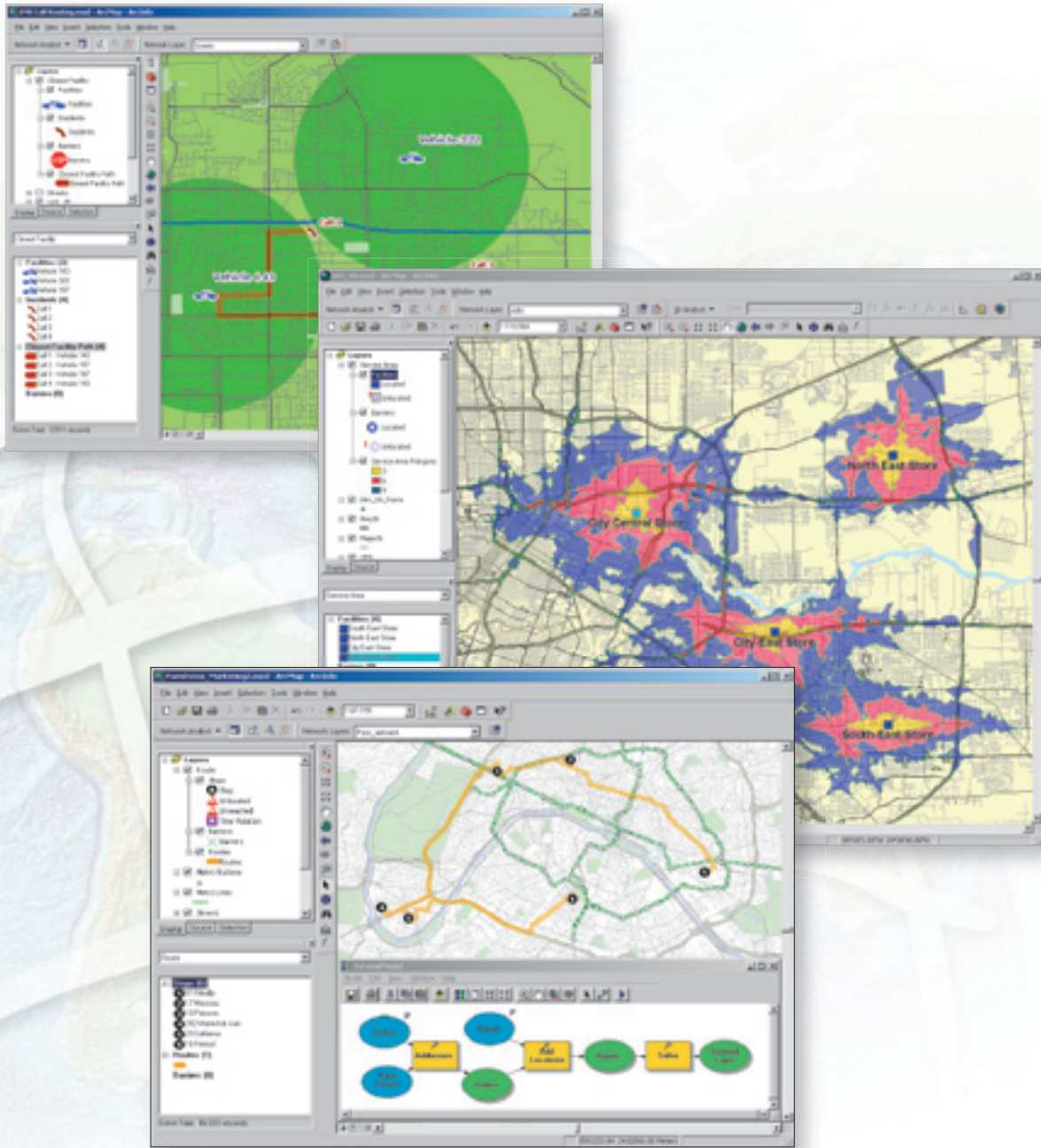


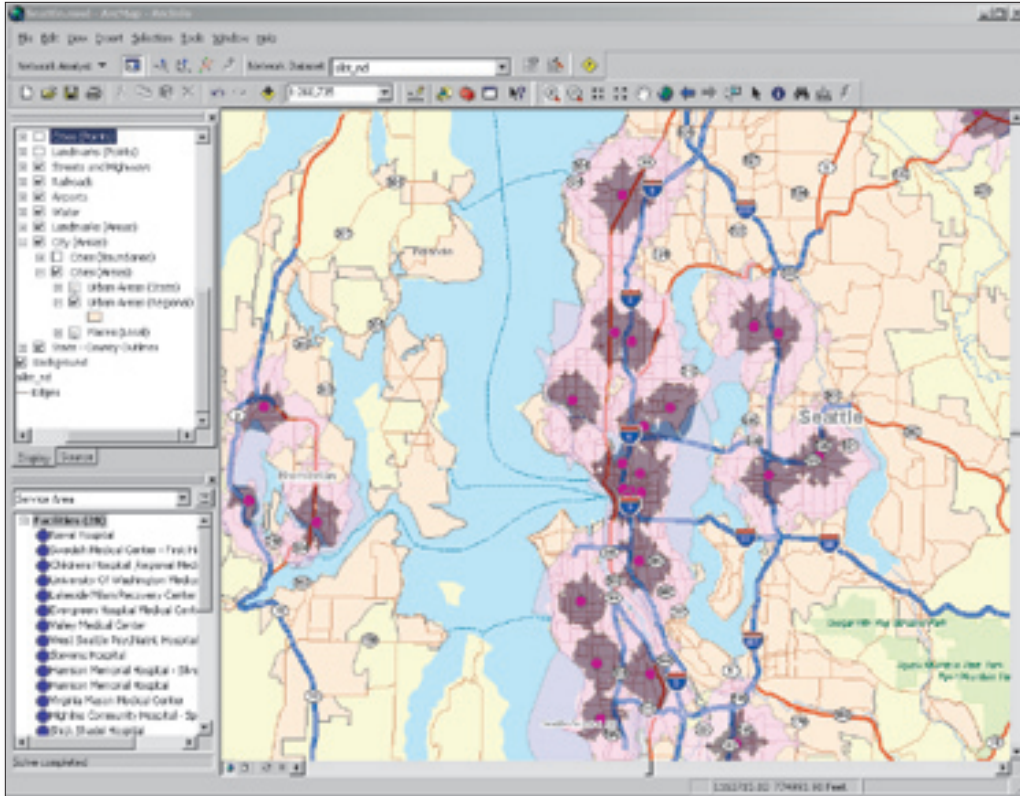
ArcGIS Network Analyst

Routing, Closest Facility, and Service Area Analysis

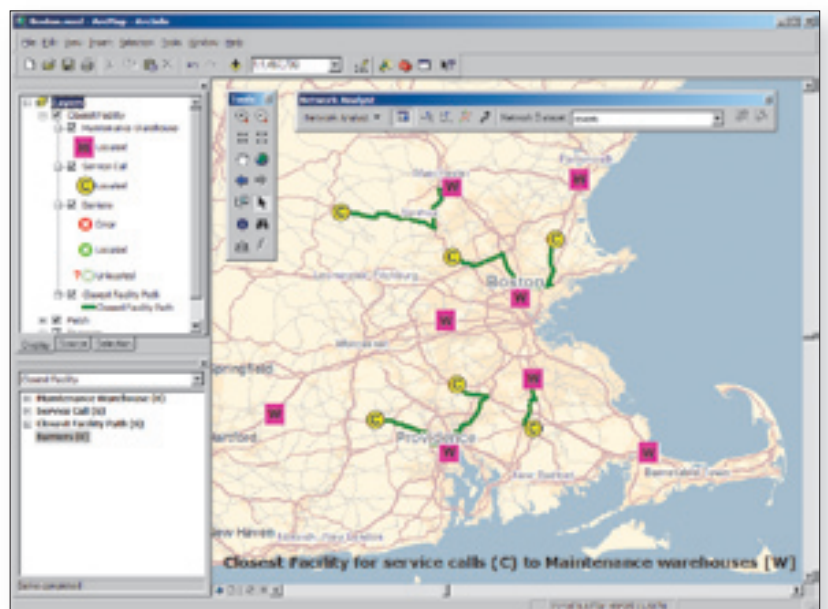
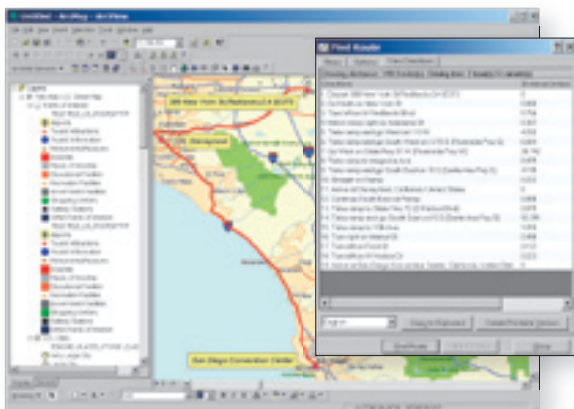


ArcGIS® Network Analyst

Network-Based Spatial Analysis



ArcGIS® Network Analyst is a powerful extension that provides network-based spatial analysis including routing, travel directions, closest facility, and service area analysis. Using a sophisticated network data model, users can easily build networks from their geographic information system (GIS) data. ArcGIS Network Analyst enables users to dynamically model realistic network conditions, including turn restrictions, speed limits, height restrictions, and traffic conditions, at different times of the day.



Use ArcGIS Network Analyst to Determine

- Drive-time analysis
- Route directions
- Shortest path
- Closest facility
- Point-to-point routing
- Service area definition
- Optimum route
- Origin–Destination (OD) matrix

Power to Solve Network Problems

ArcGIS Network Analyst solves a variety of problems pertaining to spatial networks. Capabilities include finding the most efficient travel route, generating travel directions, locating the closest facility, and defining service areas based on travel time.

Network Analysis for the Desktop and Server

Network-based spatial analysis is available for ArcGIS Desktop (ArcView®, ArcEditor™, or ArcInfo®), ArcGIS Engine, and ArcGIS Server. For desktop users, ArcGIS Network Analyst provides a rich environment with easy-to-use menus, tools, and wizards. Developers building desktop applications will use the ArcGIS Engine Network extension, while developers building serverside GIS capabilities will use the ArcGIS Server Network extension.

