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How Every Shipper Can Benefit From Modern Drop-and-Hook

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THE MODERN DROP-AND-HOOK

Shippers and carriers love drop-and-hook freight for its speed and simplicity. In fact, the majority of US Fortune 500 shipments are sent through preloaded drop trailers. The challenge with drop has been one of scale. Traditional drop services are limited to specific lanes and regions, and when demand surges, they can't flex up to accommodate the additional volume.

In 2017, Convoy Go became the first drop-and-hook service that let carriers of all sizes, including owner-operators, haul power-only loads. This unique, modern approach to drop offered shippers flexible, nationwide capacity with the reliability and quality they'd come to expect from asset-based carriers.

More recently, Convoy has enhanced our drop program, using machine learning to flex up capacity during demand surges and provide a level of visibility into trailer location and status not available anywhere else. Specific improvements include:

- A unique rebalancing capability that automatically routes trailers to facilities 24 hours before preload time, ensuring trailers are always available when you need them
- A program called "automated reloads" that minimizes deadheads on backhauls, reducing waste from empty miles and lowering carrier dropoff by between 9% and 11%
- A shared pool of smart trailers powered by the Internet of Things

Let's take a look at each of these innovations in detail.
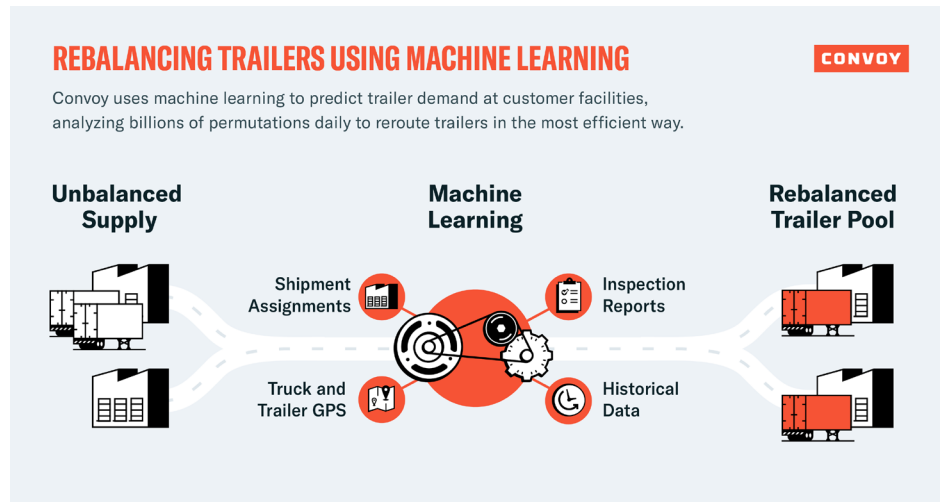
TRAILER REBALANCING

If you've ever been to a city that had app-based rental bikes from companies like Lime, you may have noticed an interesting phenomenon at the top and bottom of hills. In the morning, there are plenty of bikes at the top of hills, but by day's end, there is a clump of bikes at the bottom. Not surprisingly, fewer people are interested in biking up a steep hill than those who are happy to coast down. And at some point—often in the evenings—the bikes need to be "rebalanced" by people in vans who collect and then place them back at the top of the hill.

This is a problem of uneven supply and demand, and nationwide drop networks face the same challenge, but at a much larger scale. Facilities in cities with high demand have a tendency to accumulate trailers, leaving less supply in other locations. This requires periodically rebalancing trailers between the facilities.

The only way to solve this challenge at nationwide scale is to use machine learning. Specifically, we use machine learning models to predict how many trailers our customers will need across hundreds of facilities nationwide over the next few weeks. We combine millions of data points from our own shipment history with real-time location data from our trailers' GPS, shipment assignments, inspection

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reports, and drivers' locations. We then feed this data into our optimization models that analyze billions of trailer route permutations and pick the most efficient solution. Our technology enables us to constantly evaluate this information at a scale that no individual or team of people could do. This is in contrast to traditional drop providers who manually plan trailer routing using relatively limited information, significantly limiting the scale of their programs.

REBALANCING TRAILERS USING MACHINE LEARNING

CONVOY

Convoy uses machine learning to predict trailer demand at customer facilities, analyzing billions of permutations daily to reroute trailers in the most efficient way.

Unbalanced Supply

Machine Learning

- Shipment Assignments
- Truck and Trailer GPS
- Inspection Reports
- Historical Data

Rebalanced Trailer Pool

AUTOMATED RELOADS

In 2019, Convoy announced automated reloads for live shipments. This enabled drivers in our digital freight network to instantly match their headhaul with a backhaul, earning more money on each run while achieving better truck utilization. For shippers, the automated reloads program results in 9-11% lower carrier falloff rates, and it reduces carbon emissions from empty miles, helping shippers achieve their sustainability goals.

In October 2020, we announced automated reloads for our drop-and-hook program. This provides the same benefits as live automated reloads, but it tackles a much more complex problem because it combines the need to find backhauls with the need to continually balance our trailer pool.

