
# The Middle Mile Reimagined

## The Operational Benefits of Intelligent Freight Orchestration

*Warp helps transportation leaders design and deploy intelligent, multi-mode freight networks built for speed, flexibility, and the future.*

WARP

## The middle mile is the backbone of the supply chain. The critical link between where products are made and where they meet the customer.

But today's freight networks are stretched, fragmented, clunky, and built for yesterday's world. The demands of a post-pandemic era – faster shipping, omnichannel, tighter margins, and sustainability commitments – call for something radically different.

At Warp, we believe that freight isn't just a line item on the P&L, but a strategic lever that can amplify growth, sharpen competitiveness, and unlock new business value. We help transportation leaders deploy technology that doesn't simply automate old ways, but reimagines them. Our platform integrates FTL, LTL, parcel, cross-docking, and carrier services into a single, cohesive network connected through a unified platform. Every shipment becomes a data point; every decision becomes an opportunity.

## The Problem

### Legacy Networks Aren't Built for Flexibility

The middle mile remains one of the most complex and opaque layers of modern logistics. Legacy networks were built around inflexible transit paths and single-mode thinking. The result is high unit costs, limited visibility, and handling damage. Let's shift from simply moving loads to designing networks. From reacting to predicting. From viewing freight as a back-office burden to recognizing it as the backbone of the modern enterprise. We invite you to join us in this re-imagined freight era. Here's a look at five common challenges in legacy logistics and their related opportunities.

*Image 1. Broken pallets*

# WHAT IS THE MIDDLE MILE?

The middle mile is the connective tissue of logistics – the transportation, sorting, and consolidation that happens after imports or production but before products reach the store shelf or customer doorstep.

**Inbound DC**
FTL / Cross-Dock

**Regional DC**
LTL / Pool Distribution

**Stores**
Zone Skipping

## Typical Routes

**Port or Inbound DC** → **Regional DC**

Moving goods inland after import or manufacturing.

**Regional DC** → **Store or Micro Fulfillment Center**

Replenishing retail and e-commerce networks closer to demand centers.

**Vendor** → **Consolidation Hub** → **Store or DC**

Aggregating smaller shipments for shared or pooled distribution.

## Common Modes

### LTL (Less-Than-Truckload)
Palletized freight that doesn't fill a full trailer.

### FTL (Full Truckload)
Dedicated shipments moving directly between facilities.

### Pool Distribution
Combining multiple store deliveries into a single optimized route.

### Cross-Dock Transfers
Moving freight through hubs with minimal storage time or handling.

### Zone Skipping
Consolidating parcels in bulk and injecting them directly into regional delivery zones to bypass intermediate sort centers.

## Challenge 1: Sub-Optimized Networks

For decades, freight optimization has been constrained not just by fixed lanes but by fixed systems. Legacy transportation management tools, rigid routing logic, and batch-based planning cycles were never designed for real-time networks. These systems make decisions in isolation, relying on static data snapshots rather than real-time signals from the road, warehouse, or customer.

The result: networks that can't think dynamically. Trucks still depart half-empty, routes stay locked long after demand has shifted, and capacity goes unused even as shippers scramble for space elsewhere. According to the American Transportation Research Institute (ATRI), empty miles accounted for 16.7% of all truck miles in 2024, representing roughly $30 billion in wasted costs across U.S. freight.