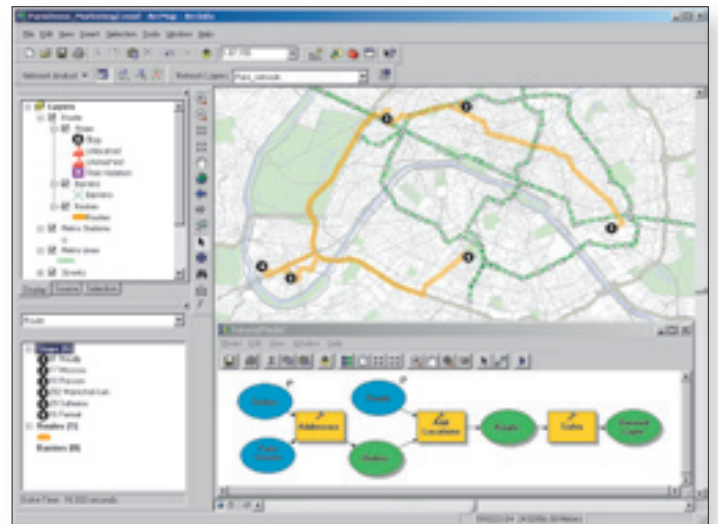
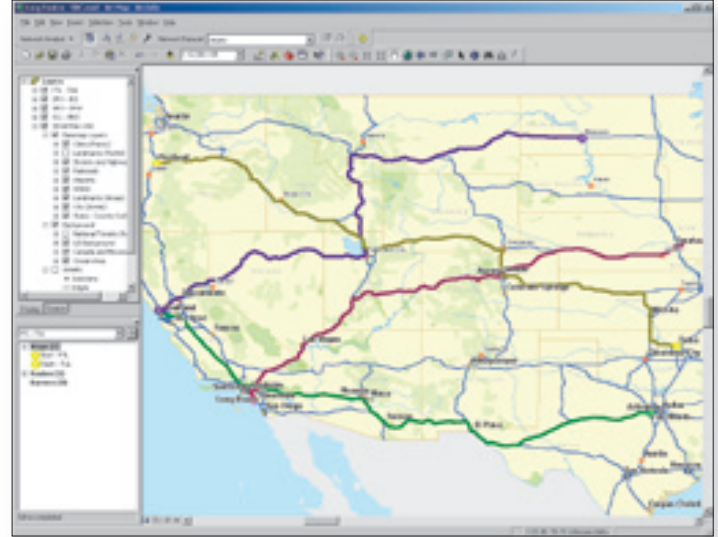
Developers can build custom network applications on three deployment platforms (ArcGIS Desktop, ArcGIS Engine, and ArcGIS Server) and deploy applications on a variety of Windows®, Linux®, and UNIX® operating systems. Since the underlying libraries of network components among the three platforms are common, development effort can be transferred easily.

Familiar Tools, New Environment

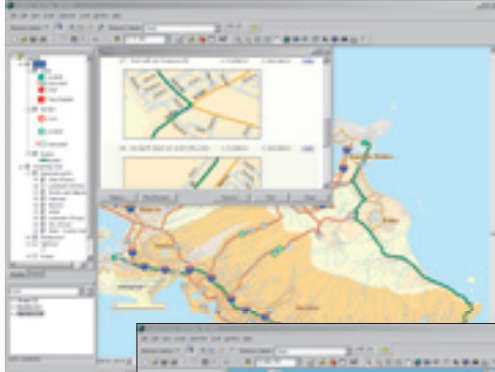
Users of the previous version of Network Analyst will find all the familiar tools. In addition, ArcGIS Network Analyst has improved the core functionality and added the ability to work within the new ArcGIS 9 geoprocessing environment including ModelBuilder™ and scripting.

Improved Functionality

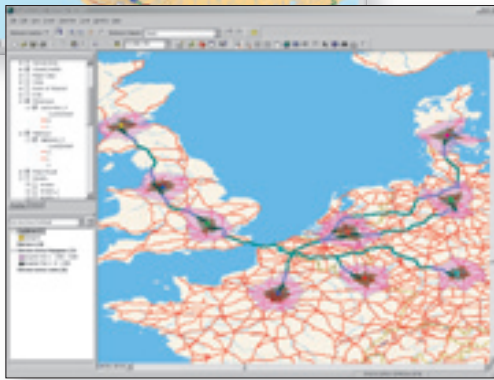
- Multipart turns and global turn impedances
- Dynamic barrier support
- Complex (multimodal) network support
- Time windows and stop duration on stops within routes
- Use of hierarchies for better performance and more realistic routes
- U-turn restriction support and curb approach for stops
- Large network support
- Network data sets can be shapefile, geodatabase, or smart data compressed (SDC)
- OD matrix functionality
- Custom solver support
- Advanced attribute model for network impedances
- Integration with geoprocessing tools, models, and scripting
- Directions setup wizards and customization



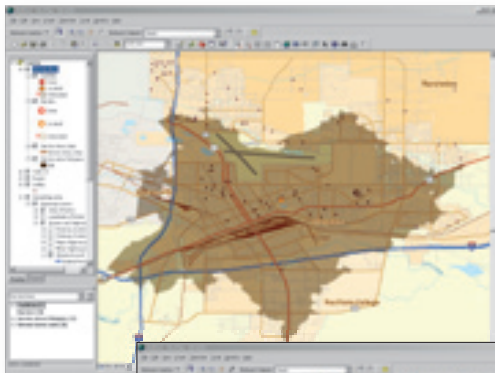
Use ArcGIS Network Analyst in Your Industry



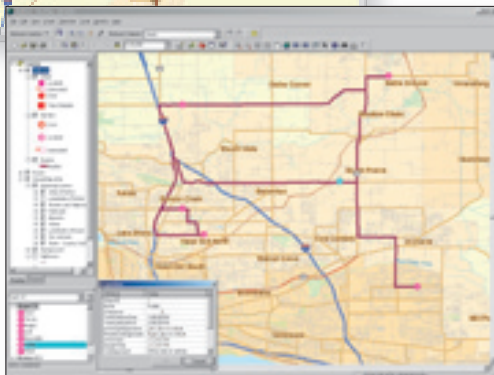
Driving Directions



Service Areas



Shortest Distance



All software users who need high-quality, GIS-based routing and network analysis can leverage ArcGIS Network Analyst. Industries that benefit from ArcGIS Network Analyst include transportation, logistics, health care, public safety, education, utilities, local government, business, and many more.

Business—Deliver and install appliances including time window restrictions.

Business—Calculate drive time to determine customer base, taking into account rush hour versus midday traffic volumes.

Business—Provide service-level agreements to customers based on drive time to the warehouse or facility.

Education—Generate school bus routes honoring curb approach and no U-turn rules.

Environmental Health—Determine effective routes for county health inspectors.

Health Care—Determine routes for home nurses honoring time window commitments.

Insurance—Determine insurance appraiser routes while honoring time windows and network barriers, especially in emergency and declared disaster areas.

Local Government—Optimize routes for city inspectors.

