Route4Me

Company Overview

Q3 2016

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What Is Route4Me?

Route4Me is the fastest and most comprehensive dynamic route optimization platform in the world.

Instead of having disconnected systems and data silos, Route4Me combines route planning, route optimization, mobility, telematics, operations management, and analytics into a single platform for SMB's and Enterprise companies.

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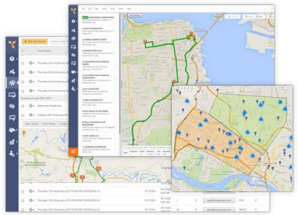
Route4Me's Proven Industry Results



With Over 1,000,000 Mobile App downloads & 100 million addresses visited per year

Route4Me currently serves over 3,000 paying customers and the Fortune 500

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Customers

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Integrations & Partners

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Mobile First

- The company was initially launched as a mobile company with an iPhone/iPad app in 2009
  - Over 41 versions have been uploaded and approved in the Apple App Store since 2009
  - Consistently top 10 highest grossing navigation app in the Navigation category
  - Consistently top 50 most downloaded app in the Navigation category
  - Available in almost 10 languages
  - Latest versions average a 4 star rating
- The Android app was launched in 2010
  - Over 75 versions released to Google Play
  - Consistently top 5 highest grossing navigation app in the Navigation category
  - Consistently top 50 most downloaded app in the Navigation category
  - Available in almost 10 languages
  - Latest versions average a 4 star rating

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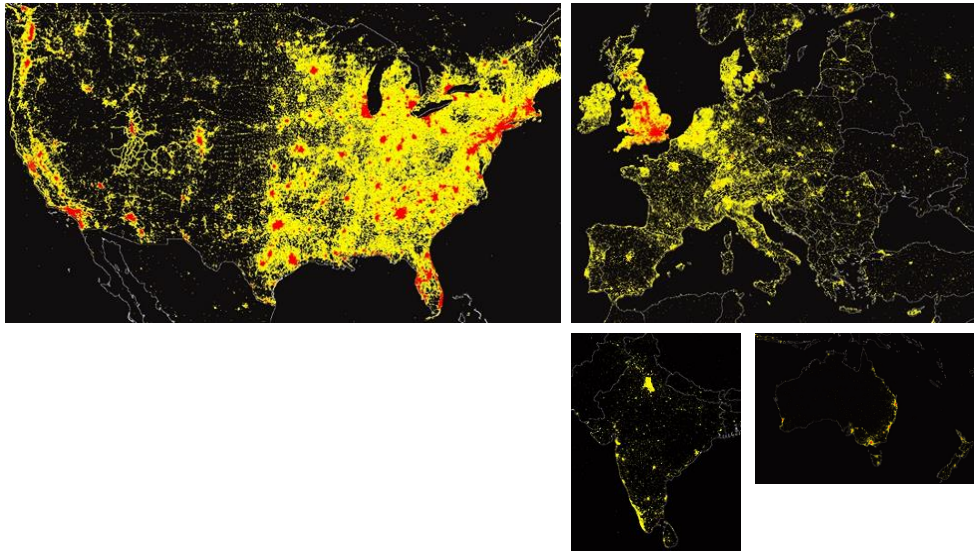
Global Coverage, World Class Performance & Scalability



- Our Public Cloud architecture is linearly scalable & we add cloud servers as needed
- Runs on the high-performance Linux operating system
- Operating in complete production in the cloud 24/7/365 for over 6 years
- 2,500+ routes optimized per second.
  For example, a 500 stop multi-depot, multi-vehicle route optimized in 3 seconds
- Our HyperMatrix™ clusters can create road-level driving distance and time matrices at the rate of hundreds of thousands of addresses per second (scales to millions)

Route4Me Technology Unlocks Many New Market Opportunities for Companies

Companies Will Need a New Dynamic Routing Platform Which Integrates Optimization and Operations

