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Convoy's Digital Freight Brokerage Network Continues to Build Carrier Capacity and Drive Sustainability

Convoy's Digital Freight Brokerage Network Continues to Build Carrier Capacity and Drive Sustainability

Seattle, Washington USA Site Visit, February 23, 2022

By **Evan Armstrong & Cheri Grabowski**

Key Personnel:

Dan Lewis, Chief Executive Officer and Co-Founder

Grant Goodale, Carrier Experience Officer and Co-Founder

Mark Okerstrom, President, Chief Operating Officer and acting CFO

Dorothy Li, Chief Technology Officer

Ryan Gavin, Chief Growth Officer
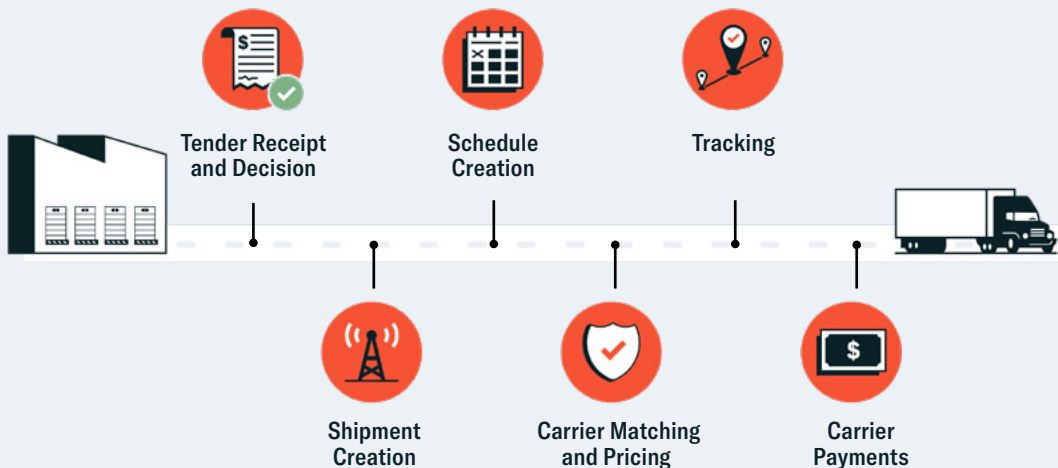
Brooks McMahon, Chief Business Development Officer

Convoy Overview

Co-founded in 2015 by Grant Goodale and Dan Lewis, Convoy has rapidly grown with $668 Million in investor funding, ranking 20th on our top Domestic Transportation Management/ Freight Broker third-party logistics provider (3PL) list. Convoy has developed a staff of over 1,000 employees.

As a leading Digital Freight Broker (DFB), it serves a nationwide roster of shippers concentrated in the Consumer Goods, Food and Beverage, Industrial, and Retail industries, as well as freight broker customers, tapping into Convoy's digital freight network of over 300,000 trucks. Convoy's network is tech-driven using advanced machine learning algorithms to provide instant pricing on quote requests, guaranteed carrier capacity, and real-time shipment visibility. The system's functionality is core to Convoy's corporate mission to "transport the world with endless capacity and zero waste".

Within the Domestic Transportation Management 3PL segment, Managed Transportation has automation via TMS, EDI and other systems interfaces. Where most traditional transactional freight brokerage operations lack automation is on the account management, carrier/sales procurement, and back-office processes. As a leading DFB, Convoy has built its business by focusing on automation and bringing efficiencies to the entire transportation management process. In six years, Convoy notes that it has automated over 90% of the process from shipment tender to delivery. These processes include, but are not limited to, freight matching to carrier capacity, automated carrier and shipper pricing, shipment tracking and tracing, tendering, and carrier payment.

