

Shipwell Platform: Excellence Through Cutting-Edge Architecture

At Shipwell, we empower supply chain professionals to drive efficiency and service effectiveness at scale. Our TMS platform architecture revolutionizes logistics operations with flexibility, high availability, and innovation, allowing seamless management and optimization of shipping processes.

Breaking Free from Scale Constraints

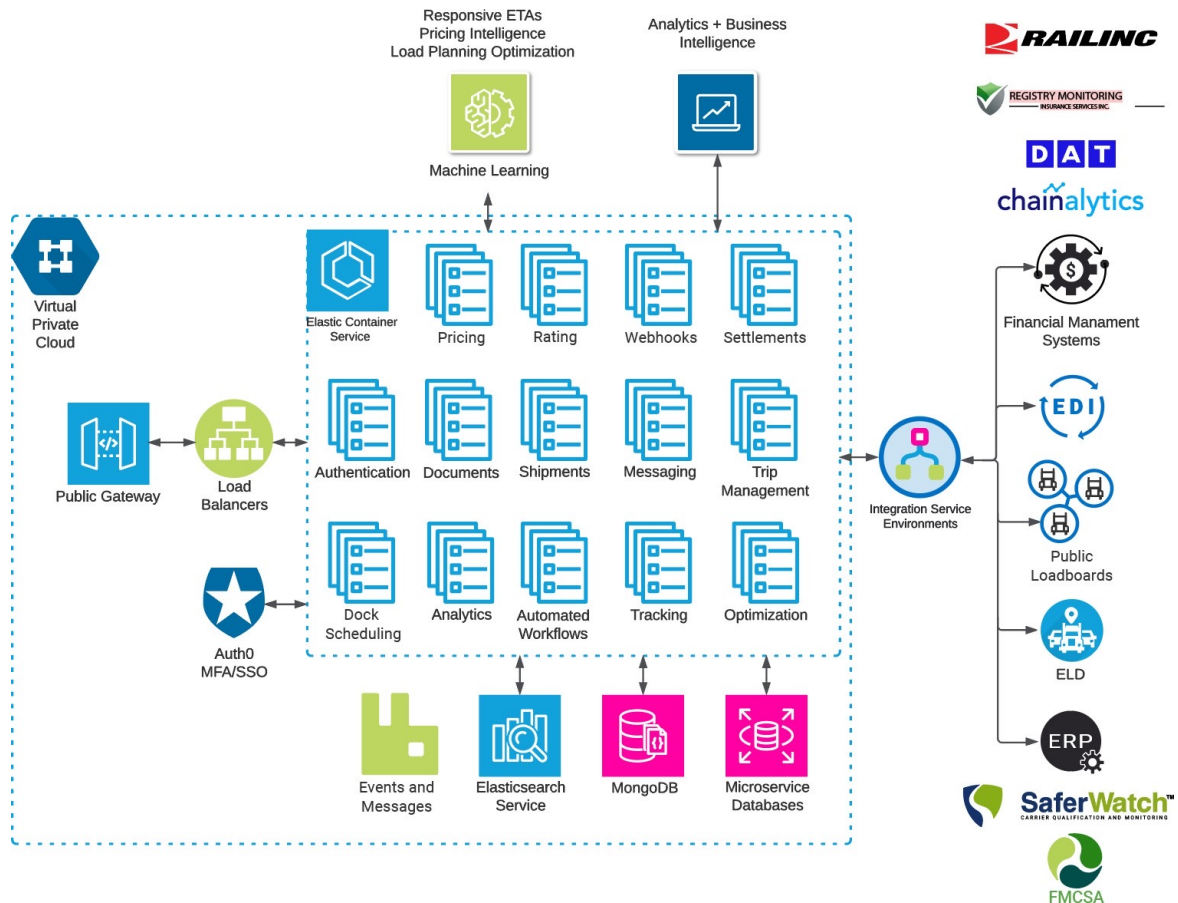
In today's dynamic logistics landscape, monolithic applications can feel like a heavy anchor. These once-efficient giants can now slow you down, particularly as logistics migrates to the cloud. Over time, maintaining a monolithic codebase becomes challenging, making it harder to isolate changes that should only affect specific modules. Picture making precise changes without overhauling the entire structure or scaling only the essential components, this is the Shipwell architecture.

Shipwell TMS Architecture: Unleashing Microservices Potential for You

At the core of Shipwell's logistics solution lies microservices architecture—a dynamic response to traditional logistics challenges. Our platform is built on a RESTful API that seamlessly integrates with our customers' supply chains, offering advanced visibility into their shipments.

- **Boost Scalability:** Shipwell's microservices independently scale, optimizing resource allocation even during peak demand. Hosted on a **Kubernetes cluster**, our cloud-based deployment ensures seamless updates, faster responses, and user expansion without downtime.
- **Maintain Modularity:** Each microservice functions as a self-contained entity, allowing precise, isolated updates. This approach minimizes disruptions during database upgrades, ensuring system elasticity and responsiveness to varying loads.
- **Self-Configurable Flexibility:** With our low code, no code approach, you're in control, choosing the level of configuration and customization that suits your needs, with the support you desire. Every component is part of a shared application platform, designed for automated scalability, resiliency, and availability. In addition, our platform offers better interoperability with your existing systems and architectures, securing your future with a cutting-edge IT stack.