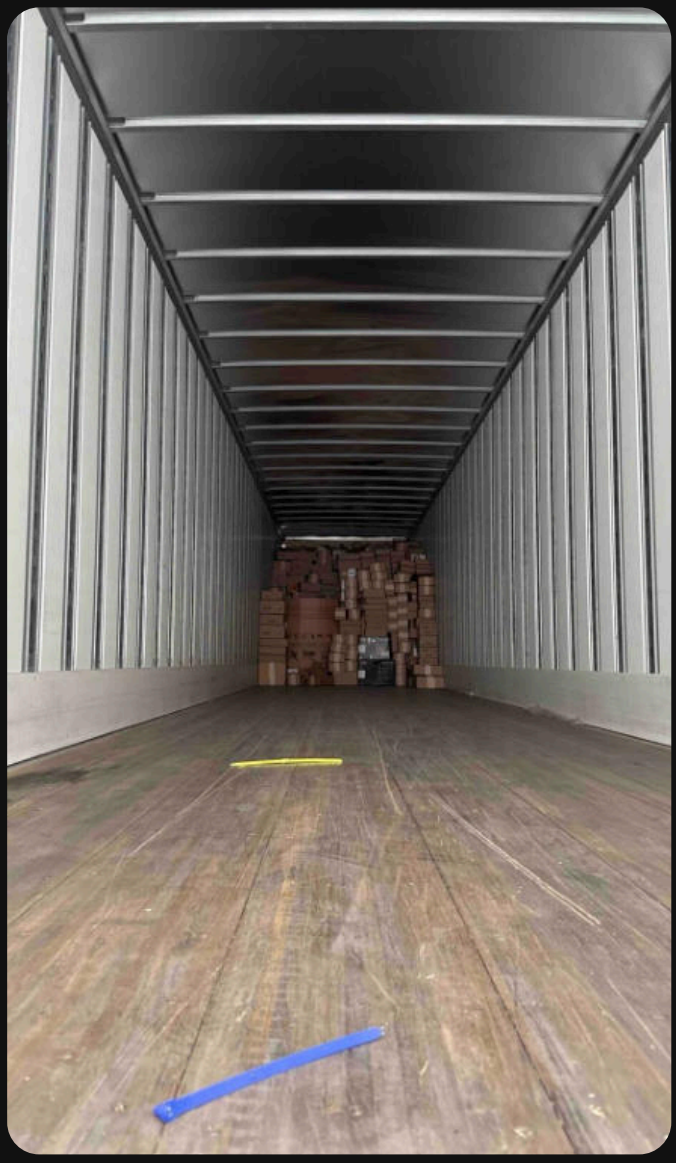


*Image 2. Underutilized Trucks Undermine Stickiness*

At the same time, most middle mile visibility typically stops at the pallet level. Traditional systems can confirm that a truck left a dock with a signed bill of lading, but they can't tell you which SKUs are on board or whether those SKUs ever reached the right location. Scans, transfers, and receipts often live in separate databases, breaking the digital thread that connects inventory to movement.

Without an adaptive, data-driven foundation, networks remain rigid in the face of constant change. They're unable to rebalance when disruptions hit, re-route when lanes shift, or respond to real-time order signals. In short, the software that runs freight hasn't kept up with the freight itself.

## The Opportunity: Predictive Consolidation & Dynamic Routing

Warp rebuilt the U.S. middle mile from the ground up to eliminate these blind spots. Its national network of cross-docks, vehicles, and routing technology transforms static freight into a real-time, data-rich system capable of tracking freight at the pallet, carton, or SKU level, depending on each customer's needs.


*Image 3. Pick-up and Drop-off Routes*

At the core is Warp's orchestration model, which replaces fixed-lane rigidity with dynamic optimization. Predictive AI models continuously analyze lane data and load behavior to:

- Consolidate shipments across customers and modes to maximize trailer utilization and minimize empty space.
- Cluster compatible freight and nearby pickups into shared routes, reducing cost per unit and emissions.
- Re-route in real time when disruptions occur, automatically selecting the most efficient combination of FTL, LTL, and parcel.
- Tie SKU-level scans back to digital records, giving shippers complete visibility from pickup to final delivery.

Every shipment trains the system to anticipate future demand, improving load planning and predictive accuracy over time. The result is a self-learning network that not only moves freight efficiently but continuously gets smarter with every mile.

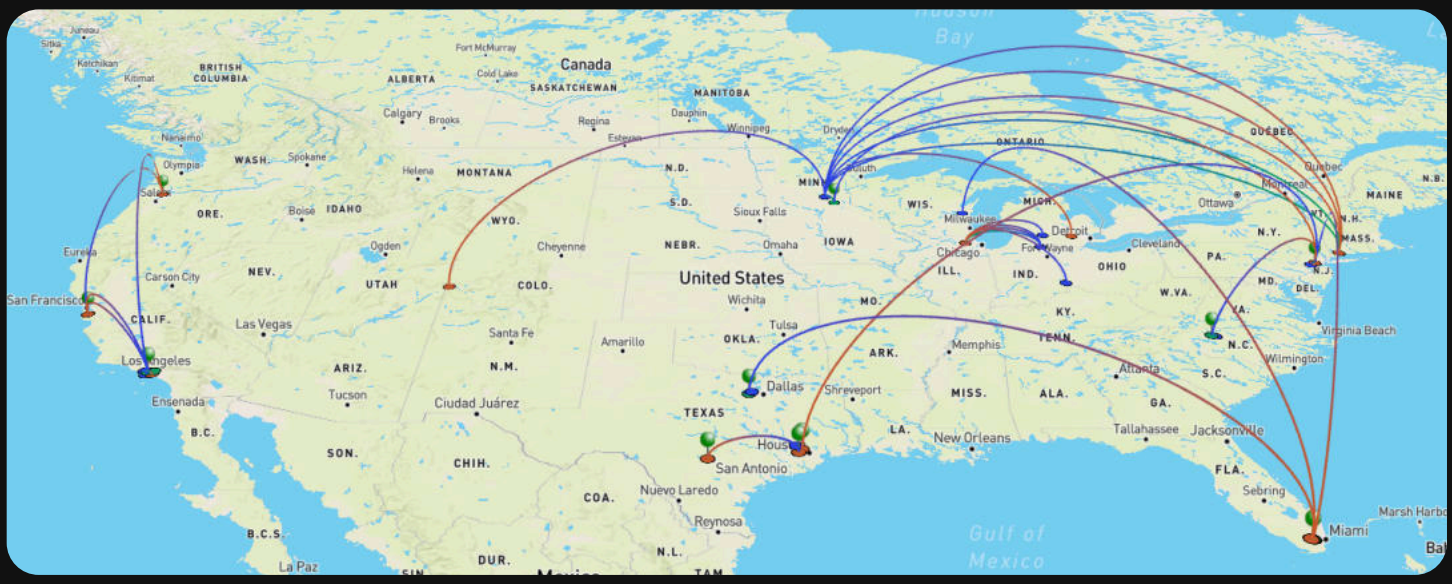



*Image 4. Historical volume of shipments*

Warp's domestic middle mile gives shippers a choice: run lean at the pallet level or unlock full SKU-level visibility for every movement between warehouses, cross-docks, and stores. Either way, they gain what legacy networks never could – a dynamic, data-driven freight system that adapts as fast as their customers do.