Convoy's Automation of the Shipment Lifecycle

Tender Receipt and Decision

Schedule Creation

Tracking

Shipment Creation

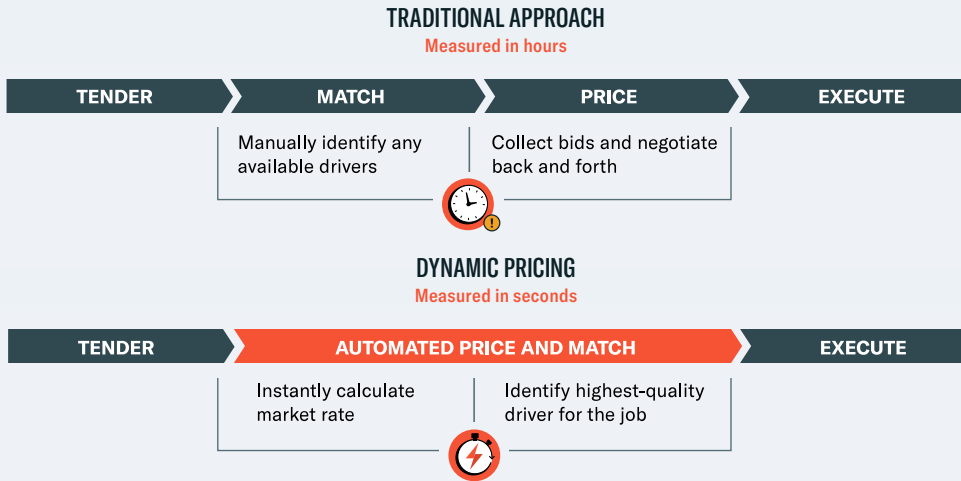Carrier Matching and Pricing

Carrier Payments

Convoy provides traditional primary and backup load coverage, as well as dynamic pricing programs for primary, backup, and spot markets. It handles live and drop freight and supports both van and reefer trucks. Its additional services such as "Automated Reloads" further sustainability efforts. The company's easy-to-use app drives shipment visibility and stronger carrier management.

Convoy's Dynamic Pricing at Real-Time Market Rates

Convoy's rates are dynamically calculated using machine learning algorithms which analyze multiple variables including current truckload market pricing conditions, carrier capacity levels across its network, and historical lane performance data. Its machine learning continues to get smarter as more data is processed through the system.

Pricing Process at Traditional Freight Brokerage Compared to Digital Freight Brokerage

TRADITIONAL APPROACH

Measured in hours

TENDER	MATCH	PRICE	EXECUTE

Manually identify any available drivers

Collect bids and negotiate back and forth

DYNAMIC PRICING

Measured in seconds

TENDER	AUTOMATED PRICE AND MATCH	EXECUTE

Instantly calculate market rate

Identify highest-quality driver for the job

Dynamic Pricing on Primary Freight

For shippers willing to award an agreed upon volume of their freight in a given lane to Convoy, Convoy offers shippers an alternative pricing solution called "Guaranteed Primary". Instead of a fixed rate per mile, the rate is dynamic and moves with the market with a fixed margin per load agreed upon between Convoy and the shipper. In turn, Convoy's revenue varies as

carrier rates move up and down. Convoy's system can accurately predict pricing a week into the future. Convoy guarantees tender acceptance, eliminating tender rejections, and generates a dynamic price for each shipment. Convoy also takes liability of the rate prediction, eliminating possible billing reconciliation. Customers using "Guaranteed Primary" have access to instant pricing and receive monthly transparency reports detailing truck costs, shipment margin, and estimated program savings. Per Convoy, "Guaranteed Primary" can reduce a shipper's total transportation cost by up to 19% via a guaranteed capacity solution.

Annual Estimated Savings from Guaranteed Primary

Source: Convoy analysis of FTR, DAT, and FreightWaves data, 2014-2020.

Dynamic Pricing on Backup Freight

A routing guide "waterfall process" is commonly used to select a backup carrier when a tender is rejected by a primary carrier. In tight carrier capacity markets, backup carriers may reject loads more frequently as spot market truckload rates exceed contracted prices. Through Convoy's "Dynamic Backup" routing guide, truckload rates are adjusted based on real-time data provided to the shipper through an API integration. If selected as a backup, coverage is fully guaranteed, offering a safety net when shippers' primary carrier tenders are rejected. It also avoids the additional cost and hassle of moving the load to the spot market. Convoy's "Dynamic Backup" is handled directly through the customer's preferred TMS system.