Logistics—Calculate routes for delivery vehicles honoring trucking restrictions.

Public Safety—Route emergency response crews to incidents.

Public Safety—Calculate drive time for first responder planning.

Public Works—Determine the optimal route for point-to-point pickups of bulky trash items or routing of repair crews.

Retail—Find the closest store based on a customer's location including the ability to return the closest ranked by distance.

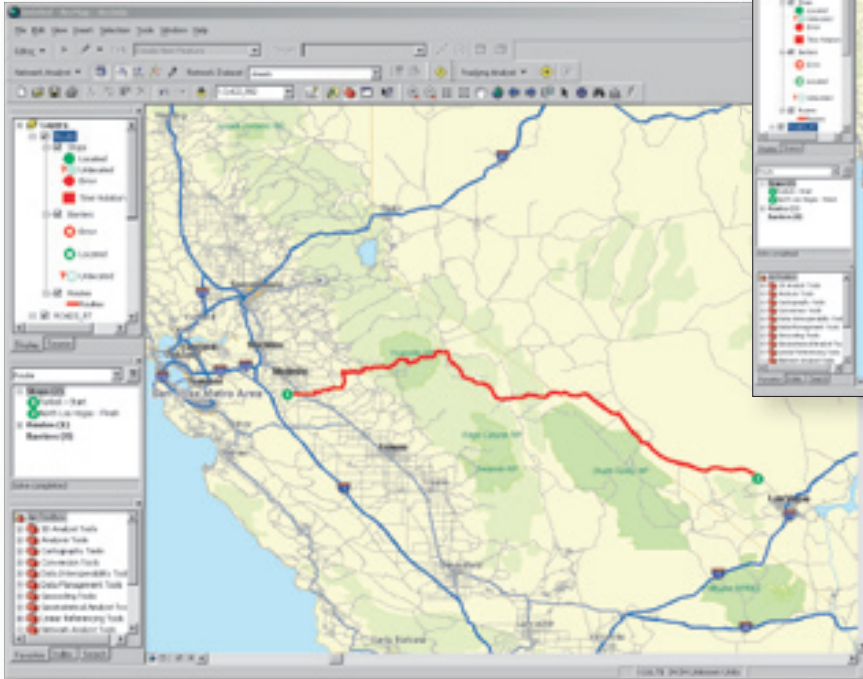
Software Developers—Generate origin–destination matrixes for use in other logistics applications.

Telecommunications—Set up, repair, and replace home and business equipment.

Transportation—Calculate accessibility for mass transit systems by using a complex network data set.

Utilities—Route service calls for technicians including time window restrictions.

Advanced Network Data Model

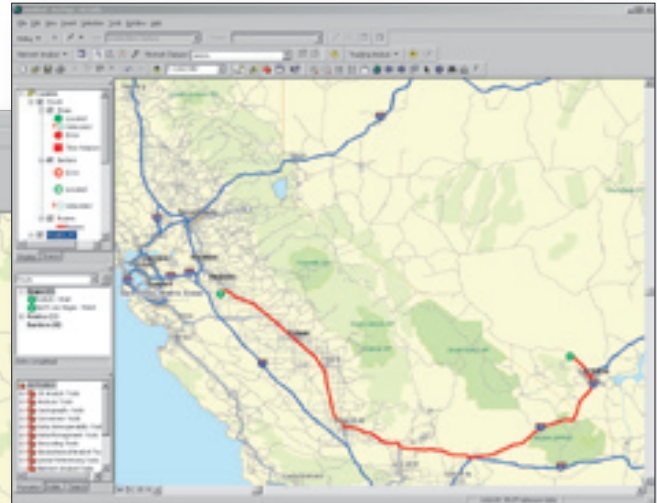


Shortest Distance With No Hierarchies

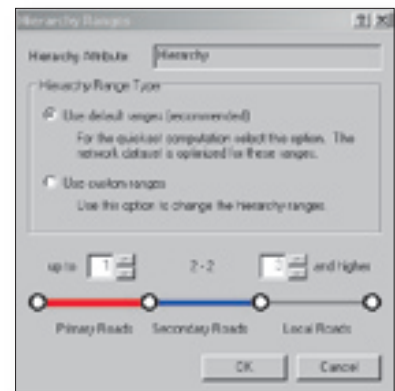
The Network Data Model allows for realistic data sets that account for multiple attributes such as cost, restriction, and hierarchy. Users can define various cost attributes, such as distance, time, and visibility, according to their analysis requirements. For example, bus driving speeds can be used for one analysis and car driving speeds for another analysis using the same network data set.

Moreover, attributes can be dynamic to take into account impedance changes that affect traversability. Restrictions can include bridge height and weight limitations, temporary road closures, construction, accidents, tunnels, areas designated as hazardous goods free zones, and much more. Multiple hierarchy levels that describe network classifications, such as highways, local major roads, and local streets, significantly improve performance on large networks while giving realistic analysis results.

The Network Data Model can include multipart turns that allow users to easily create complex turn maneuvers that will honor restriction rules such as no U-turns and curb approach. These restrictions are particularly useful for modeling routes for large vehicles and



Shortest Distance With Hierarchies



Define hierarchy ranges.

school buses in which some maneuvers are physically impossible and others, such as approaching from one direction, are required.

Users can create and maintain network data sets in shapefile, personal geodatabase, and enterprise geodatabase formats. In addition, users can perform network analysis in the SDC format.

Advanced Features of the Network Data Model

- Complex, multipart turns
- Dynamic impedance
- Global weights
- Exact and hierarchical routing
- Network barrier support

For more information on ArcGIS Network Analyst or to request an evaluation, please visit www.esri.com/networkanalyst.