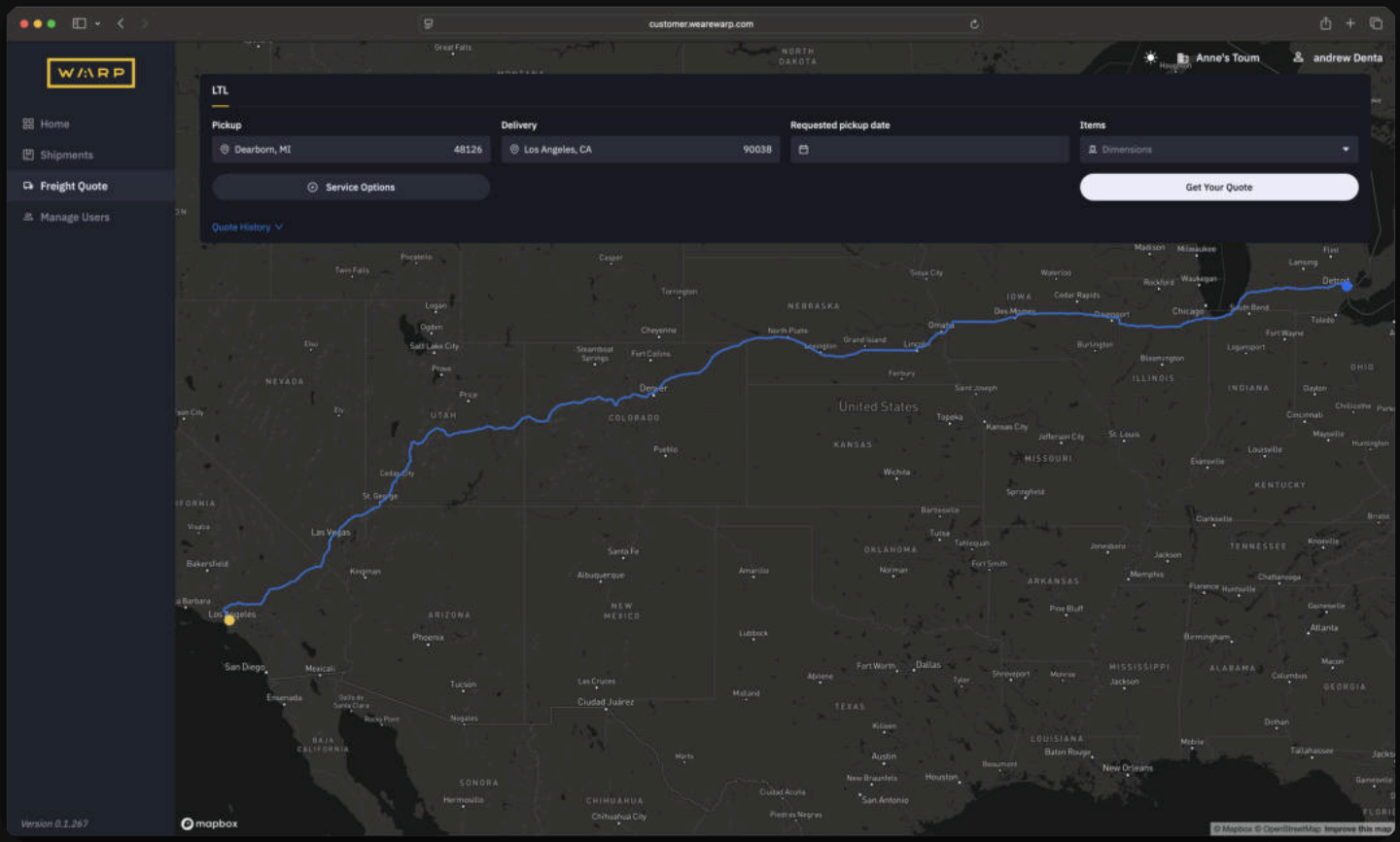



*Image 5. Warp's Customer Dashboard*

| Legacy Static Networks | Modern Dynamic Networks (Warp's Model) |
| --- | --- |
| **Built for predictability** | **Built for adaptability** |
| Pre-defined lanes, annual RFPs, and fixed contracts assume stable demand. | Continuously rebalances freight based on live demand, capacity, and constraints. |
| Routes operate in isolation, leaving trucks half-full or empty on return. | Multi-shipper orchestration consolidates compatible loads across customers, maximizing asset utilization. |
| Impossible to budget because of discrepancies from class adjustments, rate increases, fuel prices, and reweighs, among other fees. | Dynamic pricing and mode-mixing continuously optimize cost, time, and emissions. |
| Manual planning, reactive dispatch, and rigid scheduling. | AI-driven routing, predictive consolidation, and real-time exception management. |
| Limited visibility across modes (FTL, LTL, parcel operate separately). | Unified visibility across all modes via Warp's Orbit AI, integrating shippers, carriers, and cross-docks. |
| Focused on minimizing short-term cost. | Focused on maximizing long-term efficiency, resilience, and sustainability. |
| **Results** | **Results** |
| Empty miles, delayed shipments, high emissions, missed backhauls, and frustrated customers. | Lower cost per mile, higher utilization, fewer touchpoints, and reduced carbon footprint. |

## Challenge 2: Data Silos & Fragmented Visibility

Most transportation management systems were designed for single-mode operations: FTL, LTL, or parcel. This leads to fragmented data and delayed visibility. Each provider operates its own dashboard, making it impossible to view freight in movement across modes or proactively manage exceptions. The result is a disconnected network that reacts instead of anticipates.

