JTR Direct LTL Service – Technical Brief
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1. Purpose & Scope

This brief summarizes the operating model and technology stack that power the JTR Direct LTL (Less-Than-Truckload) service, a direct-load solution developed by JTR Logistics in partnership with WARP Transportation (asset-based execution), WARP (optimization & network design), and Turvo (customer visibility). It is intended for IT, operations, and partner engineering teams who require an architectural and process-level understanding prior to integration or onboarding.

2. Operating Model Overview

Element	Description
Network Design	Hub-bypass "direct-load" model: freight travels point-to-point or through a max of one cross-dock, eliminating traditional breakbulk hubs.
Core Lanes (Phase 1)	Chicago ↔ Los Angeles, Chicago ↔ Dallas, Dallas ↔ SoCal. Additional lanes activated via dynamic routing rules.
Service Classes	• Standard Direct LTL: 1–6 pallets, 4-day SLA (CHI–LA baseline) • Volume Direct: 7–14 pallets, 3-day SLA. • Expedited: time-definite, guaranteed capacity window.
Capacity Sourcing	Primary: WARP dedicated fleet Secondary: WARP-vetted carrier pool activated via API (asset-light flex capacity).
Load Consolidation	Algorithmic consolidation inside origin metro only; no en-route breakbulk.
Delivery Model	Last-mile via partner P&D carriers with Turvo driver app for proof-of-delivery capture.
Pricing Mechanism	Dynamic pallet-level rating (zone-based) calculated by WARP Engine, published to customers and via API.
Governance	Weekly KPI review (on-time, damage rate, CO_2 per mile) + joint escalation board JTR/WARP/GreenLine.

JTR Direct Load

3. Technology Stack

3.1 Core Platforms

Layer	Platform	Role
Optimization & Rating Engine	WARP TMS v3.4	Lane design, dynamic rating, routing, carrier assignment, CO_2 analytics.
Visibility & Collaboration	Turvo	Real-time shipment visibility, customer portal, exception chat, driver mobile app.
Execution	GreenLine Fleet Telematics + onboard ELD/IoT	Live location, temperature (if reefer), engine diagnostics pushed to Turvo via MQTT bridge.
Data Warehouse	Snowflake (JTR instance)	Normalized shipment, tracking, and cost data for BI/AI.
Integration Layer	MuleSoft Anypoint	API gateway, transformation, and event-driven integrations between WARP, Turvo, ERP/OMS clients.

3.2 Data Flow (High-Level)

Customer (EDI/API/Portal) ─┐
▼
Order Intake (MuleSoft API Gateway)
▼
WARP TMS → Rate & Route → Carrier Assign
▼ ↘ Capacity Ping (Real-time)
Turvo
▼
Driver App (GreenLine / Partner) ← Telemetry

Events (status, POD, exceptions) propagate back to customers in < 60 s via webhooks or EDI 214.

3.3 Key APIs & Protocols

Interface	Purpose	Spec
/rating/v1/quote	Pallet-level instant quote	REST, JSON, <150 ms p95
/shipment/v2/create	Create & tender load	REST + OpenAPI 3.1
EDI 204 / 990	Tender & response for legacy shippers	X12

/events/v1 (webhooks)	Push status, exceptions, CO_2 snapshot	HTTPS (TLS 1.3)
MQTT topic fleet/#	Carrier telematics --> Turvo	MQTT 5.0, QoS 1

3.4 Security & Compliance

* SOC 2 Type II (audit Q4 2025 in-flight)
* ISO 27001 roadmap aligned (gap-assessment complete)
* Data encryption in transit (TLS 1.3) & at rest (AES-256)
* Role-based access in Turvo; SSO via Azure AD/OIDC

4. Service Performance & SLA Targets

Metric	Target	Measurement Source
On-Time Pickup (OTP)	≥ 97 %	Turvo timestamps
On-Time Delivery (OTD)	≥ 95 %	Turvo, customer POD
Damage Rate	≤ 1 % of shipments	Customer claims portal
CO_2e per 100 lbs	10 % lower than regional LTL baseline	WARP CO_2 model
API Uptime	≥ 99.9 % (monthly)	Statuspage synthetic

5. Scalability & Roadmap

Milestone	ETA	Detail
Automated Terminal Cross-Dock (SoCal)	Q3 2025	Robotic pallet sortation; doubles late-cutoff capacity.
Predictive ETA v2	Q4 2025	ML model ingests weather + road sensor data; ±15-min accuracy on 90 % of shipments.
Carbon-Neutral Option	Q1 2026	Offset marketplace integration; customer opt-in at booking.
Self-Service Analytics Portal	Q2 2026	Snowflake → Looker embed; customizable KPI dashboards.

6. Contact & Responsibility Matrix

Function	Primary Contact	Backup
Solution Engineering	R. Pearson (JTR)	Priya Shah (WARP)
API Support	devsupport@jtrlogistics.com	–
NOC / 24 × 7 Ops	WARP Tower	–
Security & Compliance	CISO@jtrlogistics.com	–

7. Appendix

A. JSON Example – /shipment/create
B. EDI 214 Code List
C. Disaster Recovery RACI
D. Glossary