- Route4Me is the closest alternative to UPS ORION and FedEx DRA
- Companies can establish Pre-Scheduled Pickups for Daily Recurring Customers
- Enables to Deliver from Company-owned Warehouses/Distribution Centers
- Improves Same-Day Delivery for fulfilled e-commerce deliveries
- Autonomous Cars & Electric Cars Will Need More Efficient Routing to Reduce Refueling and Recharging
- Aerial Drone Dynamic Routing Already In Place
- Almost 20 Algorithms Take Predictive Traffic Modeling into Consideration (Patents-Pending)
- Route4Me eliminates dependencies on all 3rd party optimization, mapping, and telematics vendors

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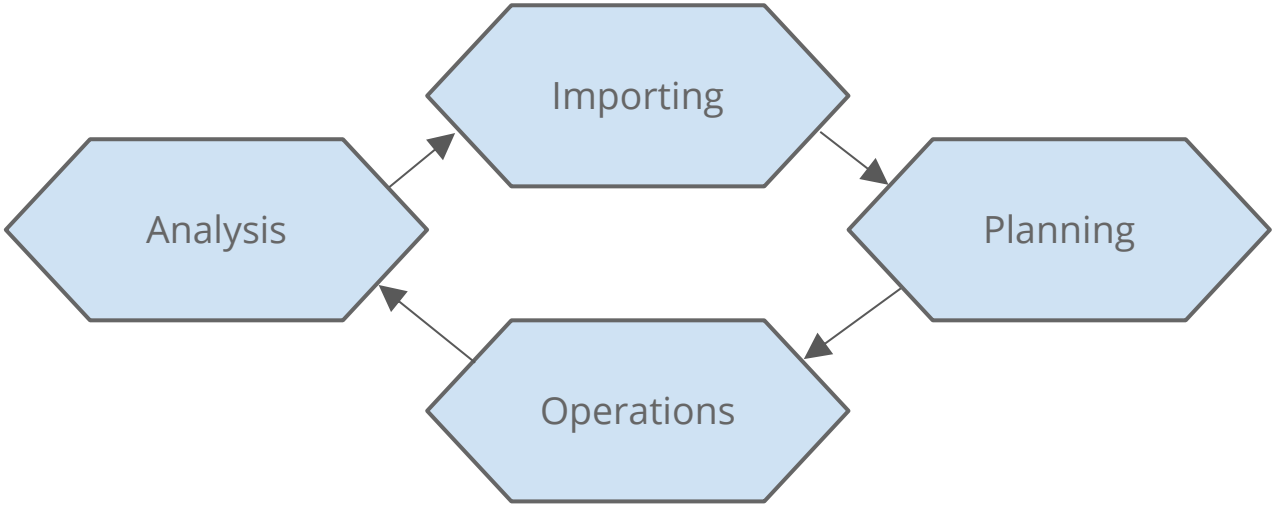
Fully Integrated Optimization and Operations Platform



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Importing

Drawing Regions on a Map

Point-to-Point & Arc Route Optimization

A region of almost any size can be drawn on a map and all the roads in that segment will be extracted:

- Rectangular Bounding Box
- Freeform Polygon
- Select over 10 road types
- Set road speed restrictions

Importing a File

Point-to-Point and Arc Optimization

Routes can be imported for analysis into the Route4Me system by:

- Uploading an Excel or CSV File
- Any text file containing valid addresses or coordinates

Importing with the API

The Route4Me API can be accessed using the SDK in 9 different languages (available on github)

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Planning & Optimization

Optimization

- Optimize point-to-point routes using addresses or coordinates
- Routes for one vehicle or distributed to many
- Intersection inspection forces drivers to arrive at a location from all legal approach directions

Extract and Export

Download and visualize multi-stop routes of almost any size

- Having tens of thousands of stops or maneuvers
- Appear in the smartphone app instantly
- Exportable to CSV and to 10+ geospatial formats

Flexible Constraints

- Capacitated Point-to-Point and Arc Routing
- Street Network Extraction with Complete Road Network Traversal
  - Select using a freeform polygon or rectangle
  - Specify maximum distance, time, road speed, and road types