Traditional TMS, WMS, ERP and POS systems often operate in isolation, meaning crucial freight, inventory, and transportation data reside in disconnected silos. As a result:


*Image 6. Disconnected Systems Create Data Silos*

- Shippers cannot see across modes, making it difficult to flex capacity, adapt routes or shift modes as demand or network conditions change.
- When inventory needs to move quickly from a regional distribution center to a store because of a surge, there's limited real-time visibility to determine whether parcel, LTL or FTL is best.
- The consequence is that many freight networks cannot scale up or down, or switch context between modes, with the agility required by today's volatile market.

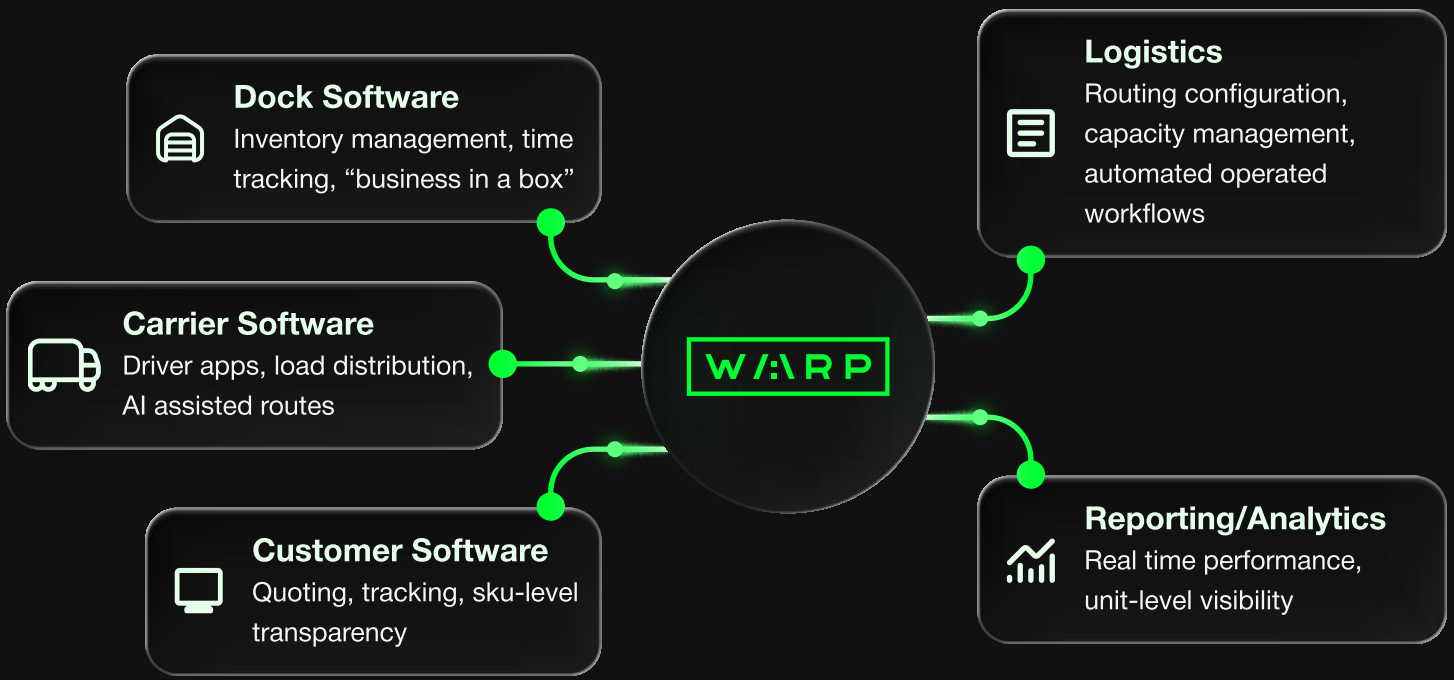
When visibility stops at system boundaries, resilience ends there too. True flexibility requires a unified data foundation, one capable of connecting every shipment, mode, and movement in real time. That's the visibility layer Warp was built to deliver.

# The Opportunity: Unified Network Visibility & Flexibility

Warp's unified platform ingests, normalizes, and connects shipment and inventory data across all modes and partners. With this unified visibility:

- Shippers gain a "single pane of glass" view of FTL, LTL, parcel, and cross-dock movement, enabling them to flex up or down depending on inventory flows.
- They can test "what-if" scenarios: if demand surges in one region, should we move via cargo van, box truck, parcel, LTL or full-truckload? The platform provides the insight.
- Real-time tracking, predictive alerts, and mode/mix decision support equal fleets that are better utilized and inventory that moves more efficiently.
- By bridging data silos, the network becomes more agile: when one mode suffers disruption, operations can pivot to another mode with full visibility into cost, time, and capacity trade-offs.

The result is a supply chain that finally sees itself clearly, where visibility isn't limited to one mode or moment, but extends across the entire network. Static visibility is transformed to continuous orchestration.



## Challenge: Outdated Pricing & Cost Volatility

NMFC Rules just got more complicated. One wrong number can trigger reclass charges, rate disputes, or stalled shipments. Teams still relying on class-based pricing are exposed. Traditional LTL and parcel networks rely on complex, outdated rate structures that include accessorials, minimums, and reclassification fees, making cost predictability nearly impossible. Even when base rates are contracted, the actual charges that appear on the invoice can vary by lane, terminal, or day.