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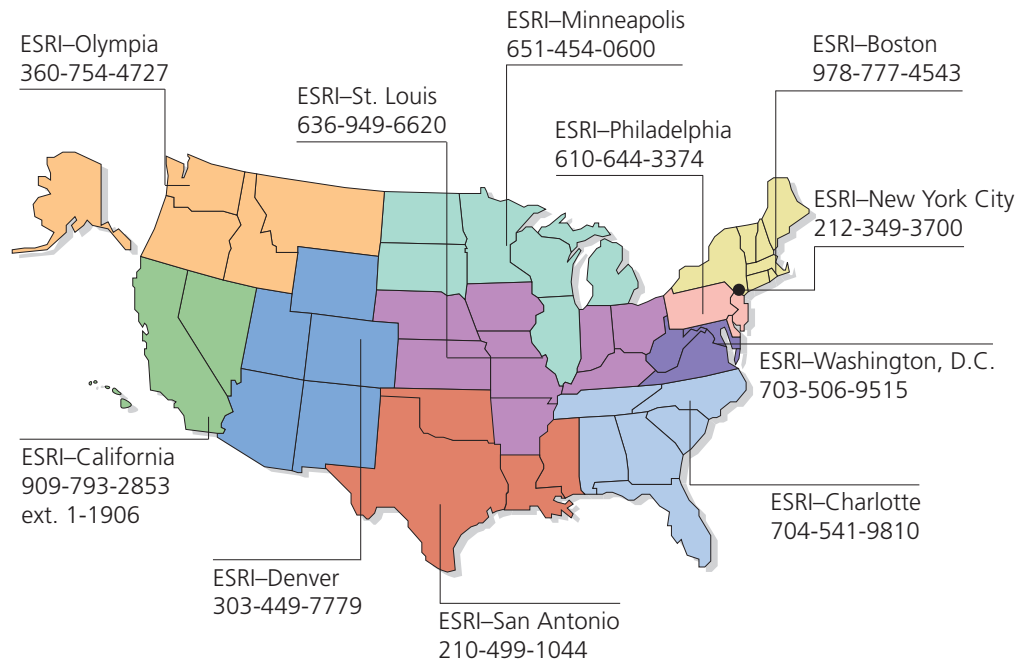
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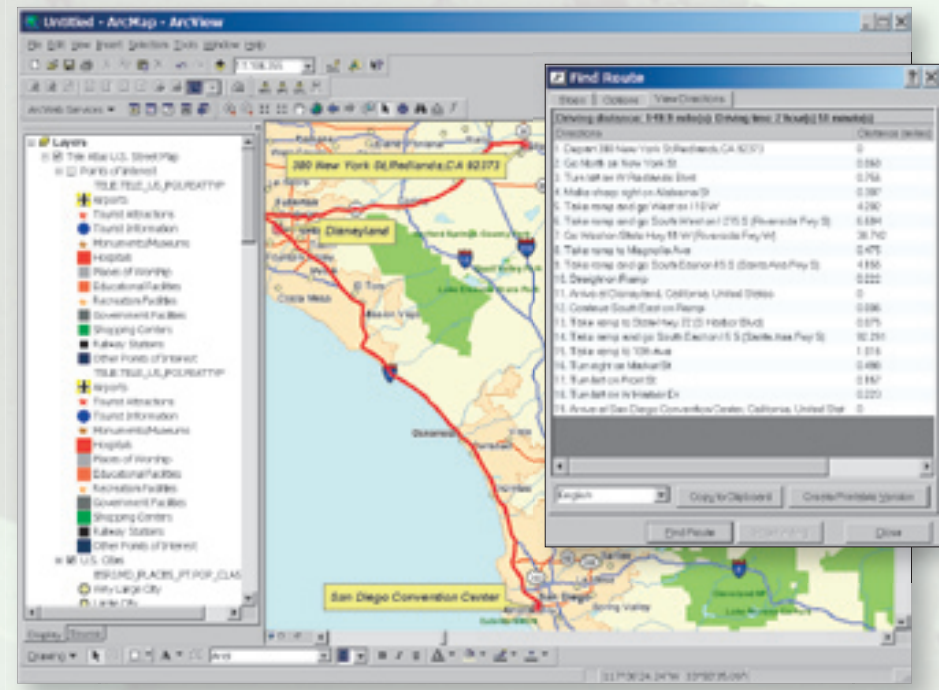
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ArcGIS Network Analyst

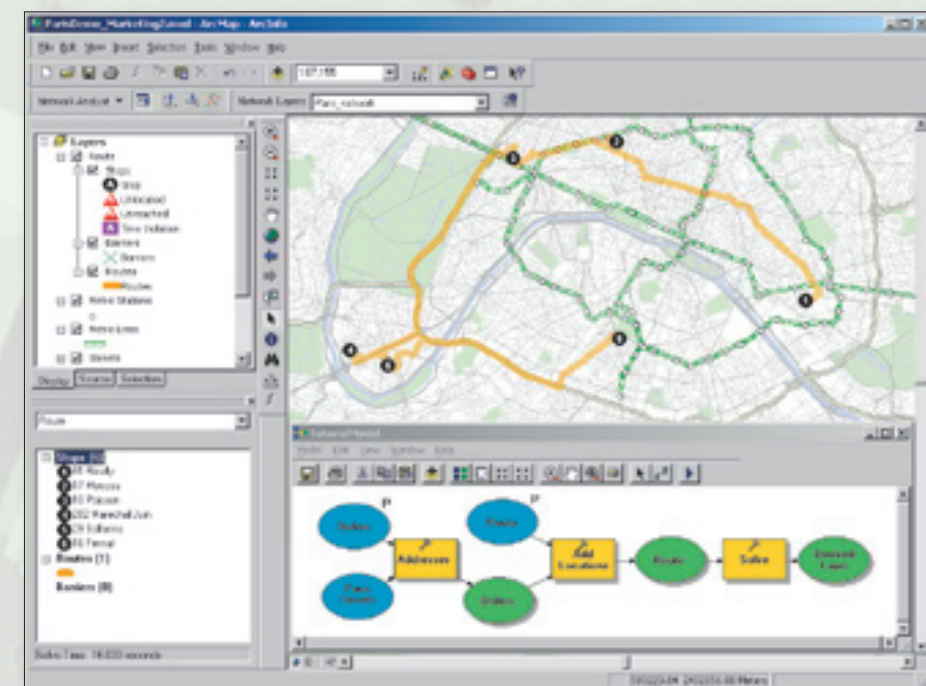
Routing, Closest Facility, and Service Area Analysis