Convoy's Growing TMS Partnerships

Dynamic Pricing on Spot Freight

Loads that have been rejected by both primary and backup truckload carriers often move to the spot market. Traditionally, a freight broker may need to reach out to its network through phone or email. The process can take significant time and when the market tightens, and costs continue to rise, Convoy uses a different approach for spot market loads. It generates instant prices based on real-time market data and machine learning models. Convoy guarantees coverage and after they accept a shipment, and it automatically posts to the

carrier network with a suggested price. Local carriers can bid on the load. A machine learning model monitors the bidding and determines which to select based on unique algorithms weighing price, carrier performance, likelihood of on-time pickup, and other factors. Carrier bidding consistently feeds into Convoy's real-time market data, increasing competitiveness and accuracy for future bids in the system.

Convoy's dynamic pricing models, automated freight matching, and growing carrier network allows shippers to maintain reliable coverage and readily flex capacity as demand fluctuates.

Convoy for Brokers

Convoy opened its technology platform to other freight brokerages in the industry with an offering called "Convoy for Brokers". Brokers can post loads directly to Convoy's network, access its elastic capacity, and expand its carrier base while remaining the broker of record, thereby maintaining direct relationships with shippers and carriers, and ensuring the privacy of their data. According to Convoy, carriers in the network see expanded opportunities, such as access to more loads in the Convoy app to improve fleet utilization, increase earnings, and reduce empty miles. "Convoy for Brokers" customers include USA Truck and AFS Logistics.
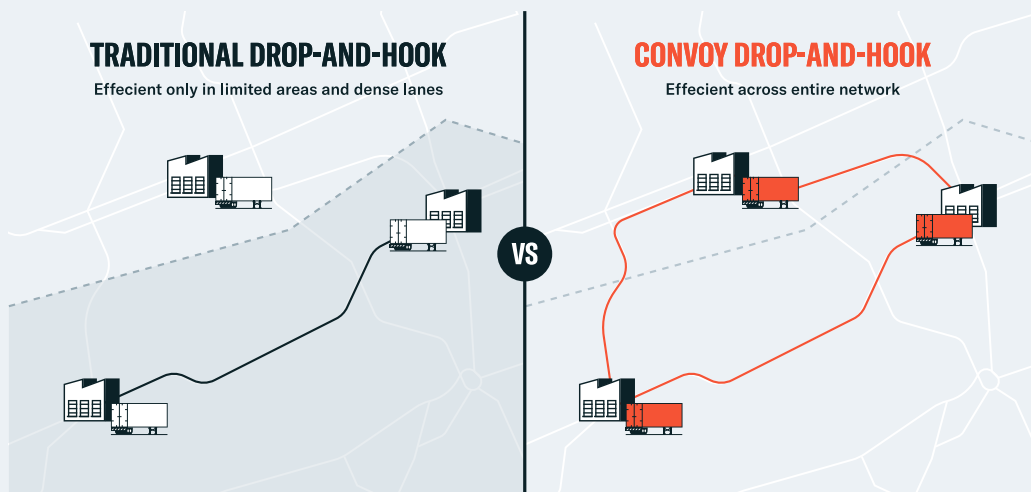
Convoy Go Drop-And-Hook Services

Historically, drop-and-hook services were only available through large asset-based carriers. "Convoy Go" was launched in 2017. It sources tractors across the United States and uses artificial intelligence/machine learning to plan and route trailers to facilities on any lane. Convoy has a fleet of 2,500 dry van trailers and works with customers moving full spot or contract dry van truckloads. All Convoy leased trailers have location, heading, speed, and tamper alerts as well as cargo sensors. Tire pressure, fault codes, and door sensors are in development.

"Convoy Go" technology analyzes billions of permutations each day. It predicts facilities' demand for trailers, coordinates drivers to trailers along optimum routes, matches backhauls to headhauls, and proactively balances the next day's demand of empty trailers. Convoy uses machine learning models to predict how many trailers will be needed in the weeks ahead. This is forecasted using data points such as historical shipment, trailer GPS, shipment assignments, inspection reports, and drivers' locations. Billions of trailer route permutations are calculated before "Convoy Go" technology selects the most efficient solution available. The automatic rebalancing and readiness of trailers has led to a 99.9% equipment availability rate for Convoy customers.

Traditional versus Convoy Drop-And-Hook Comparison

TRADITIONAL DROP-AND-HOOK
Effecient only in limited areas and dense lanes

VS

CONVOY DROP-AND-HOOK
Effecient across entire network

The "Convoy Go" trailer pool acts as a buffer to demand surges with accessibility from three sources: surplus trailers from the customer's yard, trailers currently enroute, and trailers from any nearby facilities that Convoy services.