At the terminal level, shipments are often reweighed or remeasured, resulting in unexpected “weight and inspection” adjustments. A few inches of packaging or a misrecorded dimension can shift freight class entirely, inflating costs with no prior warning. Accessorials and surcharges add another layer of unpredictability.

Full truckload pricing isn’t immune either. Because spot rates reflect immediate supply and demand, they can swing fairly rapidly. Capacity constraints, volume jump, or shocks (seasonality, tariffs, events) all contribute to volatility, while contracted lanes lose relevance when market conditions shift. Together, these forces create an environment where shippers can forecast budgets, but never truly know their cost until the bill arrives.

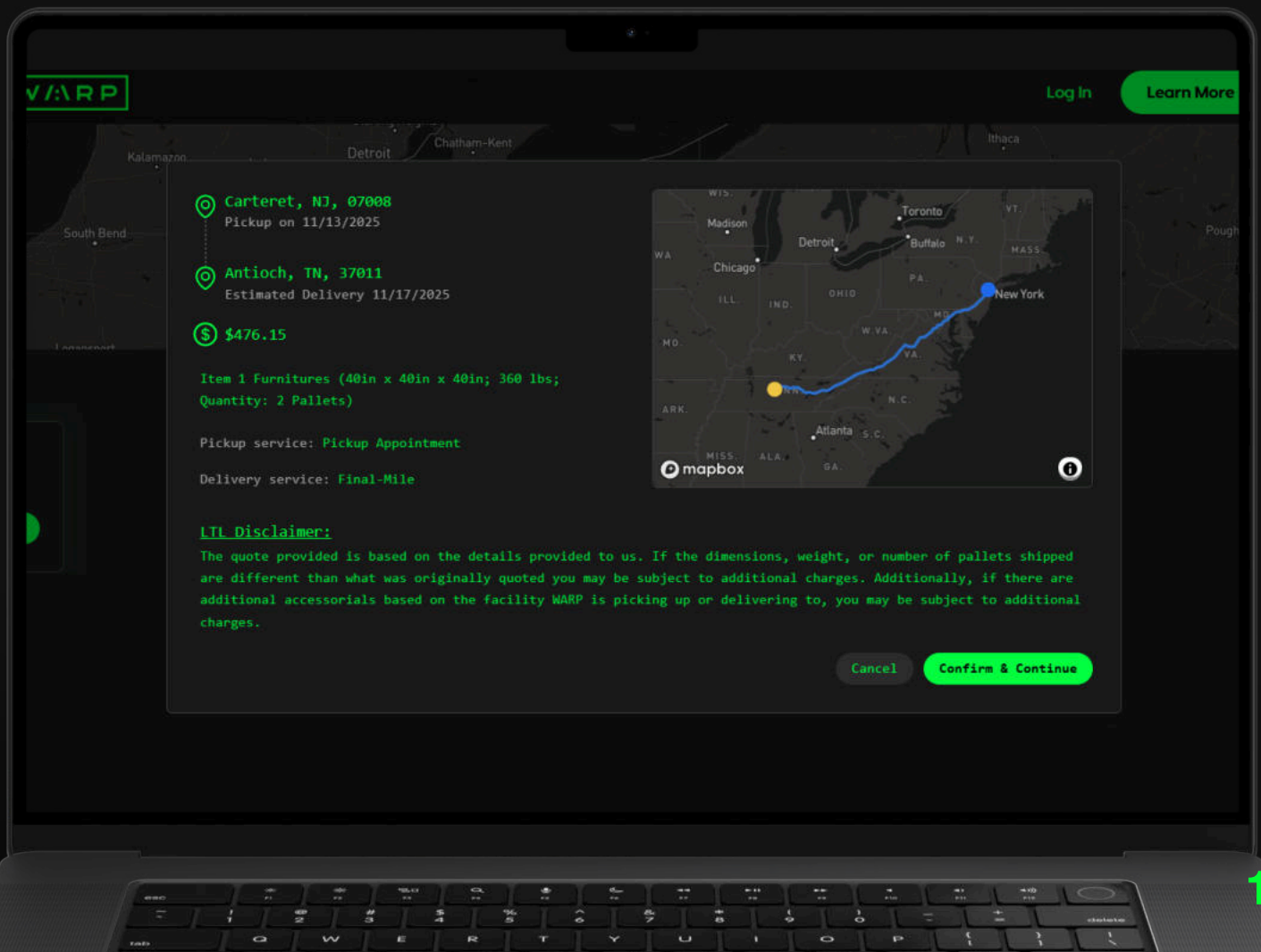
*Image 7. Shipment trucks delayed on queue*

# The Opportunity: Transparent Pricing Through Technology

Warp removes the risk. Using real-time network data, Warp's Orbit AI analyzes capacity, distance, mode mix, and load compatibility to generate a single, transparent price before the shipment ever moves. Shippers receive one flat rate. No class codes. No corrections. No hidden fees. Just predictable, transparent pricing.