In the example below, the carrier drives approximately 55 miles empty—45 miles between Portland and Salem to pick up the backhaul, and an additional 10 miles between Seattle and Bellevue after dropping the backhaul. This is compared to driving approximately 175 empty miles from Portland to Seattle had we not found a backhaul load. On average, automated reloads reduce empty miles by 45%, helping drivers earn more money and achieve better truck utilization while helping shippers improve service quality, reduce carbon emissions and achieve their sustainability goals. As of October 2020, automated reloads have prevented nearly 3 million pounds of CO_2 emissions from entering the atmosphere.

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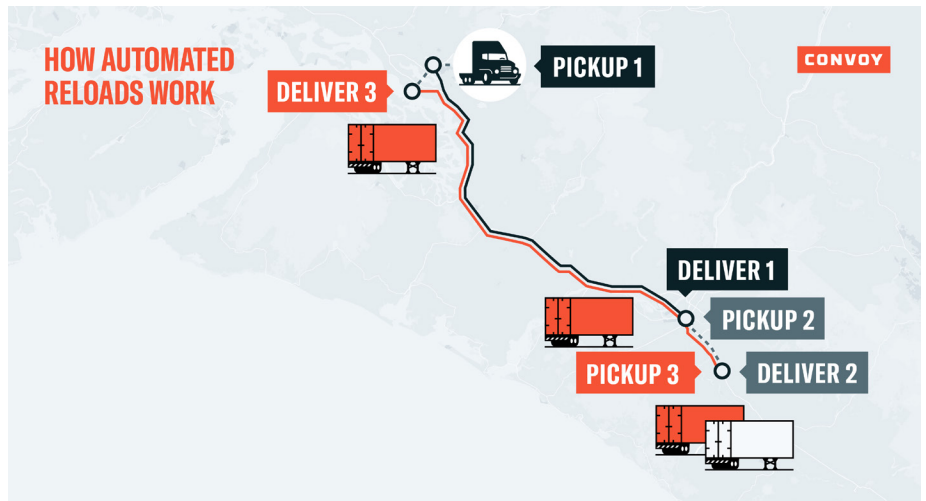
SMART TRAILERS, POWERED BY THE INTERNET OF THINGS (IOT)

Convoy Go incorporated IoT into its shared pool of smart trailers in 2017, and has since worked with sensor manufacturers to push the limits of their capabilities to better track and gather insights on the freight we haul. Through the use of IoT, we're able to get critical information about our trailers and shipments across the country without needing a large team of people to manage them. This reduction in overhead enables us to focus our teams on strategic relationships with customers rather than on routine operational tasks.

Our smart trailers report their pinpoint location using GPS and geofencing, as well as whether the trailer is moving and, if so, how fast. Combinations of ultrasonic, optical, laser, and radar sensors let Convoy understand whether the trailer is loaded, which in turn lets our system understand if a trailer is ready to be picked or if the cargo isn't ready yet. We've also developed an algorithm that confirms whether trailers are being hauled by the driver assigned to the load—this enables us to quickly identify and correct situations in which a driver accidentally hooks the wrong trailer. And with cargo and trailer theft becoming an increasing concern for shippers and freight companies, this algorithm can also tell if a trailer has been stolen.

The use of IoT in our trailers also enables us to provide higher service quality to our shippers, sometimes knowing more about their shipment status and facility yards than they have access to themselves.

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CONVOY GO SMART TRAILERS

Convoy Go's smart trailers provide unparalleled shipment visibility and remove the need for large teams on the ground to manage the fleet.

- Pinpoint location
- Speed
- Expected arrival time
- Actual arrival time
- Time in yard
- Trailers en route to yard
- Loaded status
- Trailer condition

GPS BASED GEOFENCING

ULTRASONIC CARGO SENSOR

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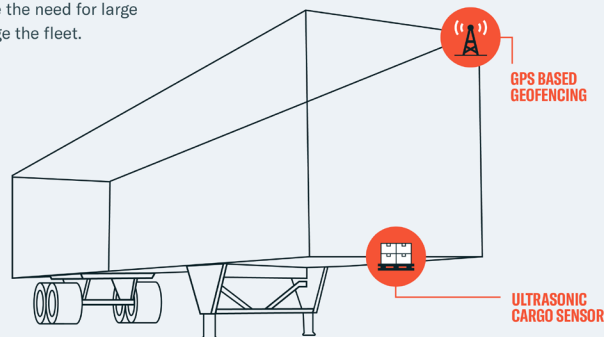
TRY CONVOY GO TODAY

Convoy Go is available to any company who ships 250 full truckloads annually on any lane, nationwide. Interested in giving it a try? Learn more by visiting convoy.com/drop-and-hook, or drop us a line at sd@convoy.com. You can also learn more by reading the white paper we've published on the topic, available today for free download.

This article is based on the white paper "How Every Shipper Can Benefit From Modern Drop and Hook" which was originally published by Convoy in November 2020. Convoy is a nationwide digital freight network founded with the mission of transporting the world with endless capacity and zero waste.

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