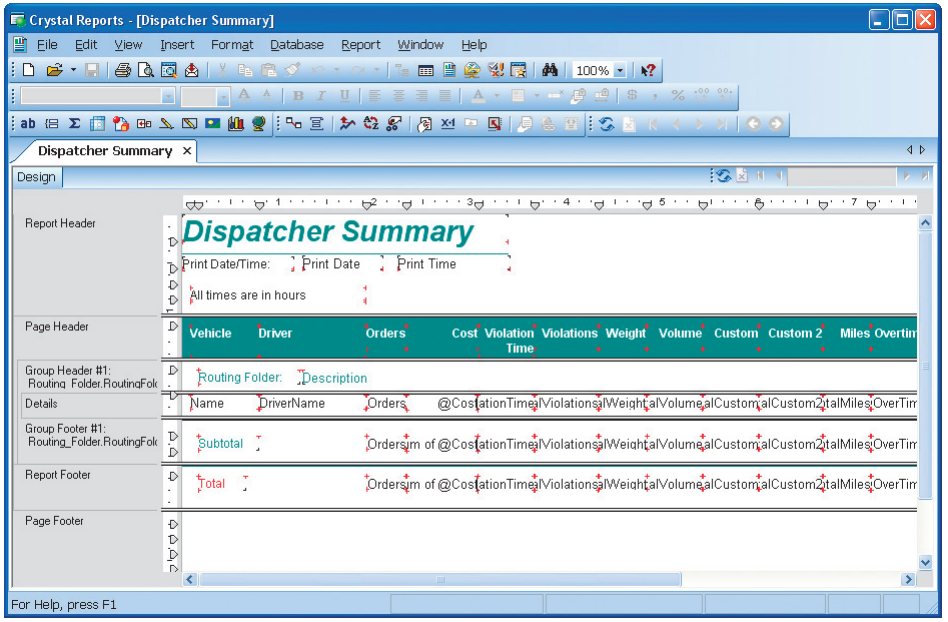
Custom reporting with ArcLogistics

The standard report templates that come with ArcLogistics provide considerable reporting capabilities. If you need to, you can extend or alter the standard reporting capabilities.

When you preview or print a report, ArcLogistics creates a temporary Access database which is used by the report template. As a result, you can use Business Objects Crystal Reports to design your own report templates, using exported routing folders. See Appendix A for details about the contents of exported routing folders. To learn more about using Crystal Reports, refer to the Business Objects Crystal Reports online help.

You can also customize the report templates that come with ArcLogistics—for example, you might want to add your company's logo to each of the report templates.

To support additional report templates, the Reports menu in ArcLogistics is customizable. You can add report templates to this menu so that you can easily access them from the application. If you want, you can also delete templates from the menu.



You can use Business Objects Crystal Reports to customize reports or create your own.

Using Business Objects Crystal Reports

You can use Business Objects Crystal Reports to create your own report templates, and, if you want, you can customize the standard report templates.

Tip

Using a similar report to get started

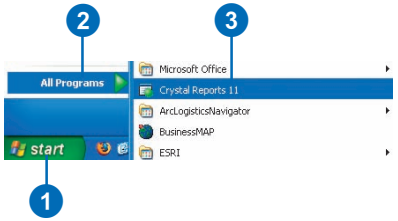
The most efficient approach to creating your own custom report template is to start with an existing report template and modify it so that it shows the information you're interested in. Once you've created your own template, add it to the reports menu and use it like you would any of the standard reports.

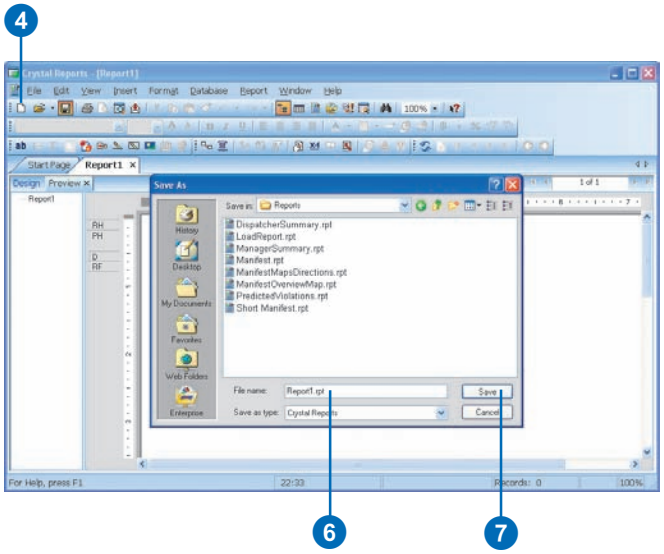
See Also

For more information on how to use Business Objects Crystal Reports, refer to the Crystal Reports online help.