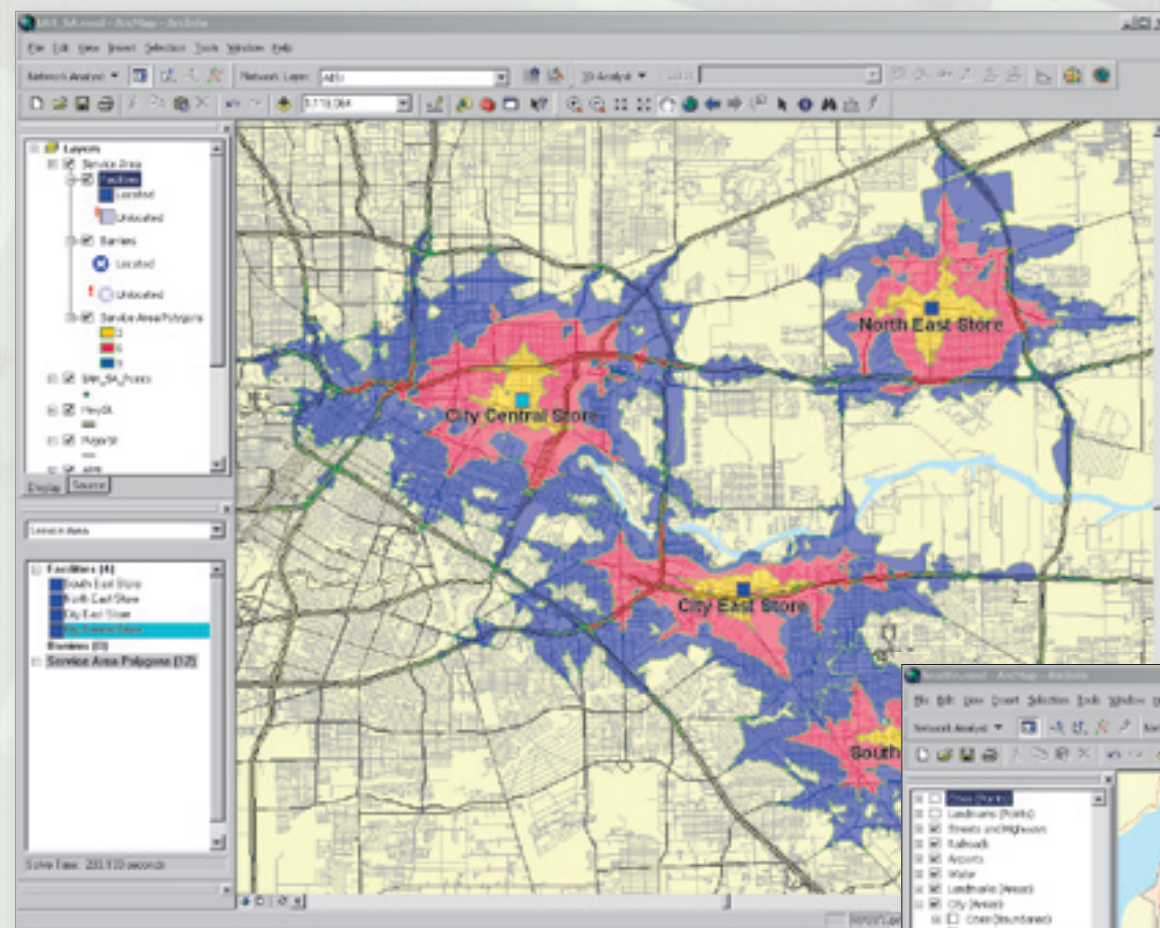
Routing

Routing

- Multipoint Routing
- Traveling Salesperson
- Time Windows and Service Time Supported on Stops