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Operations

Tracking Drivers

- Monitor field personnel and assets in real-time on a map
- Remotely set tracking refresh frequency down to 1 second
- Offline reconciliation mode ensures GPS data capture even when devices are offline
- Export raw GPS tracking data
- Geo-fenced triggered check-ins

Auditing Routes

- Real-time actual vs planned ETA's in the route manifest
- Track route progress spanning geographic regions
- Low-granularity visibility with the real-time activity feed
- Automatically color-coded and flagged time window violations

Continuous Improvement

- Route4Me's bi-directional API supports webhooks, which notify 3rd party systems as events happen
- Stream raw data directly into Amazon Kinesis*
- Visually inspect problematic drivers or regions using the Logistics Operations Center
- Over 55 types of route metrics computed in real-time

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** Coming in Q1 2016*

Analytics & Auditing

Planned vs Actual Dashboards

- Dashboards automatically aggregate metrics by time period, driver, and vendor
- Interactive graphs can be used to drill down into underlying report data
- 3rd Party telematics data can be transparently incorporated into analytics dashboards

Export Aggregated and Raw Data

- Unrestricted access to all raw data via a RESTful JSON data stream:
  - GPS tracking data, movement analytics
  - Check-in and ETA data
- **Designed for easy analysis**
  - Access data in flexible & multi-purpose formats
  - Ingest JSON data directly into unstructured DB's: DynamoDB, Hadoop, or VoltDB
  - Ingest CSV data directly into structured columnar DBs: Vertica, Redshift, VoltDB

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Over 50 Route Metrics Computed Automatically

Route Capacity
Weight*
Cube*
Pieces*
Cost*
Revenue*
Stops per Route*
Priority*

Fuel
Fuel from Start
Fuel Cost from Start

Location
Coordinates (lat and lng)*
Note Counts

Operational
Visited
Departed
Marked Arrival Time
Marked Departure Time
Detected as Visited Time
Detected as Departed Time
Detected Time on Site
Time Impact
Remaining Cube
Remaining Weight
Remaining Pieces

Traffic
Time in Traffic to Next*
Uncongested Time to Next

Time
Time Windows*
Time Windows (Secondary)*
Service Time*
Est. Travel Time to Next*
Est. Wait Time to Next*
Service Time from Start
Travel Time from Start
Travel and Service Time from Start
Wait Time from Start
Projected Arrival Time*
Projected Departure Time*
Dynamic Arrival Time
Dynamic Departure Time
Stem In Time
Stem Out Time
Marked Time of Arrival
Marked Time of Departure
Marked Time on Site
Actual Time of Arrival (Geofence)
Actual Time of Departure (Geofence)
Actual Time on Site (Geofence)

Distance
Est. Driving Distance to Next (Mi.)*
Distance from Start (Mi.)

Density
Stops / Distance Density
Stops / Hour Density
Transactions / Hour Density
Cubic / Stops Density
Cubic / Distance Density
Pieces / Distance Density
Weight / Distance Density
Weight / Stops Density
SPORH (Stops per Operating Hour)
TPORH (Transactions per Operating Hour)

** Constraints or ranges used by Route4Me's Proprietary Optimization Engine to generate optimal routes and to optimally sequence the stops in these routes*

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High-Speed, High-Accuracy Route Optimization Finally Possible With These Two Proprietary Components

- Route4Me's Proprietary Route Optimization Engine
- Route4Me's Proprietary Routing Engine

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Route4Me's Proprietary Route Optimization Engine

Over 20 algorithms implemented with global and local constraint optimization

- Easily add new algorithms by extending the optimization engine
- Multi-threaded, C++ engine, runs as a web-service
- Optimizes most routes in under one second