Creating a report template

1. Click the Start button on the Windows taskbar.
2. Point to All Programs.
3. Click Crystal Reports.
4. Click the New Report button.
5. Design the report.
6. Type a name for the report.
7. Click Save.





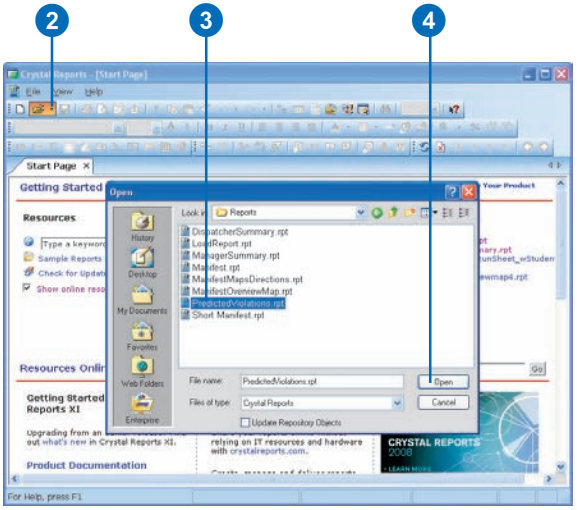
Tip

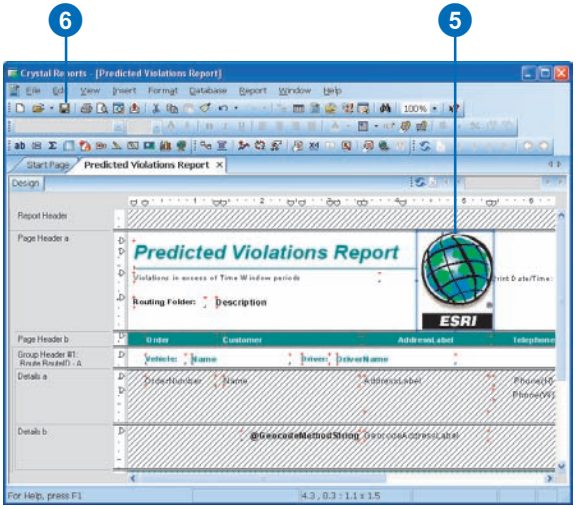
Make a backup of the original report template

Before making changes to an existing report template, make a backup so that you can go back to the original report, if necessary.

Customizing a standard report template

1. Start Business Objects Crystal Reports.
2. Click Open.
3. Browse to the report you want to customize.
4. Click Open.
5. Make any changes you want to the report.
6. Click Save.





Changing which report templates appear on the Reports menu

ArcLogistics comes with several report templates that you can use to report information on your routing folders.

If you want you can change the list of reports that appears in the Reports menu. You can also make changes to the report templates using Business Objects Crystal Reports.

Tip

Routing-folder-context vs. Route-context reports

Routing-folder-context reports summarize and present information contained in one or more routing folders. Route-context reports summarize and present information about one or more routes contained in a single routing folder.

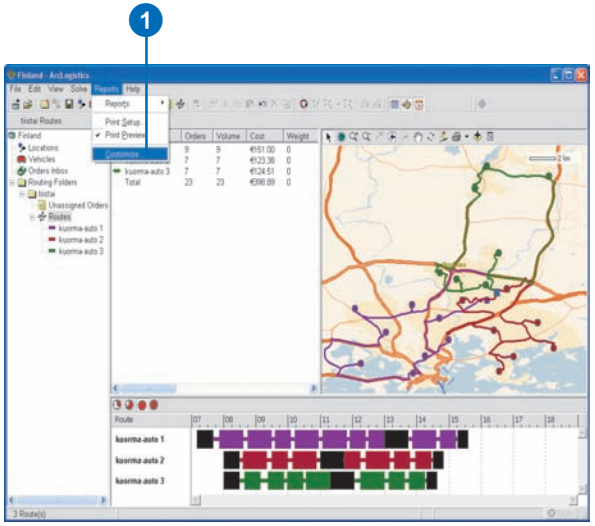
Tip

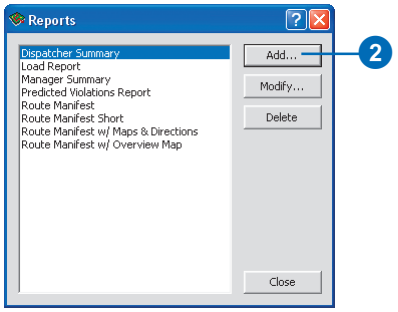
Specifying an accelerator key for the report

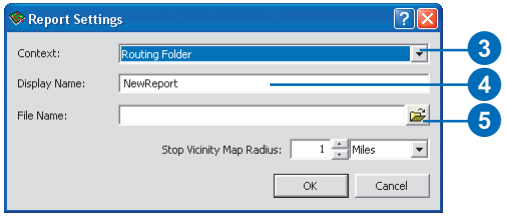
Type an ampersand (&) before the letter that you want used as the accelerator key in the Reports menu.