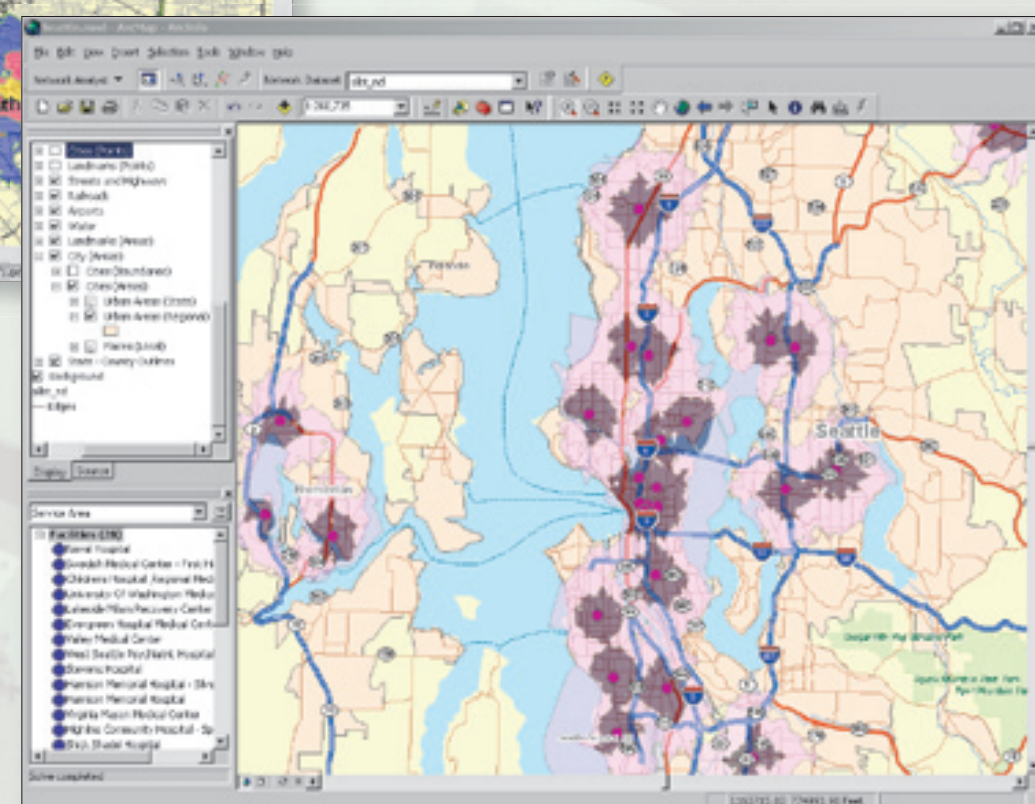


Routing With ModelBuilder



Service areas

- Complex Polygon Generation
- Honor Network Attributes Including Restrictions and Barriers
- Drive Time
- Multiple Rings



Model Real-World Networks



ArcGIS Network Analyst incorporates an advanced connectivity model that can represent real-world scenarios such as complex multimodal transportation networks. This enables users to efficiently model multiple forms of transportation across a single data set by using points of coincidence, such as rail stations or bus stops, that form the linkages between several different forms of transportation.

This is a more accurate representation of the real-world integrated transportation networks and supports the complete transportation modeling needed to model the real world.

These multimodal networks allow organizations in both the public and private sectors to better perform transportation planning analysis and accessibility modeling. End user services, such as trip planners, can easily be created that combine multiple forms of transport such as rail and bus.

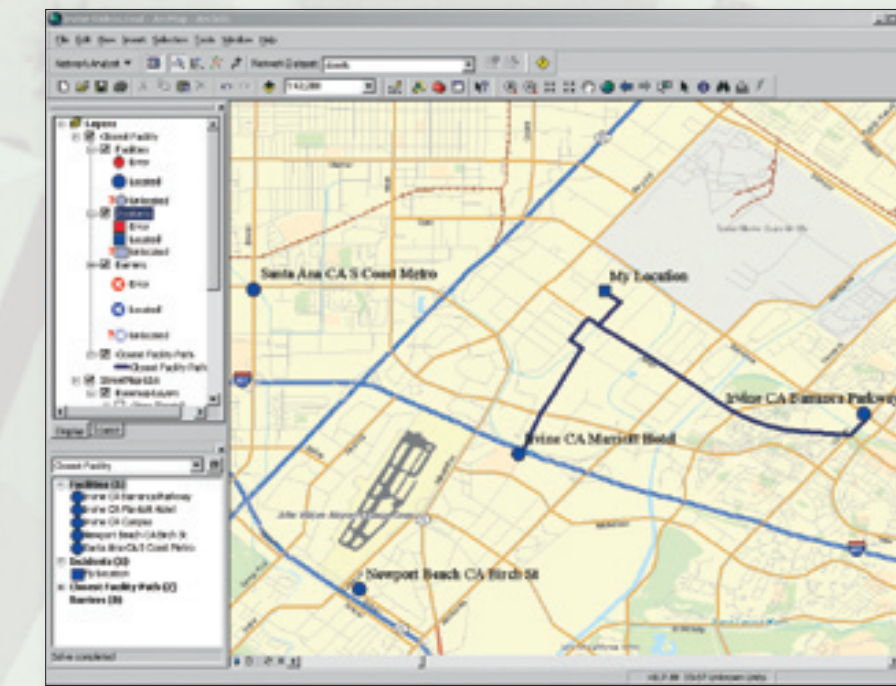
For example, a regional transportation authority can establish a trip planner that shows passengers how to utilize light rail, bus line, subway, and other networks.

Developers can build custom solutions using Network Analyst and deploy their solutions on top of ArcGIS Desktop, ArcGIS Engine, or ArcGIS Server.

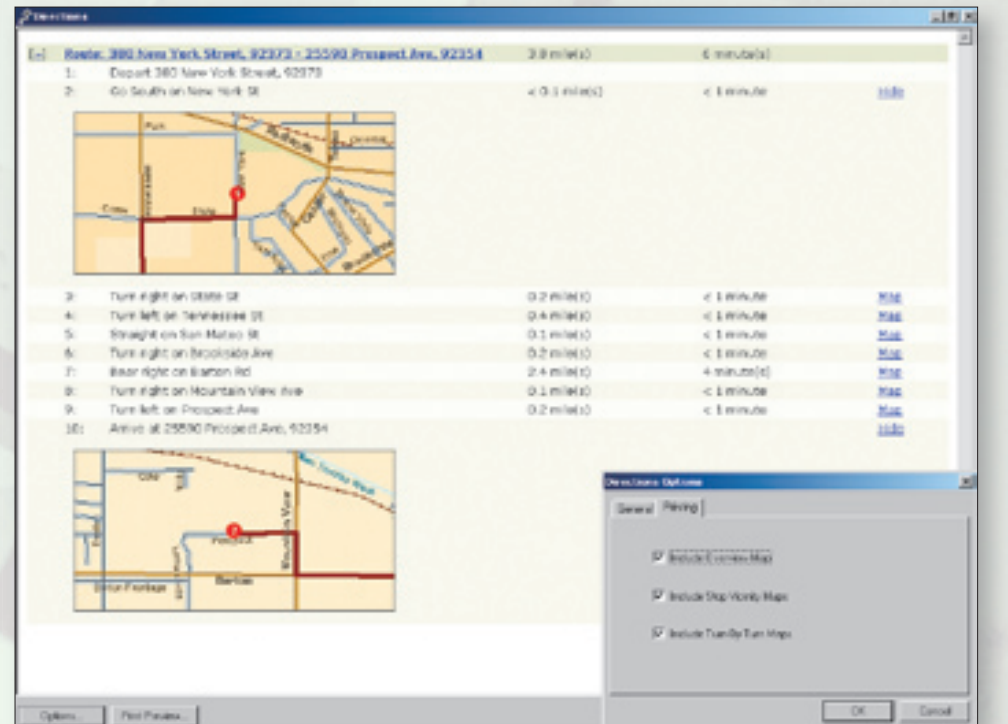
Developers can also add their own custom network solvers. This allows the powerful Network Analyst and rich attribution to be used in custom ways to generate transportation solutions.