Route4Me Algorithms Available

- ✓ Pick-up and Delivery Vehicle Routing Problem (PDVRP)
- ✓ Pick-up and Delivery Traveling Salesman Problem (PDTSP)
- ✓ Pick-up and Delivery Problem (PDP)
- ✓ Pick-up and Delivery Problem (SPDP)
- ✓ Dial-A-Ride Problem (DARP)
- ✓ Single Dial-A-Ride Problem (SDARP)
- ✓ Capacitated vehicle routing problem (CVRP)
- ✓ Open vehicle routing problem (OVRP)
- ✓ Site-dependent vehicle routing problem (SDVRP)
- ✓ Multi-depot vehicle routing problem (MDVRP)
- ✓ Vehicle Routing Problem with Clustered Backhauls (VRPCB)
- ✓ Traveling Salesman Problem (TSP) with Clustered Backhauls (TSPCB)
- ✓ VRP with Mixed linehauls and Backhauls (VRPMB)
- ✓ TSP with Mixed linehauls and Backhauls (TSPMB)
- ✓ VRP with Divisible Delivery and Pick-up (VRPDDP)
- ✓ TSP with Divisible Delivery and Pick-up (TSPDDP)
- ✓ VRP with Simultaneous Delivery and Pick-up (VRPSDP)
- ✓ TSP with Simultaneous Delivery and Pick-up (TSPSDP)

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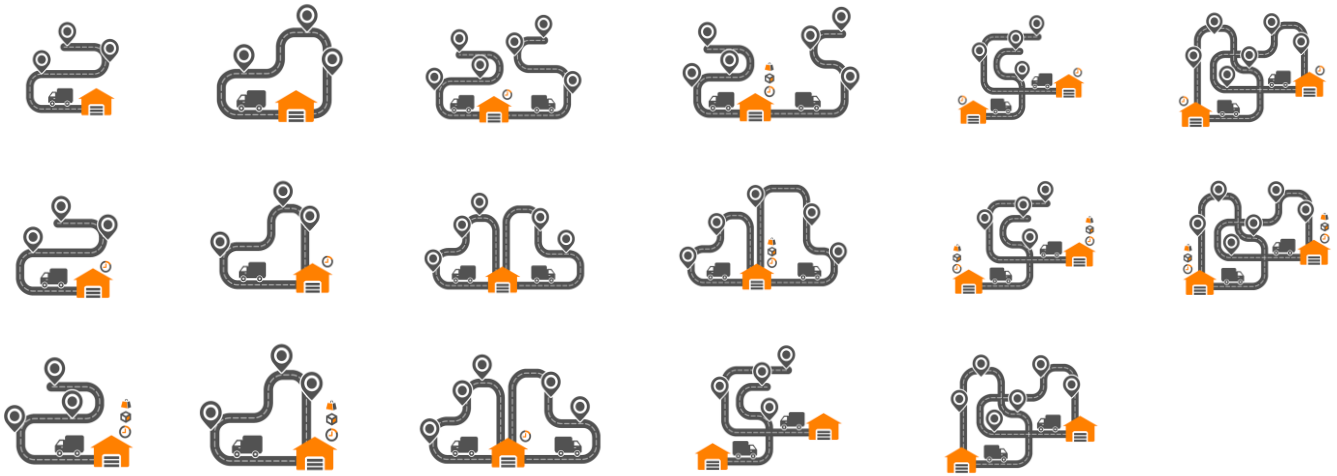
Almost 20 Tour Types

Single-Depot, Multi-Depot and Pick-Up/Drop-Off Configurations



- Single Depot
- Multiple Depot
- Time Windows
- Weight Constraints
- Volume Constraints
- Round Trip
- Single Driver
- Multi Driver

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Route4Me's Proprietary Routing Engine

The Proprietary Routing Engine determines and finds one or more routes between multiple locations

- Supports curbside and rooftop routing, with nearest curbside street snapping
- Based on Open Street Maps (OSM) Data
- Heavily customized fork of an open-source OSM engine (BSD2)
- Used to generate time and distance matrices quickly:
  - High-speed, low-latency
  - Works as a highly parallelized, decentralized, linearly scalable cluster
- Used to generate point-to-point and arc-to-arc driving directions
- Advanced routing capabilities in the routing engine:
  - Predictive and historical traffic modeling
  - U-turn, left-turn and right-turn avoidance
- Real-time traffic data ingestion and refresh
- High-resolution static maps and tile server

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Predictive Traffic Route Manifests

Traffic-Enhanced Manifests

Route manifests reflect accurate ETA's using true road-segment travel times based on real-time traffic conditions and traffic patterns up to one year into the future.