Adding a report to the Reports menu

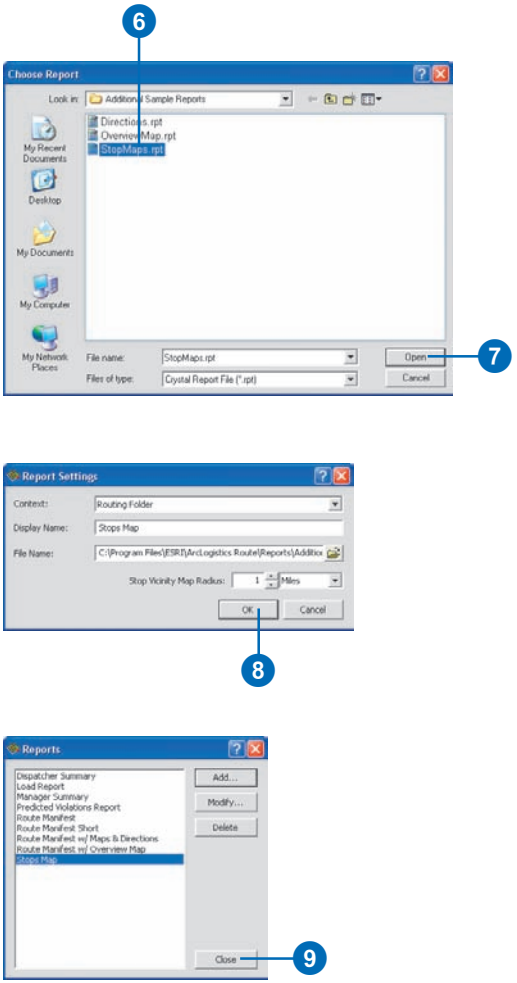
1. Click Reports and click Customize.
2. Click Add.
3. Click the Context drop-down arrow and click the context of the report.
4. Type the name for the report.
5. Click Browse. ▸







6. Navigate to the report you want to add.
7. Click Open.
8. Click OK.
9. Click Close.



Tip

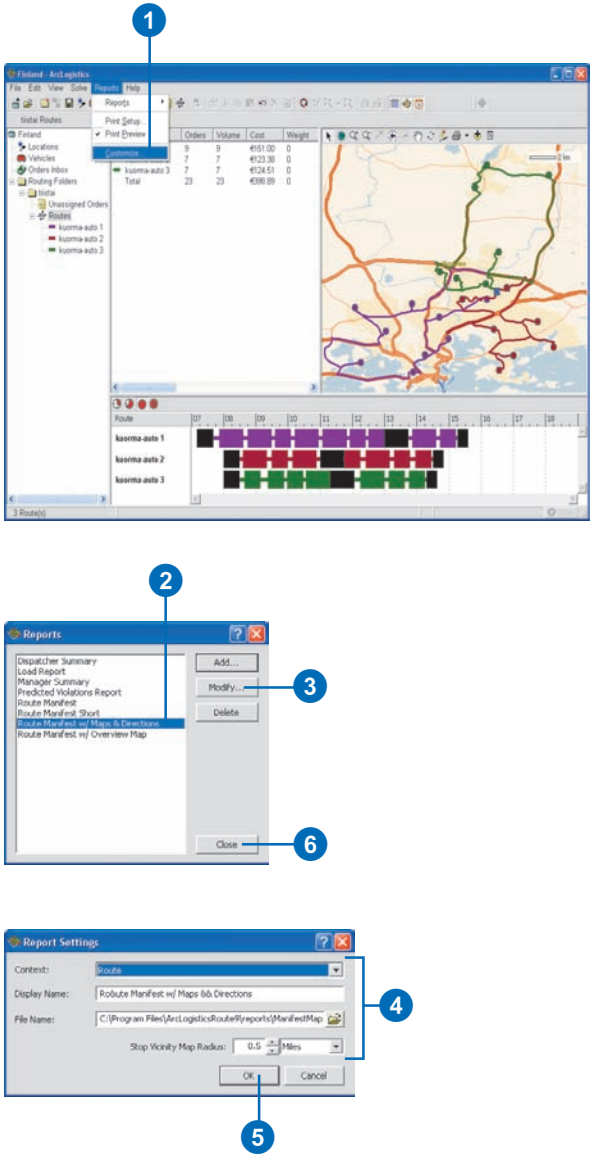
Stop vacinity maps

You can easily change the radius of stop vacinity maps in the Reports Setting dialog box.

