What's New in ArcLogistics Route 2

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Introduction

ArcLogistics™ Route 2 is a major new release of ESRI's desktop routing and scheduling solution. The purpose of this paper is to highlight the new features and enhancements of ArcLogistics Route 2 including expanded solver functionality, multiple street data extractions, improved geocoding tools, and higher-quality street data.

Solver Functionality

Route Renewal

ArcLogistics Route 2 allows users to specify a route renewal point at any number of user-chosen locations. This new feature is needed for fleets that have to return to a depot or visit a depot during a route and resume the route after that stop. For instance, delivery trucks that need to return to a renewal location to pick up additional items to deliver can account for that stop on their original route. Users can choose the location at which they want the route or the vehicle to "renew."

Maximum Hours

In addition to being able to specify the number of hours into a route before the overtime rate applies, users can now enter a number in the Maximum Length box under the Work Day tab to put a hard limit on the number of hours that a route lasts.

Time Window for Lunch

Instead of simply allowing the user to set up lunch for the drivers after a set number of work hours, ArcLogistics Route 2 gives the user the option of setting up lunch during an actual time window (e.g., between 12 and 2 rather than after about 4 hours of work).

Multiple Specialties

With ArcLogistics Route 2, users can set up as many specialty codes as they want instead of being limited to the thirty allowed in previous versions. From this list you can give vehicles and orders as many specialties as you like. ArcLogistics Route will only assign an order to a route that has all its specialties. If no route has all of an order's specialty codes, ArcLogistics Route will not assign the order. If an order has no specialty codes, ArcLogistics Route can assign it to any route including routes with specialties.

A User-Specified Constraint in Addition to Volume and Weight

In addition to the capacity constraint that existed in previous versions of the software, ArcLogistics Route 2 allows the user to specify one more constraint that is elementary to that user's business operation. This constraint is numerical/quantitative and cumulative in nature and applies to orders and routes. In the Inbox Order Properties, users can enter their own constraint in the "custom" box.

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Street Data

GDT Dynamap Transportation

ArcLogistics Route 2 will ship with the latest street data from GDT called Dynamap/Transportation, which includes node elevations and is shipped in NAD 83 format. This added value is provided at no additional cost to users. Dynamap/Transportation features one-way streets, physical turn restrictions, improved ramp structures, calculated speed information, and geocodable database.

Multiple Street Data with One Copy and Multiple Service Areas per Street Data

ArcLogistics Route 2 users are able to extract multiple street data with only one copy of the software within their maximum street data allowance. Also, they can use street data with multiple service area databases that use the same set of streets but have different locations, orders, vehicles, and so forth.

Users can purchase street data credits from ESRI and may use their credits to expand the size of their street data from 100x100 miles to 150x150 miles or extract another area.

Easier Interface to Manage Street Data (ArcLogistics Route Administrator)

Multiple street data and service areas are easy to manage through ArcLogistics Route Administrator. The functionality of the extract wizard has been broken into separate tasks in Administrator. From ArcLogistics Route Administrator, users can

- Extract new street data (if they have not exceeded their allowance).
- Update any of the existing street data from the data CD.
- Update just the speed limits.
- Rebuild the routing and geocoding indexes (if they edit the data externally).
- Rebuild just the geocoding (and spatial) indexes (if they edit only address ranges).

When creating new street data, users will be prompted to enter a name for the street data they want to create. Users are not allowed to rename the existing street data they are updating or editing. After updating street data, ArcLogistics Route will automatically zoom to the center of the last extracted extent. ArcLogistics Route Administrator lets users delete and/or rename service areas and set a service area as default so that the next time the application is opened the service area will be opened.

Preserving Routing Folders After Extract

ArcLogistics Route 2 simplifies the process of data extraction and update by allowing users to retain their routing folders during street data update instead of requiring them to delete their routing folders first.

Application Framework

Geocoding

Improved Order Import

ArcLogistics Route 2 helps users achieve a better match rate when geocoding by taking into account nearest cross streets and postal codes. For better control over geocoding, a user can allow ArcLogistics Route to "fallback match" orders if the input address does not generate a matching candidate. If the input address is similar to a matching street, the order will match. The user has the option to map the Import XY field pair during import.

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If the Import XY is near a street, then the order will match without even investigating the input address candidates. If Import XY fields are imported, orders will geocode if the XY is over a street.