- Merges traffic data and real-time driver performance metrics (e.g., Check-In & Check-Out Times) collected from Route4Me's mobile apps
- Imports historical traffic data from any source (our mobile apps, INRIX, 3rd party telematics, etc.)

Note: The route sequencing process does not incorporate traffic. Instead, Route4Me generates expected vs. actual travel time metrics which are automatically incorporated into planned versus actual metrics.

See next slide for Traffic Sequence Optimization.

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Predictive Traffic Route Sequencing Optimization

Traffic-Influenced Route Sequencing*

The sequence of the optimized route changes based on traffic congestion on the road-network segments being traveled.

- For example, the same route may be sequenced differently when considering time-of-day and time-of-year specific traffic patterns
- Dynamically incorporates and predicts traffic conditions and traffic patterns up to one year into the future
- Merges traffic data and historical driver performance metrics (e.g., Footsteps-on-Site & Time-on-Site) collected from Route4Me's mobile apps
- Future releases will incorporate machine learning

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U-Turn, Right & Left Turn Avoidance

UPS Orion is the only known logistics platform with route optimization that avoids u-turns and left turns

No Other Commercial Mapping Vendors Offer Left Turn, Right Turn or U-Turn Avoidance

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Route4Me's Vendor Agnostic Architecture

Eliminates 3rd Party Dependencies and Can Instantly Switch Vendors

Mapping (Front-End)

- Google
- Open Street Maps
- Easily add new vendors such as Decarta

Fault-Tolerant Backends

- Dynamically falls back to secondary and tertiary backends for high-availability and to overcome regional data gaps

Routing (Backend)

- Route4Me Proprietary***
- Google Enterprise
- Inrix*
- Here.com**
- Bing
- Easily add new vendors such as Decarta

Directions (Backend)

- Route4Me Proprietary***
- Google Enterprise
- Inrix
- Here.com
- Bing
- Easily add new vendors such as Decarta

** Designates a Traffic Enabled Routing Engine*
*** Designates a Commercial Vehicle Routing Engine (Trucking Class 1-8) Routes*
**** Designates Traffic Enabled with Advanced Turn Restrictions*

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Unified and Centralized Telematics & IoT Data

Capture OBD & IoT Data using Route4Me's Apps or with Proprietary High-Precision Devices

Route4Me's Apps

- GPS sensor data collected from Route4Me's iOS and Android Apps
- Route4Me's iOS and Android apps capture vehicle diagnostics using commodity OBD2 bluetooth (BLE) devices
- Route4Me already collects and stores information captured from latest generation mobile and wearable devices

3rd Party Telematics

- Seamless integration with 3 of the top 10 telematics vendors already exists
- Automatically syncs geofences, landmarks, drivers, users, vehicles
- Stores and streams real-time data
- Reconciles historical tracking data
- Eliminates the need to switch telematics vendors
- Simultaneously visualize and export telematics data from any number of vendors

Data Abstraction

- Route4Me transforms data from any vendor into one easy-to-access abstracted format
- Data from disparate sources and 3rd party telematics vendors are unified and available through the Route4Me API
- Easily ingest unlimited amounts of sensor data into DynamoDB, Kinesis, or any other type of data lake using Route4Me data abstraction technology

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Training and Documentation

Images, Diagrams, Videos, and Documentation

Train Existing and New Employees About Route Optimization Quickly

Images and Videos

- Images explaining every routing type and algorithm
- 3D videos explaining every routing type and algorithm
- Hours of step-by-step training videos
- Diagrams help describe route optimization scenarios and concepts

Documentation

Visit: support.route4me.com

- Comprehensive support portal captures nearly every detail about the platform and how it can be used
- Troubleshooting and frequently asked questions help educate users