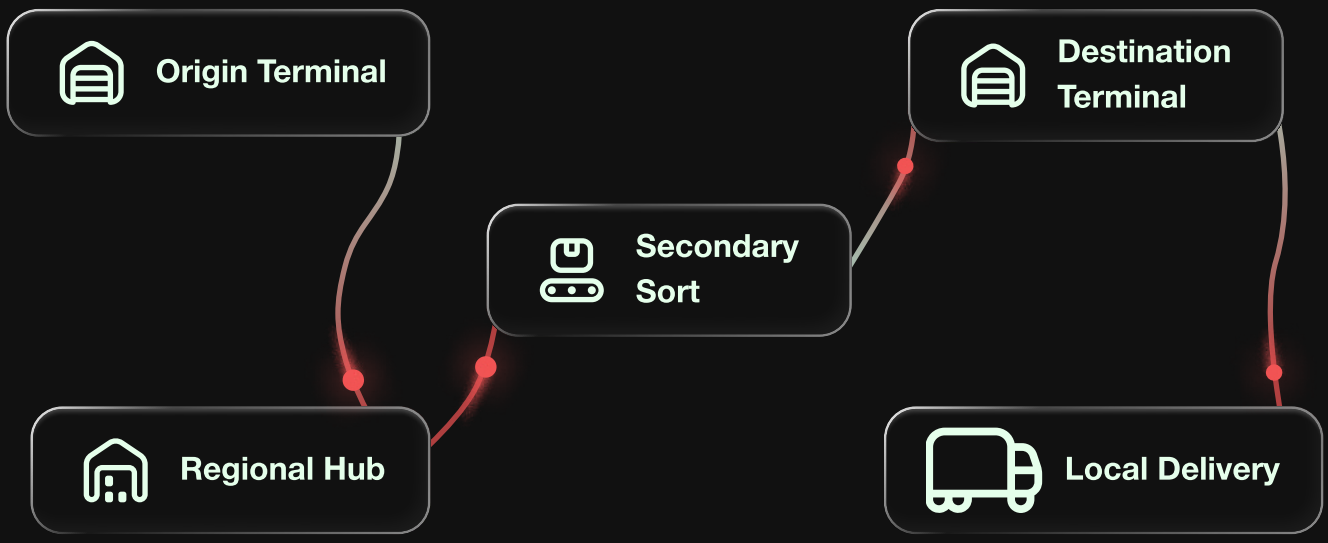
Every quote is built on live data from Warp's connected network of carriers and cross-docks, ensuring that pricing reflects real market conditions, not outdated tariff schedules.

AI dynamically models each shipment across FTL, LTL, and parcel options to identify the optimal mode mix and lane pairing. As more shippers join the network, the system continuously learns and improves, feeding intelligence back into its pricing engine. The result is a cost model that rewards network efficiency, shared capacity, fewer touchpoints, and higher utilization, rather than penalizing shippers with opaque fees.



## Challenge: Too Many Touch Points

Traditional LTL and parcel networks were designed for a hub-and-spoke world. Each transfer introduces handling, dwell time, and the potential for loss or damage. LTL networks weren't built for flexibility; they were built for density. But today's shippers need speed and reliability, not just coverage. A box that travels through seven terminals to reach the customer is no longer competitive; it's costly.