Editing report settings

1. Click Reports and click Customize.
2. Click the name of the report.
3. Click Modify.
4. Make any changes you want to the report's settings.
5. Click OK.
6. Click Close.

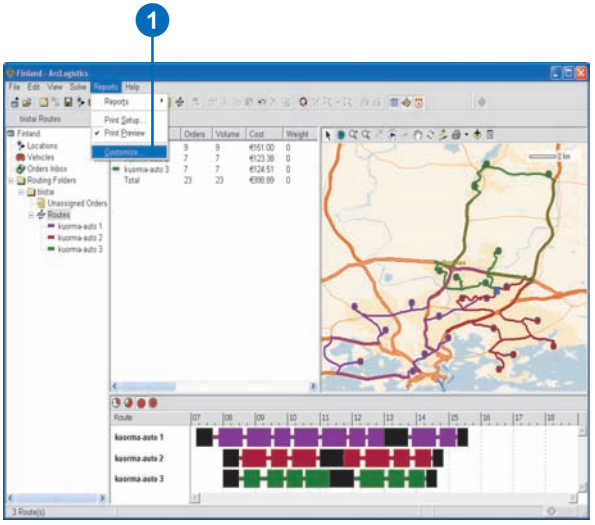
   The Reports menu is updated.

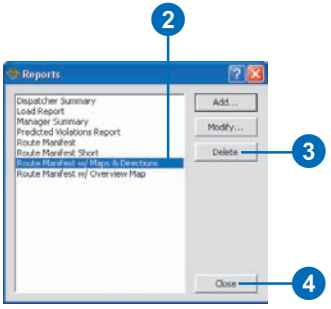


Deleting a report from the Reports menu

1. Click Reports and click Customize.
2. Click the name of the report.
3. Click Delete.
4. Click Close.

   The Reports menu is updated.





Appendix

A

IN THIS APPENDIX

- **Route table**
- **RouteDetail table**
- **Routing Folder table**

You can export routing folder information to Microsoft Access databases, text files, or ESRI shapefiles. This appendix describes the fields that can be exported.

When you export to an Access database, the resulting database consists of three tables: the Route table, the RouteDetail table, and the Routing Folder table. You can use the information to create reports of efficiency, long-term trends, or simply to archive your routing work.

When you export to a text file or a shapefile, you can export either routes or orders. The fields that can be exported for routes are described in the Route table. The fields that can be exported for orders are described in the RouteDetail table.

Refer to the 'mdb Name' column if you're exporting to Access databases. Refer to the 'txt/dbf Name' column if you're exporting to text files or shapefiles.

Route table

mdb Name	dbf/txt Name	Type	Size
OverviewMap		OLE Object	
	RFDesc	Text	50
RouteID	RouteID	Number (Long)	
RoutingFolderID	RFID	Number (Long)	
Vehicle ID	VehicleID	Number (Long)	
Name	Name	Text	50
VolumeCapacity	VolumeCap	Number (Double)	
WeightCapacity	WeightCap	Number (Double)	
CustomCapacity	CustomCap	Number (Single)	
Custom2Capacity	Custom2Cap	Number (Single)	
DriverName	DriverName	Text	50
EarliestStart	EarliestSt	Number (Double)	
LatestStart	LatestSt	Number (Double)	
FixedCost	FixedCost	Number (Single)	
CostPerMile	CostPerMil	Number (Single)	
CostPerHour	CostPerHr	Number (Single)	
OTCostPerHour	OTCostPrHr	Number (Single)	
TimeBeforeOT	TimeBefOT	Number (Single)	
MaxOrders	Maxorders	Number (Long)	
Comments	Comments	Memo	--
TimeAtLunch	TimeAtLun	Number (Single)	
TotalStops	TotStops	Number (Single)	
TotalOrders	TotOrders	Number (Single)	
TotalServiceTime	TotServTim	Number (Single)	
TotalTravelTime	TotTravTim	Number (Single)	
TotalWaitTime	TotWaitTim	Number (Single)	
TotalTime	TotTime	Number (Single)	
TotalOT	TotOT	Number (Single)	
Utilization	Utilizatn	Number (Single)	
StartTime	STimeDbl	Number (Double)	
EndTime	ETimeDbl	Number (Double)	
StartTimeString	STimeStr	Text	15
EndTimeString	ETimeStr	Text	15
Specialties	Specialtie	Text	200
VolumeUtilization	VolumeUtil	Number (Single)	
WeightUtilization	WeightUtil	Number (Single)	
CustomUtilization	CustomUtil	Number (Single)	
Custom2Utilization	Custom2Util	Number (Single)	
TotalCost	TotCost	Number (Single)	
TotalMiles	TotMiles	Number (Single)	
TotalMilesPerStop	TotMilsPSt	Number (Single)	
CostPerKM	CostPerKM	Number (Single)	
TotalKM	TotKM	Number (Single)	
TotalKMPerStop	TotKMPSt	Number (Single)	
TotalViolations	TotViols	Number (Single)	
ViolationTime	ViolTime	Number (Single)	
TotalRuns	TotalRuns	Number (Long)	
MaxHours	MaxHours	Number (Single)	
MaxDrive	Maxdrive	Number (Single)	