Convoy Go's Shared Trailer Sources

Convoy's shared trailer pool provides access to trailers from three different locations:

Surplus trailers from the customer's yard

Trailers currently en route from one facility to another

Trailers from any nearby facilites that Convoy services
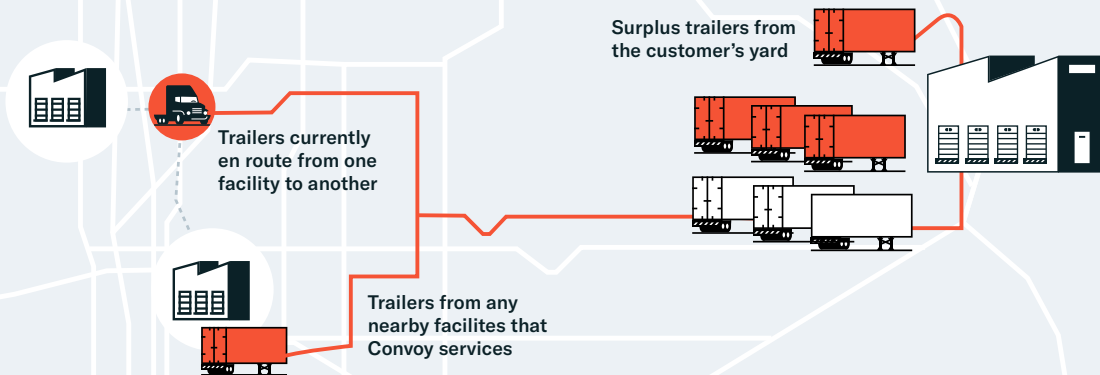
During pickup, "Convoy Go" automatically has the order information so the carrier can confirm they have the right trailer.

If there happens to be damage, carriers can load photos directly into the app. The Convoy Operations team sees the information immediately and gets the carrier back on the road within 20 minutes.

The "Convoy Go" drop-and-hook service helps address the industry-wide capacity challenge by reducing average carrier unload wait time. In addition, it benefits corporate sustainability efforts. According to Convoy, by combining headhaul and backhaul loads, empty miles driven are reduced by 45%, thereby reducing carbon emissions.

Customers also benefit from increased visibility. First, customers can track the status of loads in transit. Through the "Convoy Go" pool of smart trailers, customers have access to trailer location, speed, projected and confirmed arrival times, if it is loaded, what it was carrying, and what will be loaded on it next. Second, it provides a granular view of the facility yards. Daily reports automatically provide insight into how many trailers are parked in the yard and overflow lots, where the trailer is located, and its status.

Convoy Go's Smart Trailer Visibility

CONVOY GO SMART TRAILERS

- 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
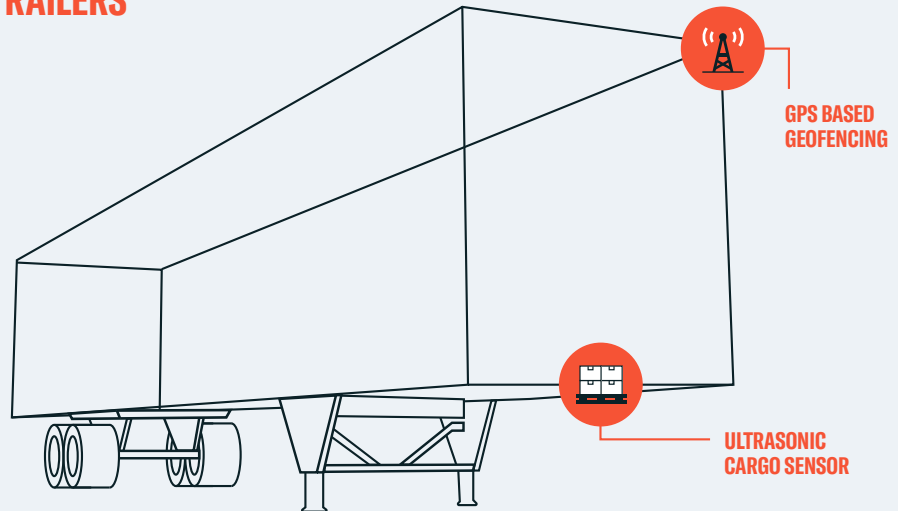
Specialized Features Driving Efficiency and Sustainability