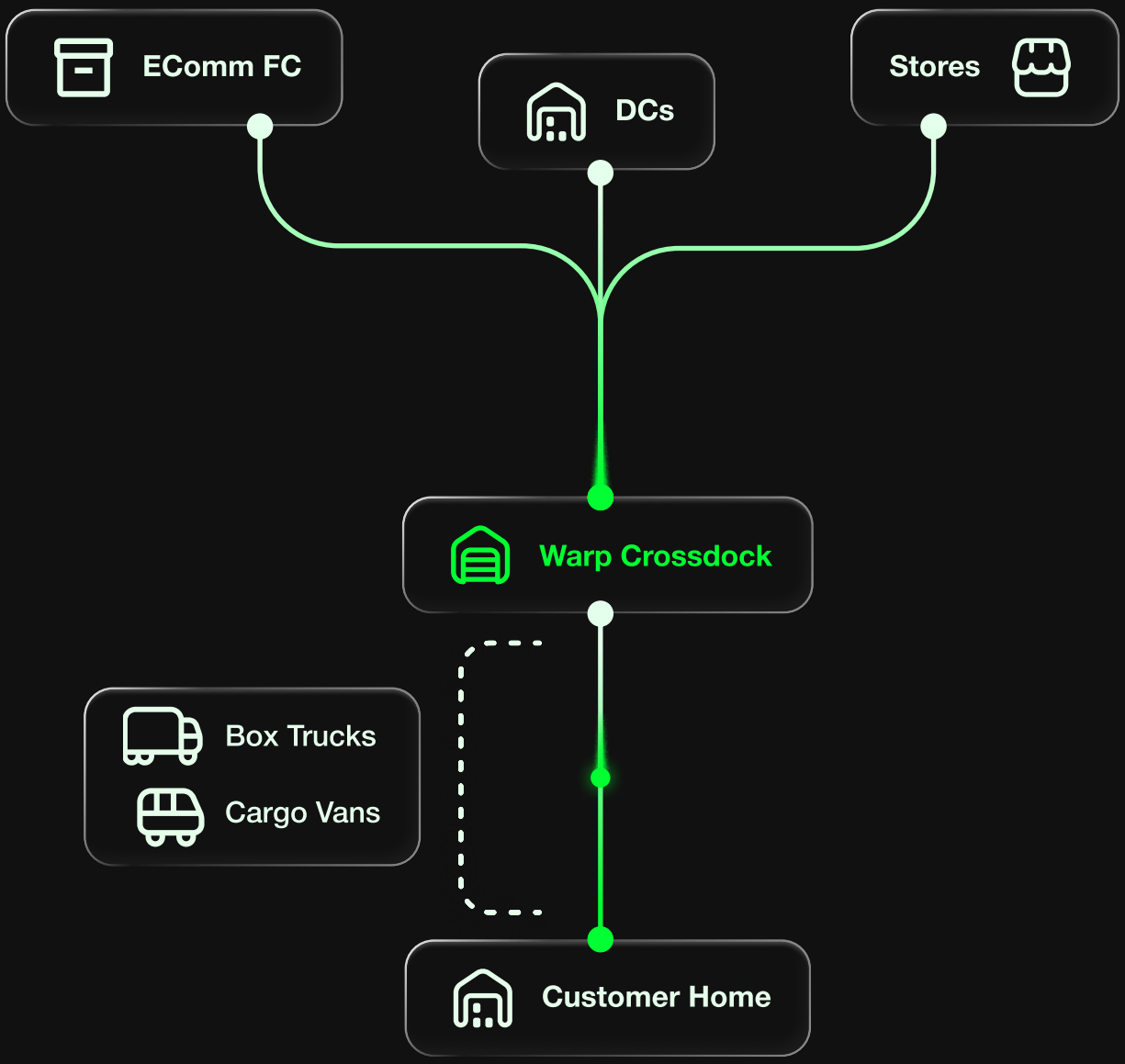

Because LTL shipments move through multiple terminals and cross-docks, they often incur multiple dwell/detention events. Across the trucking industry, drivers are detained at ~39% of stops, and facility dwell times frequently stretch over several hours per event, reducing asset utilization and increasing damage risk.

## The Opportunity: FlowSkip – Zone Skipping for the Omnichannel Era

Traditional zone skipping consolidates shipments for a particular region into one bulk load, shipping it to a regional hub to bypass multiple individual zone transfers. Warp's FlowSkip takes that concept into the modern era using AI-driven orchestration and a shared cross-dock network to move all freight types (parcel, LTL, store replenishment, and big-and-bulky) together, faster and with fewer touches.

FlowSkip intelligently combines B2B and D2C freight within the same truck and cross-dock flow. Through AI-driven load planning and cross-dock orchestration, FlowSkip identifies overlapping demand between shippers (or even the same shipper) and consolidates shipments bound for the same metro or carrier injection point. This allows retailers and brands to bypass legacy sortation centers altogether, moving closer to their customers with fewer stops and far less cost.

Warp's predictive decision engine continuously analyzes order data, destination density, and carrier injection schedules to build optimal loads across modes and customers, creating high-utilization, low-touch freight flows that move like express linehaul. Every pallet, carton, and parcel is tracked through one system, giving shippers Amazon-like transparency from pickup to final delivery.



## Challenge: Manual Processes and Paper Trails

Even as logistics has modernized, much of freight management still runs on manual processes and disconnected vendor tools. Shippers toggle between emails, spreadsheets, PDFs, portals, and legacy TMS interfaces to quote, book, dispatch, and reconcile shipments. Carriers provide updates by phone or text. Accessorial charges are entered manually. Proofs of delivery are scanned, uploaded, or sometimes lost altogether. Each handoff introduces the risk of human error and delays that ripple downstream.

Manual processes don't just slow teams down; they limit visibility and scalability. According to McKinsey, up to 19% of logistics costs can be attributed to inefficient handovers between systems and stakeholders.

## Solution

Warp eliminates the need for multiple vendor apps by connecting the entire freight lifecycle into one intelligent, end-to-end platform with every stakeholder operating from a single source of truth.