The user has control over the automatic matching process using the geocoding preferences form. The match ranges that the user sets include Auto Geocode, Manual Geocode, and Fallback. The Auto Geocode range tells ArcLogistics Route to automatically match orders if the highest scoring candidate generated by the input address falls in the Auto Geocode range. The minimum Auto Geocode score is thirty. If the best candidate generated by the input address has a score that falls in the Manual Geocode, that order will remain ungeocoded. If, however, the best candidate generated by the input address has a score that falls in the Fallback range, then ArcLogistics Route will attempt to fallback match the order.

Why Have a Manual Range?

ArcLogistics Route maximizes the efficiency of the dispatcher by automatically matching the best candidate during order import or by automatically using fallback options when the match is too poor. The assumption is that when a match is too poor, throwing the order back to the dispatcher would be too time consuming and in all likelihood would not result in an accurate match anyway. When the score of the best candidate falls in the Manual Geocode range, it is likely that it is due to a minor error or ambiguity in the input address, and a slight change in the input address will quite possibly produce an adequate candidate.

The user can control the fallback matching process by changing the priorities of the fallback options which include Cross Street, Postal Code, and Fallback XY.

- **Cross Street**

  In addition to entering a street address, users can provide the cross street nearest to the actual location of the order. There are two cross street formats that ArcLogistics Route can interpret as an intersection of two streets. If the Cross Street field contains just one street, then the second cross street is assumed to be the input address street. The user can also explicitly indicate both streets by separating them with an "&."

- **Postal Code**

  If ArcLogistics Route recognizes the Postal Code field, it will match to the postal code.

- **Fallback XY**

  Fallback XY has a lower precedence than the input address, while Import XY has a higher precedence than the input address.

The user can control the fallback behavior on the geocoding preferences form by adjusting the fallback priority. Using the priority arrows, users can rank the priority of the three fallback options. To turn off a fallback option altogether during order import, uncheck that option.

Manual Geocoding

Users can manually geocode orders that were not automatically matched during order import. In the Geocode Address dialog, the name and the customer ID of the current order are displayed and users can move backward or forward between a group of orders using the navigation arrows on the main toolbar. Users may also choose to show or hide the map view by clicking the show/hide tool or geocode an order to the selected candidate by clicking the geocode tool.

The Geocode Address dialog displays a Name and a Group By pulldown, an Input Address Frame, a Candidate Address Frame, a Match Address Frame, a Candidates filter, a Candidates ListView, and a Candidates Map.

Name and Group By Pulldowns

The available Group By options include none, all, customer ID, and address. Since the orders are not grouped initially, "None" is the default setting. If users want to geocode all the orders to the same place, they can group by "All." Similarly, they can geocode all orders that share the same customer ID or the same address by grouping by Customer ID or Address respectively.

Candidates Filter Pulldown

The default is set to show all candidates. However, users may choose to limit the number of candidates shown in the Candidates ListView and Candidates MapView by selecting a filter option in the pulldown. Users can show either the best candidates or all candidates above the chosen cut-off score.

Candidates ListView

The Candidates ListView displays all candidates generated by the current input address as well as the User Pick, Import XY, and Fallback XY if applicable. The input address candidates are scored from 0 to 100, with 100 being the closest match. Next to each score, the list view shows an icon. The symbol of this icon indicates the candidate type (Standard Address, Intersection Address, User Pick, Cross Street, Postal Code, Import XY, or Fallback XY), and matches the candidate symbol used in the map. Selecting a candidate in the list view selects it in the map view.

Candidates Map

The map tools at the top of the Candidates Map view are standard with a few additions:

- A User Pick tool (a red pushpin) for adding/moving the user pick. Please note that only one user pick may be added. If a user pick does not exist, the User Pick tool adds it. Otherwise, it will move it.
- A Zoom to Current Candidate tool (green circle button) that zooms the map in to the current candidate.
- A Zoom to Match Point tool (blue square) to zoom to a currently matched coordinate.
- A convenient scale bar directly above the map that changes as the user zooms in for a closer look at the streets.

When the select tool is the active tool, selecting a candidate in the map view will highlight that candidate in the list view.

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The Hover Address shows the address that the cursor is currently over in the map view.

Enhanced Export of Routing Folders

From the Export Routing Folders screen, ArcLogistics Route 2 enables users to export to text files and to pick the fields they want exported. After specifying the folder to export into, users can choose either Routes (*.txt) or Orders (*.txt) in addition to the Access database files (*.mdb) and line and point shapefiles (*.shp) that were available in previous versions of the software. In addition to being able to pick the fields they want to export, users may also export overview maps, vicinity maps, and directions simply by checking a box in the newly added Export Fields view within the Export Routing Folders screen.