In 2019, Convoy announced "Automated Reloads" for live shipments. Through its "Automated Reloads" functionality, Convoy is able to batch multiple shipments together into a singular circuit. Automatically identifying and matching opportunities enables carriers in Convoy's digital freight network to book both shipments as a single roundtrip or continuous move. This functionality makes it easier for a carrier to increase utilization and reduces carbon emissions from empty miles. Per Convoy, its "Automated Reloads" function generated over 465,000

fewer empty miles and its batching capabilities prevented more than 1.6 million pounds of CO_2 emissions from entering the atmosphere in 2020.

Through the program, carriers can increase revenue through better route planning and improve truck utilization. Shippers benefit from reduced carrier falloff rates and lower carbon emissions.

In October 2020, Convoy announced "Automated Reloads" for its drop-and-hook program. The process provides the same benefits as it does to live "Automated Reloads", while continually balancing Convoy's trailer pool and further reducing empty miles.

Convoy launched its "Green Appointment Window" feature in May of 2020. The program encourages shippers to book loads with a flexible versus an exact delivery appointment window. The delivery window flexibility increases the opportunity for the shipment to fit into a carrier's schedule. By using the "Green Appointment Window", shippers obtain access to carriers at the best price, while reducing carbon emissions. Per Convoy, between May and December 2020 it has been leveraged on over 63,000 loads, preventing over 109,000 pounds of carbon emissions.

Convoy's Freight Brokerage and Operations Proprietary Technology

Dynamic pricing and other services are driven by Convoy's proprietary technologies. Convoy's load matching platform uses machine learning to digitally match and tender loads to carriers (through numerous factors including carrier falloff), and auto-accepts a bid within 10 minutes. Per Convoy, nearly 98% of the time, the load will flow through the Broker Board without human intervention. Exceptions are handled by a team of internal freight brokers. Freight volumes can be highly erratic, especially backup and spot loads. Convoy's carrier network can quickly scale up as freight brokers move their attention to where the volume is concentrated to handle market swings.

If a bid in the system does not match or if there is damage to a trailer, Convoy's Operations team will use their internal system to troubleshoot and correct the issue. The system contains all the load details including pickup location, appointment

times, notes, flags, and all communication activity related to the load. It can automatically link to a shipper's TMS.

Convoy's Yard Monitor solution provides a single dashboard view of 1,000s of yards in real time, as well as two weeks into the future. Operations can view every delay, arrival, as well as how many trailers are at a yard and available for routing. Yard Monitor uses machine learning to automatically find the most efficient way to route and balance trailers throughout the United States.