Closest facility

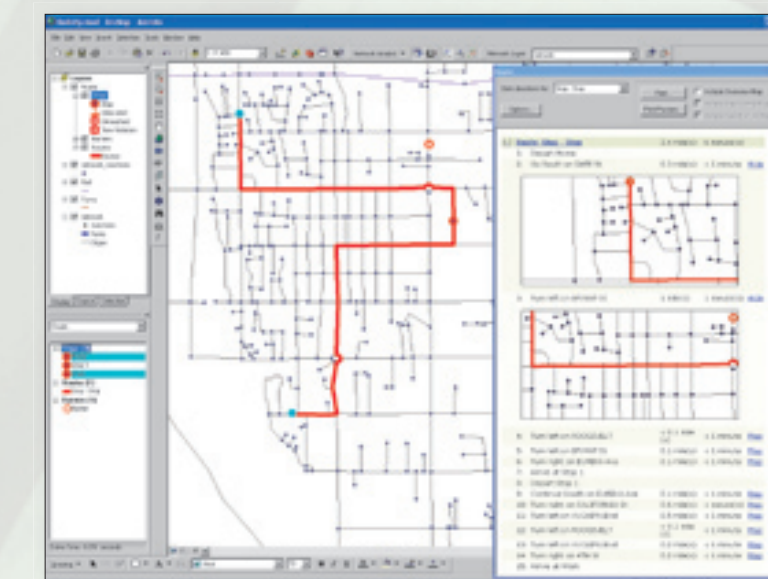
- Fixed and Mobile Asset Routing
- Emergency Response
- To and From Facility



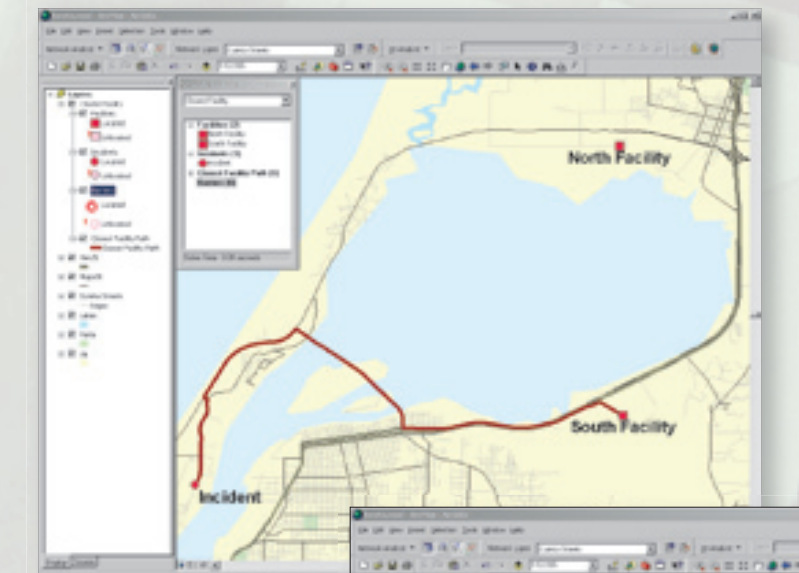
Closest Facility



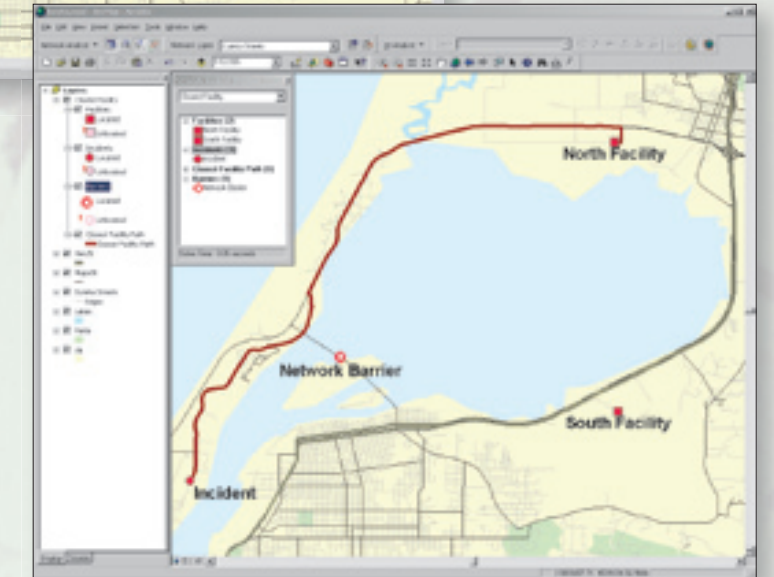
Inset Maps



Overview Route Map With Directions



In normal situations, the incident response is fastest from the south facility.



In the event of a traffic jam on the bridge (dynamic barrier), the incident response is fastest from the north facility.

Driving directions

- Overview Route Map
- Expandable Insets
- Turn-by-Turn Maneuver
- Maps for Each Stop Area

Multimodal Network Support

ArcGIS Network Analyst

To learn more about ArcGIS Network Analyst or to request evaluation software, visit www.esri.com/networkanalyst.