mdb Name	dbf/txt Name	Type	Size
TotalVolume	TotVolume	Number (Single)	
TotalWeight	TotWeight	Number (Single)	
TotalCustom	TotCustom	Number (Single)	
TotalCustom2	TotCustom2	Number (Single)	
Zones	Zones	Text	200
MaxMiles	MaxMiles	Number (Single)	
MaxKM	MaxKM	Number (Single)	

RouteDetail table

mdb Name	dbf/txt Name	Type	Size
StopVicinityM ap		OLE Object	
Directions		Memo	--
RouteDetailID		Number (Long)	4
RoutingFolderID	RFID	Number (Long)	4
Name	Name	Text	50
Street*	Street	Text	100
City*	City	Text	100
State*	State	Text	100
ZIP*	Zip	Text	100
CrossStreet*	CrossStr	Text	100
AddressLabel		Text	200
X	X	Number (Double)	
Y	Y	Number (Double)	
Phone(H)	Phone_H_	Text	30
Phone(W)	Phone_W_	Text	30
OrderNumber	OrderNum	Text	32
CustomerNumber	CustNum	Text	32
Priority	Priority	Text	32
FromDeliveryTime1	FDelTime1	Number (Double)	
ToDeliveryTime1	TDelTime1	Number (Double)	
FromDeliveryTime2	FDelTime2	Number (Double)	
ToDeliveryTime2	TDeltime2	Number (Double)	
TimeWindow1	TW1	Text	30
TimeWindow2	TW2	Text	30
FromTime1Str	FrTime1Str	Text	15
ToTime1Str	ToTime1Str	Text	15
TW1Day	TW1Day	Number (Single)	
FromTime2Str	FrTime2Str	Text	15
ToTime2Str	ToTime2Str	Text	15
TW2Day	TW2Day	Number (Single)	
ServiceTime	ServiceTim	Number (Single)	
TotalWeight	TotWeight	Number (Single)	
TotalVolume	TotVolume	Number (Single)	
TotalCustom	TotCustom	Number (Single)	
TotalCustom2	TotCustom2	Number (Single)	
Description	Descriptio	Text	100
Comments	Comments	Memo	
Description2	Descripti2	Text	100
Comments2	Comments2	Memo	
Specialties	Specialtie	Text	200
RouteID	RouteID	Number (Long Integer)	
Sequence	Sequence	Number (Long Integer)	
OrderSeuence	OrderSeq	Number (Long Integer)	
TravelTime	TravelTime	Number (Single)	
WaitTime	WaitTime	Number (Single)	
ArriveTime	ArrTime	Number (Double)	
ArriveTimeString	ArrTimeStr	Text	15

mdb Name	dbf/txt Name	Type	Size
DistanceFromPrevious	DistFromPr	Number (Double)	
StopType	StopType	Number (Integer)	
StopTypeString	StopTypStr	Text	50
GeocodeMethod	GeoMethod	Number (Long Integer)	
GeocodeMethodString	GeoMethStr	Text	50
GeocodeAuto	GeoAuto	Number (Long Integer)	
GeocodeStreet*	GeoStreet	Text	100
GeocodeCity*	GeoCity	Text	100
GeocodeState*	GeoState	Text	100
GeocodeZIP*	GeoZip	Text	100
GeocodeAddressLabel		Text	200
MaxViolationTime	MaxViolTim	Number (Single)	
CurbApproach	CurbAppr	Number (Integer)	
CurbApproachString	CurbApprStr	Text	50
DeliveryType	DeliverTyp	Number (Integer)	
DeliveryTypeString	DelTypeStr	Text	50
MaxTimeOnVehicle	MaxTimeVeh	Number (Single)	
LoadAtID		Number (Long Integer)	
	VehicleID	Number (Double)	
	Vehicle Nam	Text	50
	DriverName	Text	50
	StopID	Number (Double)	

* Address field names may vary based on the address locator being used.

Routing Folder table

mdb Name	dbf/txt Name	Type	Size
RoutingFolderID		Number (Long)	
Description		Text	50
TWCost Factor		Number (Single)	
TransitTimeCostFactor		Number (Single)	
DepartWithinTW		Number (Long)	
UTurnPolicy		Number (Long)	
UTurnPolicyString		Text	50

Appendix B

IN THIS APPENDIX

- **Data requirements for importing orders**
- **Data requirements for importing trip requests**

You can import orders and trip requests from an external database into ArcLogistics. To import orders and trip requests, you need to match fields from your database to the fields in the ArcLogistics database. This appendix describes the data types and widths of each field in ArcLogistics. You need to make sure that the data in the fields you match can be accommodated by the fields in ArcLogistics.