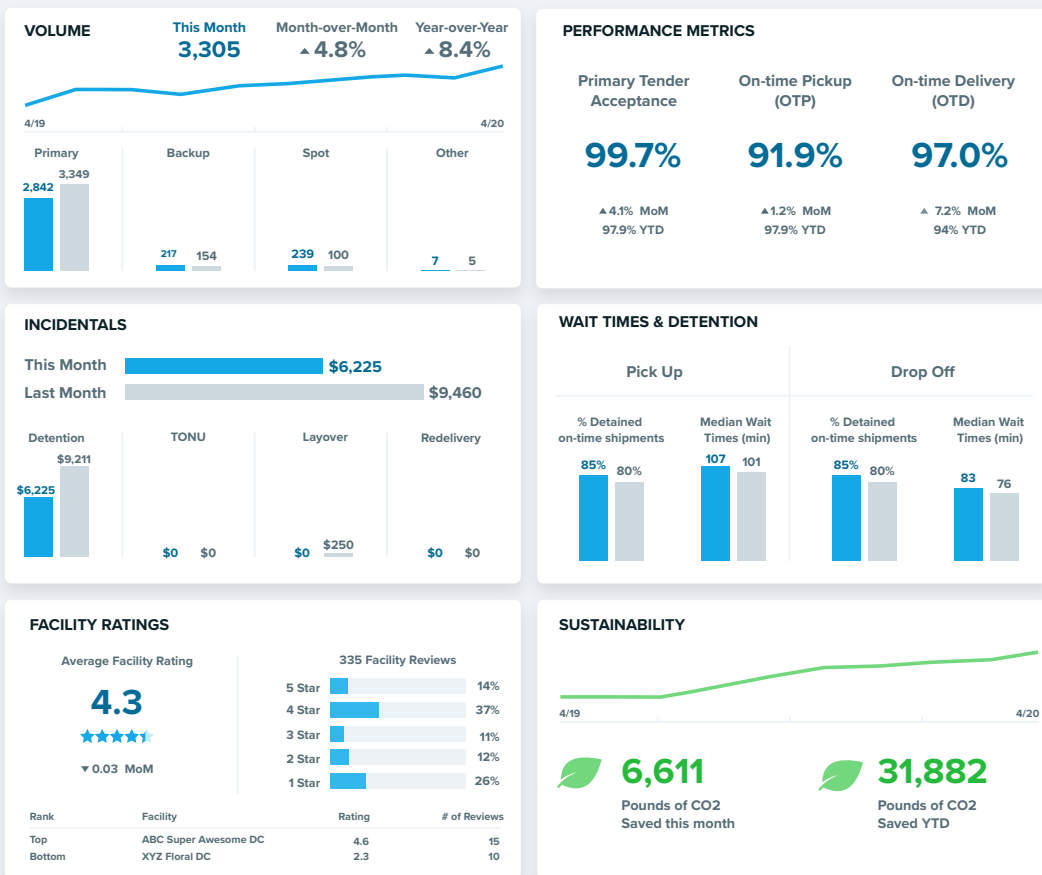## Increased Visibility with GPS Tracking and Online Tools

Convoy's end-to-end visibility allows shippers to track shipments, access shipment details and documents, and plan production schedules accordingly. Using GPS, the precise location of every shipment can be viewed in real-time on a map. Convoy automatically provides real-time updates on shipment status throughout the route. The Convoy web app has a central dashboard where customers can create custom views. Shipments can be filtered by factors such as load status, pickup location, or by owner. Each shipment has a details page including real-time status and documentation such as PODs and scale tickets. Information is always accessible, shareable, and downloadable.

Convoy collects over 1,000 data points on each shipment and shares monthly business reports with insights in 10 core categories, including factors such as facility ratings and carrier feedback. Facility ratings are gathered through

automatic data points and driver feedback. This includes highest and lowest rated facilities, benchmarks of facility ratings compared to other shippers, and feedback on yard space. Convoy automatically includes statistics, charts, and benchmarks for accessorial charges such as a breakdown of detention, lumper, layover, and more. Each month contains a detailed section for on-time pickup and delivery trends including the number and percentage of shipments picked up on-time, early, and late. Facilities with highest and lowest wait times and custom carbon emissions insights are also included. Shippers can leverage the information to improve the carrier experience and address current and predicted facility inefficiencies.

Convoy's Monthly Reporting and Analytics

VOLUME

This Month **3,305** Month-over-Month ▲ **4.8%** Year-over-Year ▲ **8.4%**

4/19   4/20

Primary	Backup	Spot	Other
2,842 / 3,349	217 / 154	239 / 100	7 / 5

PERFORMANCE METRICS

Primary Tender Acceptance	On-time Pickup (OTP)	On-time Delivery (OTD)
99.7%	**91.9%**	**97.0%**
▲4.1% MoM 97.9% YTD	▲1.2% MoM 97.9% YTD	▲ 7.2% MoM 94% YTD

INCIDENTALS

This Month $6,225
Last Month $9,460

Detention	TONU	Layover	Redelivery
$6,225 / $9,211	$0 / $0	$0 / $250	$0 / $0

WAIT TIMES & DETENTION

	Pick Up		Drop Off	
	% Detained on-time shipments	Median Wait Times (min)	% Detained on-time shipments	Median Wait Times (min)
	85% / 80%	107 / 101	85% / 80%	83 / 76

FACILITY RATINGS

Average Facility Rating
4.3
★★★★½
▼ 0.03 MoM

335 Facility Reviews

5 Star	14%
4 Star	37%
3 Star	11%
2 Star	12%
1 Star	26%

Rank	Facility	Rating	# of Reviews
Top	ABC Super Awesome DC	4.6	15
Bottom	XYZ Floral DC	2.3	10

SUSTAINABILITY

4/19   4/20

🍃 **6,611** Pounds of CO2 Saved this month

🍃 **31,882** Pounds of CO2 Saved YTD

In addition to the monthly reporting and
analytics, Convoy can act as a resource for
shippers by leveraging its quantitative and
qualitative data, as well as external resources,
and running several simulations and sharing
insights on how certain changes can impact a
customer's business.