Support

- Zendesk powered support portal containing an extensive list of troubleshooting responses and macros

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Features List

Geocoding

- Geocoding Uses a Parallelized Queue
- High-Speed Bulk Forward-Geocoding
- High-Speed Bulk Reverse-Geocoding
- Discarding Improperly Geocoded Addresses
- Manually Relocating & Overriding Geocoded Addresses
- Adding Addresses from the existing Address Book with Predictive Auto-Complete

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Route Planning & Optimization

- Plan New Route from Uploaded CSV File
- Plan New Route from Uploaded Upload Excel File
- Plan New Route from GPX, GeoJSON, KML, 10 other formats
- Plan New Route from Copy-and-Paste
- Plan New Route from Map Click or Touch
- Plan New Route from Address Book Map
- Plan New Route from Address Book List
- Plan New Route from Address Book Territory
- Plan New Route by Importing from Google Drive
- Plan New Route by Importing from Quickbooks Online
- Plan New Route by Importing from Box.net
- Plan New Route by Importing from Xero
- Plan New Route by Importing from Dropbox
- Plan New Route by Using Rapid Street Address Lookup (Browse)
- OCR Based Route Importing
- Human Based Route Importing (Similar to AWS Mechanical Turk)

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Route Scheduling

- Specify a Route Start Date and Time
- Dynamic Start Time to Reduce Wait Time
- Semantic Route Planning - Set Route Departure With Sunrise
- Semantic Route Planning - Set Route Duration With Sunset

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Manifest and Agenda

- Fuel, Time, Distance, Dynamic ETA Columns in Manifest
- Address Metadata in Map Callout, Agenda, Manifest
- View Multiple Routes at the Same Time on a Map
- Move Address from One Route to Another Route
- Assign Service Time to a Route Address
- Route Density Analysis
- Over 50 Automatically computed metrics

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Real-Time Collaboration

- Collaborative real-time editing:
  - Cross-screen and cross-device
  - Same-screen and same-device
- Industry First: Route Version Control
  - Takes incremental route snapshots with point-in-time rollback capabilities
- Push Based Notifications for Route Updates
- Push Based Notifications for Address Book Updates
- Push Based Notifications for Activity Feed
- Push Based Notifications for Real-Time GPS Tracking Updates
- Activity Feed View, Audit Log, with filtering and time drilldowns

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Dynamic Routing

- Supports Just-In-Time Re-routing
- Modify routes that are already in progress
  - Add, remove, re-sequence, or delete stops on existing routes
  - Inserts stops of any kind, such as pickups, dropoffs, or meetups
- Congregation and Mothership routing
  - Automatically determines the optimal intersection point of vehicles
  - Accommodate operational nightmares like late freight and freight swapping
  - Mothership routes are when a certain type of vehicle brings packages, parts, or assistance to other vehicles in the field

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Operations & Management

- Modify Route Name
- View All User Routes
- Modify Destination Sequence in Route without Re-Optimizing
- Duplicate a Route
- Export Multiple Routes Simultaneously
- Merge Multiple Routes Simultaneously
- Insert New Addresses Into the Optimal Route Position
- View Multiple Routes Simultaneously
- Compare Multiple Routes Simultaneously
- Ad-Hoc Multi-User Congregation
- Reverse a Route
- Logistics Operations Center - Concurrent Routes View
- Mobile Push-to-Talk*
- Mobile 2-Way Messaging*
- Sign-on-Glass E-Signatures
- Upload Note Attachments
- Set Note Types
- Stop Disposition Status
- Export Route Notes
- Geotagged & Timestamped Check-Ins and Departures
- Geotagged & Timestamped Notes
- Geotagged & Timestamped Notes
- Moving Stops from one Route to Another