The address fields in the ArcLogistics database will vary depending on the address locator you are using for your routing project. For example, the address locator for Ireland is different from the address locator for the United States of America, and the corresponding ArcLogistics database will reflect the address locator fields being used in the routing project. The Import Wizard in ArcLogistics will display the address fields specified within the address locator in the routing project.

Data requirements for importing orders

Name	Type	Size*	Details
[Routing Folder]	Text	50	Text in Routing Folder field must match an existing routing folder name; otherwise, a new routing folder is created.**
Previous Route	Text	50	Text in Previous Route must match an existing route in ArcLogistics. The order will be placed on this route using the Previous Sequence field.
Previous Sequence	Number (Long)		Sequence on specific route that you want the order to be placed.
Order Number	Text	32	Any value you use to keep track of your orders.
Customer Number	Text	32	Any value you use to keep track of your customers.
Name	Text	50	Name of the customer.
Delivery Type***	Number (Integer)		Defines if an order is a pickup or a delivery. “0” means delivery; “1” means pickup.
Delivery Type***	Text	10	Delivery Type can also be a text field. “Delivery” means delivery; “pickup” means pickup.
Street****	Text	100	Text that can be interpreted as a street address (e.g., 380 W Fern St) or intersection (e.g., 5th Ave. & Main St.).
City****	Text	100	Full name of the city (use Los Angeles, not L.A.).
State****	Text	100	Two-digit abbreviation of the state or province (use CA, not California, or ON, not Ontario).
Postal Code****	Text	100	Any value representing the postal or ZIP Code of an order (e.g., 92373).
Country****	Text	100	Country name.
Cross Street****	Text	100	Closest cross street to the street address.
X	Number (Double)		The x-coordinate is used instead of the address to geocode the order (e.g., -117.19543).
Y	Number (Double)		The y-coordinate is used instead of the address to geocode the order (e.g., 34.05924).

Alt X	Number (Double)		If the x-coordinate doesn't fall within the extent of the street data and the street address cannot be matched, the Alternate x-coordinate is used to geocode the order (e.g., -117.19543).
Alt Y	Number (Double)		If the y-coordinate doesn't fall within the extent of the street data and the street address cannot be matched, the Alternate y-coordinate is used to geocode the order (e.g., 34.05924).
Time Window1 Start	Text	15	Any text that can be interpreted as a time (e.g., 2 pm, 2:00 PM, 14:00, 1400).
Time Window1 Finish	Text	15	Any text that can be interpreted as a time (e.g., 4 pm, 4:00 PM, 16:00, 1600).
Time Widnow1 Start Day	Number (Long)		The day on whcih the first time window starts. "2" means Day 2; otherwise, treated as day 1.
Time Window2 Start	Text	15	Any text that can be interpreted as a time (e.g., 2 pm, 2:00 PM, 14:00, 1400).
Time Window2 Finish	Text	15	Any text that can be interpreted as a time (e.g., 4 pm, 4:00 PM, 16:00, 1600).
Time Widnow2 Start Day	Number (Long)		The day on which the second time window starts. "2" means Day 2; otherwise, treated as day 1.
Priority***	Text	30	Priority of order. "High" means high; "normal" means normal.
Priority***	Number (single)		Priority can also be a number field. "0" means normal; other values mean high.
Service Time	Number (Single)		Number of minutes required to service the order (e.g., 2.5).
Weight	Number (Single)		Any value representing the weight of the order.
Volume	Number (Single)		Any value representing the volume of the order.
Custom	Number (Single)		Any value representing the custom capacity constraint of the order.
Custom 2	Number (Single)		Any value representing the custom 2 capacity constraint of the order.
Curb Approach***	Number (Integer)		Curb approach of an order. "0" meams left, "1" means right, "2" means either.
Curb Approach***	Text	10	Curb Approach can also be a text field. "Left" means left; "Right" means right; "Either" means either.
Specialties	Text	200	Text in Specialties field must match existing specialties in ArcLogistics. Orders can have more than one specialty by delimiting specialties with commas (e.g., electrician, spanish speaker, plumber).**

Phone (H)	Text	30	(e.g., (909) 793-2853, 793-2853, 909-793-2853, 7 (8634) 315200 ext. 208).
Phone (W)	Text	30	(e.g., (909) 793-2853, 793-2853, 909-793-2853, 7 (8634) 315200 ext. 208).
Description	Text	100	Any text you want to describe what the order is for.
Comments	Memo	-	Additional information about the order.
Description 2	Text	100	Additional text information about the order.
Comments 2	Memo	-	Additional information about the order.
Max Violation Time	Number (Single)		Number of minutes an order can be serviced after the time window ends.
Hard Time Window***	Number (Integer)		Defines if time windows are hard. “0” means no; “1” means yes.
Hard Time Window***	Text		Hard Time Window can also be a text field. “False” means no; “true” means yes.
Max Time on Vehicle	Number (Single)		Number of minutes a delivery order can be on a route after it has been picked up. This is used in paired orders only.