Carrier Management

Through machine learning and artificial
intelligence, Convoy maintains stringent standards
for its carriers. Its unique model continually
audits carrier safety and quality using millions
of records spanning 10 years. This includes data
from the government, insurance companies, safety
organizations, and other factors.

Convoy's Eight Safety Categories for Carriers

QUALIFICATION	INDUSTRY	CONVOY
Collect W9, operating authority, Insurance certificate	✔	✔
Disqualify "unsatisfactory" carriers	✔	✔
Disqualify "conditional" carriers and assess with CSA safety scores		✔
Differentiate Inter/Intra state; require DOT in all states		✔
Automated real-time compliance standards monitoring		✔
Fraud prevention via data matching and dual-factor authentication		✔
Collect valid insurance certificates directly from insurers		✔
Disqualify carriers who fall below Convoy's performance standards		✔

Before any driver in the network can accept a load, the system checks crash history, vehicle maintenance, traffic incidents, operating authority, insurance status, cargo claims history, and historical carrier performance. If the driver does not pass the requirements, they cannot accept the shipment. The algorithm runs these compliance checks continuously to make sure every carrier is bonded, insured, licensed, and in good standing for every shipment. Carriers that do not meet safety standards are removed and replaced by a compliant carrier automatically.

Convoy's Predictive Carrier Crash Capability

COLLECT CARRIER DATA

Convoy combines rich carrier data from government, insurance, and safety organizations with our own digital freight network statistics.

IDENTIFY SAFEST DRIVERS

Machine learning processes thousands of inputs across millions of records spanning the past 10 years to identify carriers who are least likely to crash.

VERIFY SAFETY STATUS

Through automation, we vet the tens of thousands of carriers in our network against our rigorous standards, daily, with every load.

A SAFER CARRIER NETWORK

As a result, Convoy carriers have a **16% lower crash rate** vs. the industry average, with **99.99% of loads delivered without a cargo claim**.

The use of machine learning to continually audit carrier quality, and to automatically match each shipment to the best carrier based on current location, performance rating, and bid, increases on-time pick-up and delivery. To further raise the quality of carriers in the network, Convoy proactively sends additional training materials to the carrier after delivering their first 10 shipments.

Carrier Partnerships and Programs

Convoy offers consistent work for single owner-operators and smaller fleets by opening access to dedicated freight from large shippers across the United States. It also has an easy-to-use, free app and several beneficial programs.

Within Convoy's app, carriers can quickly see an individual facility's dwell time, standard detention terms, and shipper cancellations. Carriers can use the app to personalize load offers based on lane preferences, location, history, or truck type. Instead of numerous phone calls, carriers can bid, accept, and confirm jobs instantly at market

competitive rates. With "Request a Load" carriers can proactively set what lanes they prefer to run, along with a preferred rate, and indicate when their truck will be empty. As soon as a compatible load is added to the network, a bid automatically generates on behalf of the carrier. Carriers can also set up alerts to receive repeat loads in a specific area.

Convoy's Easy to Use App
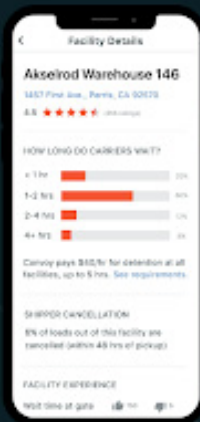
Details on each facility
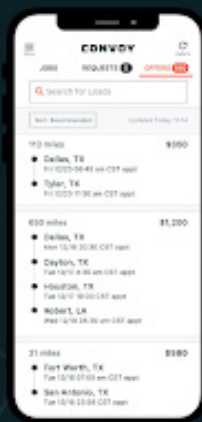
Automated Reloads

Less hassle, paperwork

Free Quickpay

Convoy offers additional benefits to carriers such as No Hassle Detention, Hassle-Free Lumper payments, and free QuickPay. In the former, if a carrier is delayed at a facility beyond two hours, Convoy pays the carrier for the detention time. With the latter, carriers can request and receive lumper codes immediately within the app to reduce phone calls and additional expenses. Through Convoy's QuickPay service, carriers can upload bills of lading directly into the app and receive payment within 48 hours of document approval.