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Territory Management

- Unlimited Arbitrarily Defined Territories
- View Territories On All Route Management Screens
- Automated Territory Optimization and Balancing
- Automatically Create a Route(s) for an Territory
- Territory Count Analysis
- Import Polygons as Address Book Territories
- Overlapping and Sub-Territories
- Advanced Search Groups With Unlimited Constraint Filters
- Search Group Color Coding
- Define Territories by ZIP Code
- Define Territories by County Line
- Define Territories by State Line
- Manually Adjust Territories

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Tracking

Command, Control, Manage

- Logistics Operations Center - High-Density Route Viewer
- Geofence Triggered Check-Ins
- Geofence Triggered Check-Outs
- Concentric Geofence Tracking - Notify API's or Users about delivery status based on proximities
- On-Approach Vehicle Tracking Map
- Arrival SMS Notifications*
- Geofence Triggered SMS & EMail Notifications*
- Transmits Device Beacon Location to Server
- Offline Reconciliation and Delayed GPS Tracking Transmission
- View Other Team Members on a Map
- Variable Beacon Frequency - 60 Second Minimum
- Spatial Map clustering for large vehicle fleets
- No-Movement Detection Battery Saver Mode
- Bluetooth OBD Streaming M2M Ingestion
- Footstep & Flights of Stairs Analytics

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Search

- Search for a Route By Name
- Search for a Route By Any Destinations inside the Route
- Search for a Route By Any Custom-Meta Data Inside Routes
- Search for a Route By Any Route Notes
- Real-time indexing with sub-second search response times

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Reporting

- Usage and Routing Analytics
- Set Fuel Costs
- Analyze Fuel Costs by Route, Vendor, Vehicle
- Customer Heat Map and Visualization
- Granular Labor Cost Computations
- Granular Transportation Cost Computations
- Vendor Specific Rating and Reporting

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Map Layers

- Bee-Line Distance Tool
- Real-Time Traffic
- Real-Time Weather
- Address Book Objects
- Territories
- Avoidance Zones
- Straight Lines or Driving Lines

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User Management

- Authenticate into System
- Concurrent Multiple-User System Access & Route Planning
- Add User
- Remove User
- Modify User
- Read-Only Users
- Master-Data Address Book
- Nested User Permission Hierarchy Management With Lateral Roles
- View Routes Traveled by User
- Two Factor Authentication
- Single-Sign On
- Google Apps Integration
- OAuth Integration
- Password Resetting

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Address Book

- Address Book List
- Address Book Map
- Plan Routes from Address Book Map and Preserve Meta-Data
- Add Address from Address Book
- Add Address Book Contact
- Remove Address Book Contact
- Modify Address Book Contact
- Plan Routes from Inside of Salesforce (Native Force App)
- Mobile Bi-Directional Address Book Contact Synchronization
- Color Coded Group Pins on Address Book Map
- Reverse-Lookup - Address Visitation History - Show All Routes an Address Was Part Of
- Custom Meta-Data Editor
- Batch Address Book Object Colorization
- Batch Address Book Object Icon Setting

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Security

- Successful Authentication Audit Logs
- Failed Authentication Audit Logs
- Route Export Audit Logs
- API Request Audit Logs
- System Usage and Module Access Management
- Automatic Lock-Out After Failed Authentication Threshold Reached
- Server Infrastructure is SSAE-16, HIPAA & PCI compliant
- SSL available for data transfer
- McAfee Secure and Norton Secured used for daily scans, verify valid SSL certificates, identify site compromises, provide attack site status, Phishing protection, and perform other Malware tests
- All web traffic is HTTPS encrypted at customer's request
- SSL is used for data ingestion and for viewing data

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Internationalization

Website and Mobile Apps already available in:

English
Spanish
German
French
Korean
Dutch
Russian
Chinese
Arabic

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Command Line
Automation Tools

- Hi-Speed Automated Bulk Route Planner - Windows
- Hi-Speed Automated Bulk Route Planner - Linux
- Hi-Speed Automated Bulk Route Planner - Mac

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API & SDKs

RESTful API

http://route4me.com/api/demo/

JSON, XML, and CSV Output

10+ SDK's on Github

https://github.com/route4me/

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