* Data that doesn’t fit into the maximum size of the fields will be truncated.

** String comparisons are not case sensitive.

*** Delivery Type, Priority, Curb Approach, and Hard Time Window can be either text or number type fields.

**** Address fields may vary based on the address locator being used.

Data requirements for importing trip requests

Name	Type	Size*	Details
[Routing Folder]	Text	50	Text in RoutingFolder field must match an existing routing folder name; otherwise, a new routing folder is created.**
Order Number	Text	32	Any value you use to keep track of your orders.
Customer Number	Text	32	Any value you use to keep track of your customers.
Name	Text	50	Name of the customer.
Priority***	Text	10	Priority of order. “High” means high; “normal” means normal.
Priority***	Number (single)		Priority can also be a number field. “0” means normal; other values mean high.
From Street****	Text	100	Text that can be interpreted as a street address (e.g., 380 W Fern St) or intersection (e.g., 5th Ave. & Main St.).
From City****	Text	100	Full name of the city (use Los Angeles, not L.A.).
From State****	Text	100	Two-digit abbreviation of the state or province (use CA, not California, or ON, not Ontario).
From Postal Code****	Text	100	Any value representing the postal or ZIP Code (e.g., 92373).
From Country****	Text	100	Country name.
From Cross Street****	Text	100	Closest cross street to the street address.
From X	Number (Double)		The x-coordinate is used instead of the address to geocode the order (e.g., -117.19543).
From Y	Number (Double)		The y-coordinate is used instead of the address to geocode the order (e.g., 34.05924).
From Alt X	Number (Double)		If the x-coordinate doesn’t fall within the extent of the street data and the street address cannot be matched, the Alternate x-coordinate is used to geocode the order (e.g., -117.19543).
From Alt Y	Number (Double)		If the y-coordinate doesn’t fall within the extent of the street data and the street address cannot be matched, the Alternate y-coordinate is used to geocode the order (e.g., 34.05924).

From Curb Approach***	Number (Integer)		Curb approach of an order. “0” means left; “1” means right; “2” means either.
From Curb Approach***	Text	10	Curb Approach can also be a text field. “Left” means left; “Right” means right; “Either” means either.
To Street****	Text	100	Text that can be interpreted as a street address (e.g., 380 W Fern St) or intersection (e.g., 5th Ave. & Main St.).
To City****	Text	100	Full name of the city (use Los Angeles, not L.A.).
To State****	Text	100	Two-digit abbreviation of the state or province (use CA, not California, or ON, not Ontario).
To Postal Code****	Text	100	Any value representing the postal or ZIP Code (e.g., 92373).
To Country****	Text	100	Country name.
To Cross Street****	Text	100	Closest cross street to the street address.
To X	Number (Double)		The x-coordinate is used instead of the address to geocode the order (e.g., -117.19543).
To Y	Number (Double)		The y-coordinate is used instead of the address to geocode the order (e.g., 34.05924).
To Alt X	Number (Double)		If the x-coordinate doesn’t fall within the extent of the street data and the street address cannot be matched, the Alternate x-coordinate is used to geocode the order (e.g., -117.19543).
To Alt Y	Number (Double)		If the y-coordinate doesn’t fall within the extent of the street data and the street address cannot be matched, the Alternate y-coordinate is used to geocode the order (e.g., 34.05924).
To Curb Approach***	Number (Integer)		Curb approach of an order. “0” means left; “1” means right; “2” means either.
To Curb Approach***	Text	10	Curb Approach can also be a text field. “Left” means left; “Right” means right; “Either” means either.
Arrive Time	Text	15	Any text that can be interpreted as a time (e.g., 2 pm, 2:00 PM, 14:00, 1400) for a trip delivery.
Depart Time	Text	15	Any text that can be interpreted as a time (e.g., 2 pm, 2:00 PM, 14:00, 1400) for a trip pickup.