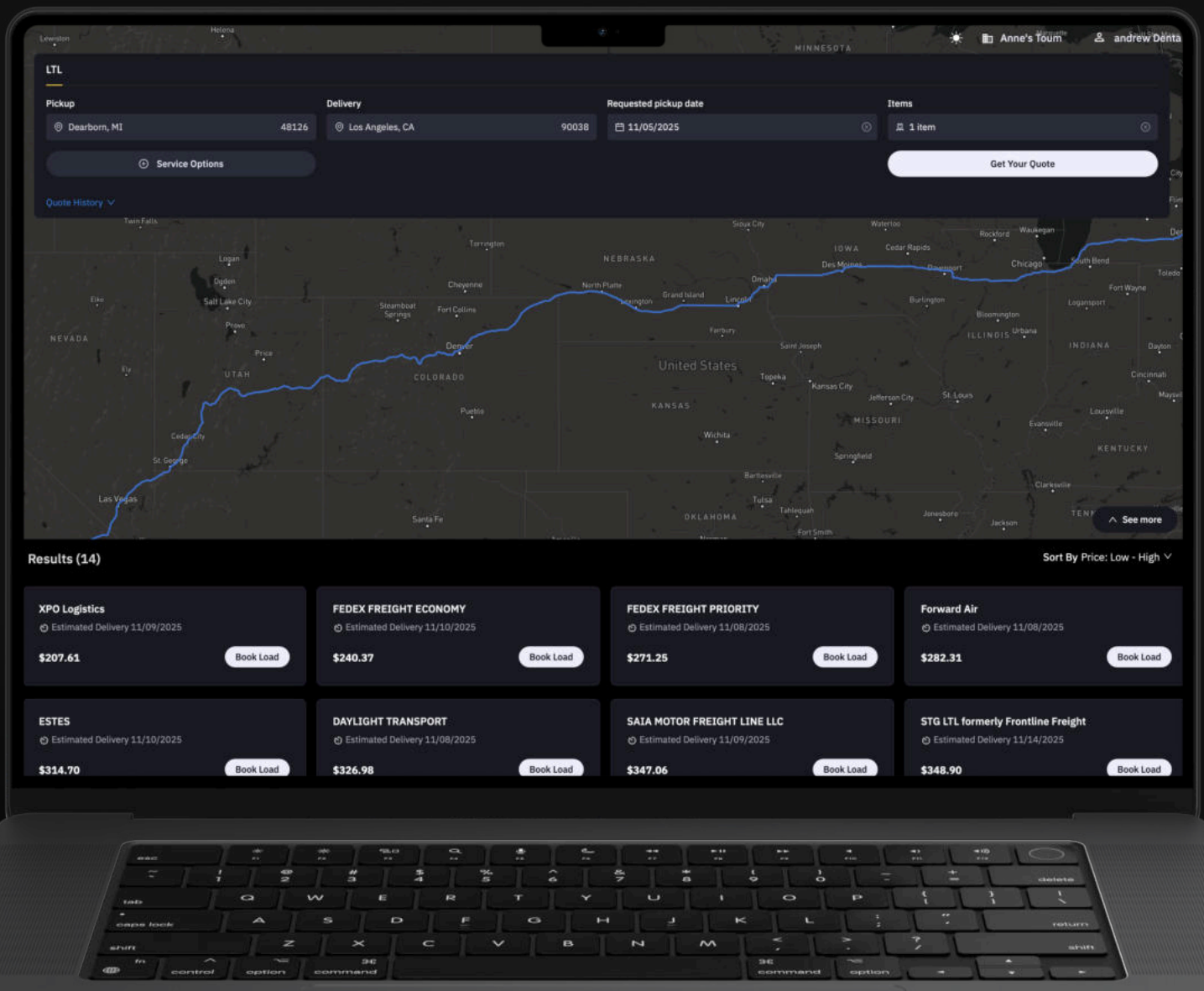
- **Unified Interface:** Shippers quote, book, track, and manage invoices in one place. No more juggling logins or re-keying shipment data across systems, everything happens in a single platform.
- **Automated Data Flow:** APIs connect directly to carriers, cross-docks, and warehouses, automatically updating status and eliminating the need for manual check-ins or spreadsheet uploads.
- **Smart Documentation:** Digital bills of lading, PODs, and invoices are generated and reconciled automatically, creating a true paperless freight experience.
- **Exception Intelligence:** AI detects anomalies (delays, weight mismatches, or missing paperwork) before they become downstream problems, prompting proactive fixes instead of reactive calls.
- **Continuous Learning:** Each shipment trains Warp's models to forecast dwell times, optimize consolidation, and improve billing accuracy over time.

"Every time you leave one system to enter another, you lose visibility, accuracy, and speed. Freight orchestration should happen in one place — not ten."

**— Daniel Sokolovsky, CEO & Co-Founder of Warp**

"Our platform takes what used to be 15 tabs and five emails and turns it into one continuous flow — from quote to final delivery."

**— Troy Lester, CRO & Co-Founder of Warp**



# Freight Workflow Comparison

## Before Warp

### Quoting & Booking

Email carriers, copy rates, wait hours/days.

### Dispatch & Coordination

Manual calls and email handoffs.

### Tracking & Visibility

Multiple portals; reactive updates.

### Docs & Proof of Delivery

Paper BOLs, manual signatures, scanned PDFs.

### Billing & Reconciliation

Re-key invoices, dispute reweighs, spreadsheet checks.

### Analytics & Improvement

Manual Excel rollups; no real-time insight.

## After Warp

### Quoting & Booking

Single digital request; Orbit AI returns instant, mode-optimized pricing.

### Dispatch & Coordination

API-based auto-dispatch with live confirmations, status, and ETAs in one dashboard.

### Tracking & Visibility

Unified view across modes with predictive exception alerts.

### Docs & Proof of Delivery

Digital BOLs, auto-PODs, verified audit trail.

### Billing & Reconciliation

Orbit AI auto-matches and approves; one-click pay/archive, no re-entry.

### Analytics & Improvement

Built-in dashboards with lane/mode/cost views; continuous learning improves forecasting and optimization.

## Conclusion: Freight Reimagined

For decades, the freight industry has been built on compromise: between speed and cost, visibility and control, flexibility and reliability. But those trade-offs no longer serve the modern supply chain. E-commerce, on-demand retail, and volatile market conditions have exposed the limits of legacy networks designed for predictability, not agility. Static lanes, disconnected systems, and data silos have created blind spots at every handoff, eroding efficiency and resilience.

Warp was built to erase those boundaries. By unifying shipment, inventory, and transportation data across modes, Warp transforms fragmented visibility into continuous orchestration. Shipments no longer move through opaque terminals or isolated dashboards; they move through a dynamic, connected network where every event, from pallet scan to delivery confirmation, informs the next decision in real time.

The result is a middle mile that finally operates with the intelligence of a living system. Predictive consolidation reduces wasted miles and touchpoints. Dynamic routing flexes capacity up or down as demand shifts. Unified visibility enables proactive adjustments before disruptions become delays. And every load moved through the network strengthens the algorithms that make the next one smarter.

The freight network of the future isn't a collection of lanes or carriers, it's a digital ecosystem built on speed, flexibility, and shared intelligence.

**That's the promise of freight reimagined. And it's already in motion with Warp.**