Convoy offers a "TruckYeah" Savings program and fuel cards as a way for carriers to reduce expenses while they grow their business. In addition, fuel finder functionality is built into the Convoy app to help carriers find the lowest cost fuel while they are enroute.

If a carrier needs support, Convoy has 24/7 customer service available in English and Spanish.

Customer Cases

Home Depot, the largest home improvement retailer in the United States, has been working with Convoy since 2018 using both "Guaranteed Primary" and "Convoy Go". A lot of Home Depot's freight is bulky and difficult to handle, making loading and unloading time-consuming, potentially delaying carriers, and leading to higher detention costs. To make loading easier, Home Depot maintains a trailer pool. This can pose a challenge with asset management as both carrier tractors and trailers need to be tracked and matched in the yard. During a volatile 2020, Convoy's access to carrier capacity helped keep Home Depot's network fluid. As a drop-and-hook shipper that uses trailer pools, Home Depot has benefited from Convoy's own universal trailer pool via "Convoy Go" which provides the extra trailer capacity needed to keep Home Depot's drivers operating efficiently. Convoy has maintained "best-in-class capacity levels" and "on-time performance" throughout their relationship according to Ron Guzzi, Senior Manager of Carrier Relations and Sourcing at Home Depot.

Ardagh Group, a global metal and glass packaging solution supplier with a shared value of sustainability, worked with Convoy to efficiently source over-the-road truckload carriers while reducing CO_2 emissions on bulky, large shipments. Convoy's "Automated Reloads" capability, which enables drivers to automatically match its headhaul with a backhaul, reduces carrier drop off and carbon emission from empty miles. Convoy also offers shippers like Ardagh the opportunity to book freight with a flexible appointment time frame, called "Green Appointment Windows". By utilizing these two features with Convoy last year, Ardagh saved nearly 35,000 pounds of CO_2 shipments and 1,500 gallons of fuel.

CHEP

A Brambles Company

Australian pallet, crate, and container pooling company, CHEP, began U.S. operations in 1990 and now has more than 110 million pallets circulating in North America. CHEP has a circular business model. CHEP supplies pallets to customers at approximately 14,000 locations throughout the United States. From there, the pallets are loaded with freight and shipped to distribution centers and warehouses. The pallets then get deconsolidated, reconsolidated, and sent off to more than 19,000 retail locations. CHEP then collects the pallets from those locations and refurbishes them for further use.

CHEP's freight flows in the United States are unbalanced and lead to empty miles. It uses Convoy's carrier network to balance longer pallet relocation moves by sourcing reliable capacity in those lanes. Through Convoy, CHEP can tap into small carrier capacity. Convoy's "Automated Reloads" creates optimized loops, efficiently utilizing carrier assets, reducing CO_2 emissions, and lowering CHEP's transportation costs. For its drop trailer needs, CHEP leverages Convoy Go as a virtual dedicated fleet. Furthermore, through shared reporting from Convoy, CHEP receives specific feedback about service centers and can address areas of concern, such as locations with long driver waiting times, to continue eliminating waste, reducing empty miles, and other inefficiencies in its supply chain.

Summary

Convoy continues to connect shippers, freight brokers, and carriers to transport tens of thousands of truckload shipments in a more efficient, smarter, intuitive manner. Its pricing solutions driven by advanced machine learning save shippers time and money. Convoy's functionality also helps carriers improve utilization and reduce empty miles. Convoy has built a strong digital freight matching platform in a short amount of time. The customer-first focused, data rich organization continues to problem solve some of the industry's most unique challenges. From "Automated Reloads" to "Convoy Go" drop-and-hook services, Convoy's innovation is steadily raising the bar and moving closer to its mission of endless capacity and zero waste.

SOURCES:

A&A Primary Research, https://convoy.com