Network Analyst: An Introduction

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ArcGIS Network Analyst Extension

...models transportation
• Less gas used
• Less vehicle maintenance
• Less driver overtime
• More customers serviced
• Optimal locations chosen
• Redundant facilities removed
ArcGIS Network Analyst Extension is *NOT* used for utility networks.
• Analysis types
• Analysis types
• Products
• Analysis types
• Products
• Street networks
• Analysis types
• Products
• Street networks
• Questions and resources
Network Dataset

Accurate modeling

Network Dataset
Travel modes

- Car
- Truck
- Pedestrian
- Emergency vehicle
- Bicycle
- Transit
Directions in ArcGIS Online

Route in ArcGIS Pro
Find point-to-point routes
Find point-to-point routes

Route solver

Directions

Connect origins to destinations
Find coverage
Buffer
Service area
Coverage
Coverage

Service Area solver

Create drive-time area
Select the optimal site
Select the optimal site

Location-allocation solver

Choose best facilities
Coverage and Site selection

Demo
Optimize a fleet

Vehicle routing problem solver

Plan routes
Connect two sets of locations
Connect two sets of locations

- Closest facility solver
- OD Cost Matrix solver
- Find nearest

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<tr>
<th>Stores</th>
<th>29.4</th>
<th>24.2</th>
<th>31.3</th>
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<td>Warehouses</td>
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<td>11.5</td>
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<td>17.3</td>
<td>5.67</td>
<td>19.1</td>
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More about Products!
No license

No street data

Credits

ArcGIS Network Analyst: An Introduction

- ArcGIS Enterprise
- ArcGIS Desktop
- Geoprocessing
- ArcGIS Runtime
- Navigator
- Map Viewer
ArcGIS Online

• Managed by Esri

• High-quality data

• Excellent reliability

• No Network Analyst Extension license required
Network services (and credit costs)
Network services (and credit costs)

- Simple route (0.04 per route)
- Optimized route (0.5 per route)
Network services (and credit costs)

- Simple route (0.04 per route)
- Optimized route (0.5 per route)
- Vehicle Routing Problem (1 per route)
Network services (and credit costs)

- Simple route (0.04 per route)
- Optimized route (0.5 per route)
- Vehicle Routing Problem (1 per route)
- Service area (0.5 per area)
Network services (and credit costs)

- Simple route (0.04 per route)
- Optimized route (0.5 per route)
- Vehicle Routing Problem (1 per route)
- Service area (0.5 per area)
- Closest Facility (0.5 per route)
- Origin-Destination (0.0005 per OD Pair)
Network services (and credit costs)

- Simple route (0.04 per route)
- Optimized route (0.5 per route)
- Vehicle Routing Problem (1 per route)
- Service area (0.5 per area)
- Closest Facility (0.5 per route)
- Origin-Destination (0.0005 per OD Pair)
- Location-Allocation (.1 per demand point)
Use Pro, except for:
- Editing network dataset schemas
- Editing network dataset turns
- Network dataset layer symbology
- Publishing network services
ArcGIS Enterprise
ArcGIS Runtime SDKs

- Android
- iOS
- Java
- macOS
- .NET
- Qt
Modeling Travel
Where can I get street data?
You can make your own network dataset

• Use your organization’s data
Maybe you don’t need street data

- Use credits for analysis
You can make your own network dataset

- Use free government data
You can make your own network dataset

- Use crowdsourced data
You can purchase data

- Street Map Premium from Esri
Streets are connected
Travel modes

- Car
- Truck
- Pedestrian
- Emergency vehicles
- 4-wheel drive
- Transit
Restrictions can depend on street characteristics
Restrictions can depend on vehicle characteristics
Traffic
Turns can restrict travel
Turns can add time
Turns can add time
Turns can add time.
Turns can add time.

Total Time: 10 Seconds
Turns can add time

Total Time: 25 Seconds
Barriers can restrict travel
Barriers can restrict travel
Barriers can slow travel
Side of the road
Slope
...and the rest
Common questions
Common questions

• Does Network Analyst support high-density routing?
Common questions

• Can I get alternate shortest paths?
Common questions

- Can Network Analyst work with transit schedules?
Support and resources

- Network Analyst tutorial
- Network Analyst documentation
- ArcGIS Network Analyst Extension Discussion Forum
- Creating network datasets video
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<td>GeoAI Deep Dive: Implementing Machine Learning Solutions with ArcGIS - Room 05 B</td>
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- ArcGIS Network Analyst Extension...
  - Makes it easy to do sophisticated analysis
  - Offers many types of analysis
  - Works across products and skill levels
  - Models transportation networks accurately
Please Take Our Survey on the App

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Select the Feedback tab

Complete answers and select “Submit”

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2. Select the session you attended.
3. Select the Feedback tab.
4. Complete answers and select “Submit.”