Localization Support

At version 2, ArcLogistics Route will include a component-based localization tool for creating international versions of the software. Users will be able to isolate all country/locale/language-dependent information from the software (or from components) in order to localize it. Also, users can change the words on the user interface to other English words, which can prove quite useful for industry-specific vocabulary.

Seagate Crystal Reports 7.0 Report Writer Extension

ArcLogistics Route 2 includes an upgrade from Seagate Crystal Reports Version 6.0 to Version 7.0. Advantages of Version 7.0 include faster reporting and new wizards for advanced reporting.

Improved SAP R/3 Integration

The SAP interface has been enhanced to accept a user-defined parameter, allowing the SAP module to be much more dynamic and making integration easier. For example, the parameter can be used to select orders based on a delivery date field.

Duplicate Routing Folders

The duplicate routing folder feature can be used to evaluate alternate routing scenarios and is particularly helpful for users who service more or less the same set of orders and want to evaluate the effects of different ArcLogistics Route settings.

Copy Option for New Service Areas

When creating new service areas, users can copy all the orders from an existing area. This provides the user with a way to create a backup for their data.

Performance

Users can expect significant improvements in solve times with problems having fifty or more routes. In some cases ArcLogistics Route is up to ten times faster. Map rendering speed has also been improved.

Customization in ArcLogistics Route 2

Users interested in editing and customizing the street data can do so with ArcLogistics Route Street Editor. The Street Editor requires the use of ArcView® GIS 3.2 and is downloadable for free from the ESRI® ArcScripts page at http://gis.esri.com/arcscripts/scripts.cfm. Search by keyword, using ArcLogistics Route.

Localization at ArcLogistics Route 2

Users interested in localization of ArcLogistics Route need to contact their local ESRI international distributor.

For more than 30 years ESRI has been helping people manage and analyze geographic information. ESRI offers a framework for implementing GIS in any organization with a seamless link from personal GIS on the desktop to enterprisewide GIS client/server and data management systems. ESRI GIS solutions are flexible and can be customized to meet the needs of our users. ESRI is a full-service GIS company, ready to help you begin, grow, and build success with GIS.

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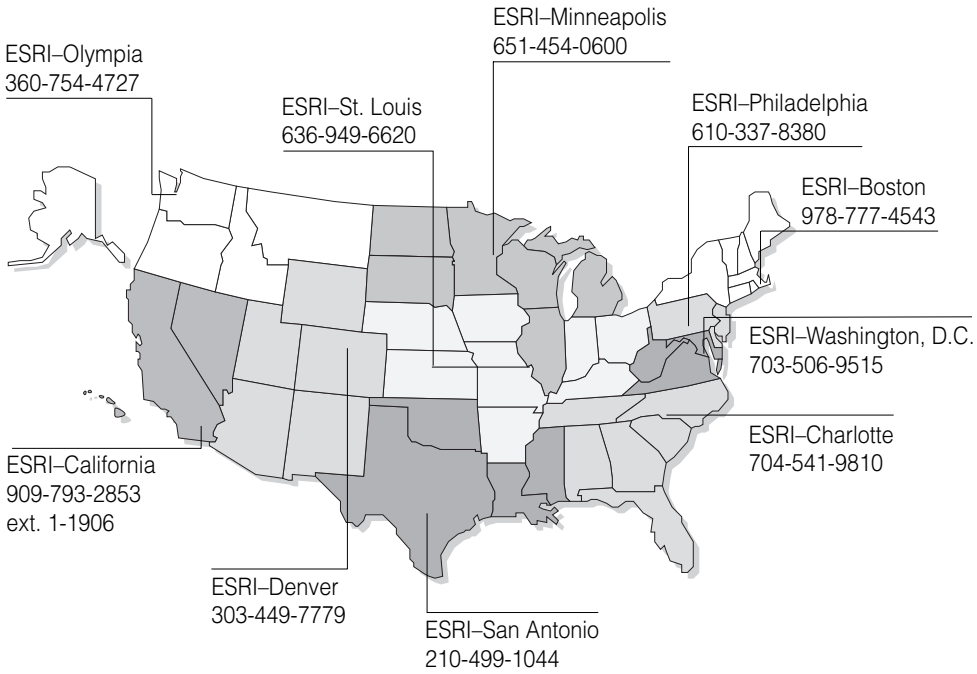

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