Earliest Arrival	Number (Single)		Number of minutes a trip can arrive before the Arrival Time at a delivery address.
Latest Departure	Number (Single)		Number of minutes a trip can depart after the Depart Time of a pickup address.
Ride Time Flexibility	Number (Single)		Percentage of additional time a trip can take in relation ot the most direct route between the two addresses (e.g., 50 means 50% additional time can be taken).
Hard Pickup Time	Number (Integer)		Pickup time is hard. “0” means no; “1” means yes; otherwise, it will be soft.
Hard Pickup Time	Text	10	Hard Pickup Time can also be a text field. “false” means no; “true” means yes.
Hard Dropoff Time	Number (Integer)		Delivery time is hard. “0” means no; “1” means yes; otherwise, it will be soft.
Hard Dropoff Time	Text	10	Hard Dropoff Time can also be a text field. “false” means no; “true” means yes.
Pickup From Time	Text	15	Any text that can be interpreted as a time (e.g., 2 pm, 2:00 PM, 14:00, 1400). The start of the pickup time window for an Arrive Trip type. Overrides Earliest Arrival and Ride Time Flexibility.
Pickup To Time	Text	15	Any text that can be interpreted as a time (e.g., 2 pm, 2:00 PM, 14:00, 1400). The end of the pickup time window for an Arrive Trip type. Overrides Earliest Arrival and Ride Time Flexibility.
Load	Number (Single)		Number of minutes required to load a passenger.
Unload	Number (Single)		Number of minutes required to unload a passenger.
Volume	Number (Single)		Any numeric value representing the volume capacity constraint of the trip (e.g., could be number of passengers).
Weight	Number (Single)		Any numeric value representing the weight capacity constraint of the trip (e.g., could be number of wheelchairs).
Custom	Number (Single)		Any numeric value representing the custom capacity constraint for the trip.
Custom 2	Number (Single)		Any numeric value representing the custom 2 capacity constraint for the trip.
Specialties	Text	200	Text in Specialties field must match existing specialties in ArcLogistics. Trips can have more than one specialty by delimiting specialties with commas (e.g., Pads, Vest Restraint, Oxygen).**
From Phone (H)	Text	30	(e.g., (909) 793-2853, 793-2853, 909-793-2853).
From Phone (W)	Text	30	(e.g., (909) 793-2853, 793-2853, 909-793-2853).

From Description	Text	100	Any text you want to describe what the trip is for.
From Comments	Memo	-	Additional information about the trip.
From Description 2	Text	100	Additional text information about the trip.
From Comments 2	Memo	-	Additional information about the trip.
To Phone (H)	Text	30	(e.g., (909) 793-2853, 793-2853, 909-793-2853).
To Phone (W)	Text	30	(e.g., (909) 793-2853, 793-2853, 909-793-2853).
To Description	Text	100	Any text you want to describe what the trip is for.
To Comments	Memo	-	Additional information about the trip.
To Description 2	Text	100	Additional text information about the trip.
To Comments 2	Memo	-	Additional information about the trip.

* Data that doesn't fit into the maximum size of the fields will be truncated.

** String comparisons are not case sensitive.

*** Priority and Curb Approach can be either text or number type fields.

**** Address fields may vary based on the address locator being used.

Appendix C

IN THIS APPENDIX

- **Working with your own street data in ArcLogistics**

Users may opt to use ArcLogistics with their own street data or with street data from another source. This appendix describes the requirements for using your own street data in ArcLogistics for routing and geocoding purposes.

Working with your own street data in ArcLogistics

If you want to use your own street data or street data from another source, there are four requirements the street data must meet.

ArcGIS Network Dataset

The Network Dataset must contain a drivetime attribute with Usage Type of Cost and Units in a time domain. It should have Use By Default set to true.

It must also contain a distance network attribute with a Usage Type of Cost and Units in a distance domain. It should have Use By Default set to true.

The Network Dataset must also have a hierarchy network attribute with Usage Type of Hierarchy. It should have Use By Default set to true.

ArcMap Map Document

The ArcMap Map Document (.mxd) will contain the cartographic layers, such as streets, major roads, parks, counties, provinces, rivers, and points of interest, that the user will see in the Map View. Any scale dependent drawing rules need to be set up in ArcMap before being used in ArcLogistics.

If the Network Dataset is added to the Map Document, it will be used by default and the person using ArcLogistics will not have to browse for it in the New Project window.

Address locator

You will typically need an address locator with address, city, state and postal code. For fallback geocoding, you will also typically want to include a postal code locator. These locators should be in the same workspace as your Network Dataset so that they are used by default. In some international and localized situations your address locator may contain limited street address information.

Spatial reference

The street data feature classes should have a spatial reference defined. In ArcMap, check View|Data Frame Properties and the Coordinate System tab. The Current Coordinate System should not be Unknown.

When data is prepared for use in ArcLogistics as described above, the user will just need to pick the Map Document (.mxd file) in the ArcLogistics New Project window and the Network Dataset and Locator(s) will be chosen for them by default. In other words, they should not have to browse for them or otherwise understand what these things are.