How Shipwell TMS Architecture Can Help



I. Access to the Platform

At the core of Shipwell's architecture is a robust infrastructure hosted in a Virtual Private Cloud (VPC). This VPC features a single entry point via a public gateway, strategically designed to limit access from the public internet, ensuring data security and privacy. Authentication is handled seamlessly through Auth0, providing support for multi-factor authentication and single sign-on via various identity providers. This access to our platform not only guarantees advanced technology and infrastructure but also enhances the developer experience, streamlines integration, simplifies deployment, and optimizes maintenance.

II. Microservice Architecture

Shipwell's architecture leverages Elastic Container Service (ECS) within the VPC to manage multiple microservices that form the backbone of the Shipwell platform. These microservices run as containers, and additional instances of the same microservice are dynamically added to the cluster as the workload increases, ensuring optimal performance. Each microservice is paired with a load balancer to efficiently distribute incoming requests across multiple instances. But it's not only about system reliability; it's also about accelerating innovation cycles and enabling incremental updates. Shipwell's microservice architecture keeps us at the cutting edge of technology providers, ensuring you benefit from the latest logistics industry developments.

III. Microservice Functionality

The Shipwell platform comprises a multitude of microservices, each designed to fulfill specific functions essential for efficient logistics management. Some notable examples include:

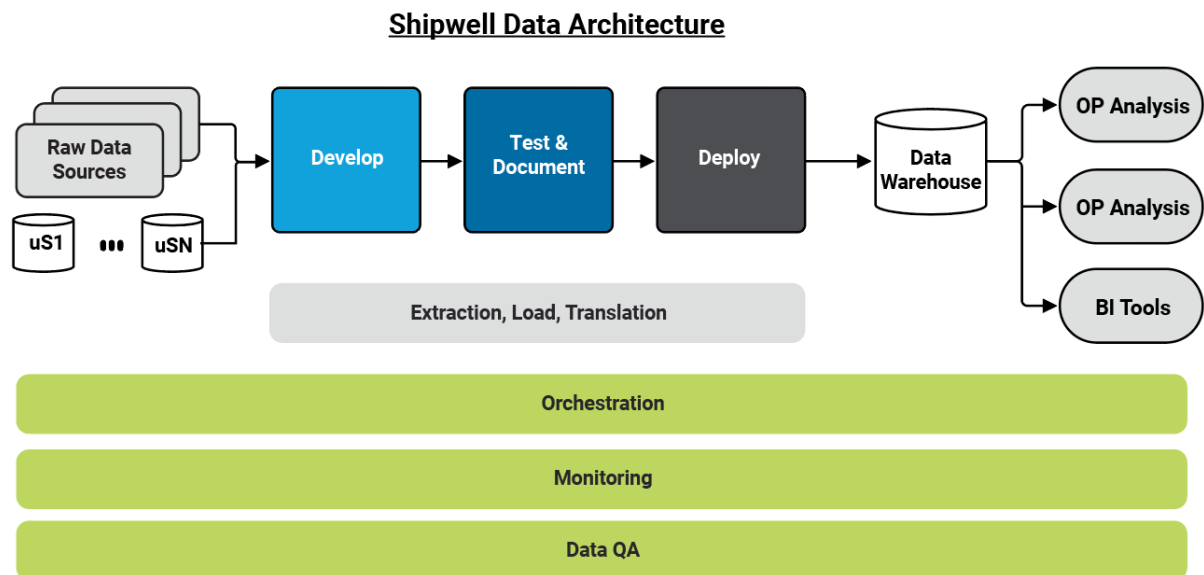
- **Webhooks:** Developers can subscribe to events and create custom webhooks to receive real-time notifications directly to their systems.
- **Dock Scheduling:** Comprehensive scheduling of facilities and docks, accommodating various personas such as dock workers, drivers, and facility managers.
- **Document Management:** Handling of crucial documents like Bills of Lading (BOL), Proof of Delivery (POD), and invoices, with the flexibility to create new document types as needed.
- **Settlements:** Streamlining the audit process for shippers, including first-pass match and exception management.
- **Rating:** Generation of rates for Full Truckload (TL), Less Than Truckload (LTL), and Parcel shipments through seamless integrations with third-party rate providers.
- **Tracking:** Real-time tracking of individual shipments, supporting multiple data sources, including Electronic Logging Devices (ELD), Electronic Data Interchange (EDI), Shipwell's mobile app, automated check calls, and manual updates.
- **Pricing:** Utilizing Artificial Intelligence (AI) and machine learning to provide price predictions for shipments, incorporating historical pricing data and market data providers.
- **Optimization:** Leveraging AI and machine learning for load and route optimization, ensuring efficient resource allocation.

IV. Integration Service Environment

Shipwell extends its capabilities through extensive integrations with third-party data providers. These integrations include:

- **Railinc:** Access to rail tracking data.
- **DAT, Truckstop, Sonar:** Integration with market pricing data providers.
- **RMIS and FMCSA:** Inclusion of carrier compliance data.
- **SaferWatch:** Enhancing carrier compliance data with additional insights.
- **Third-Party Applications:** Integration with Enterprise Resource Planning (ERP), Financial Management Systems (FMS), Electronic Data Interchange (EDI), public load boards, and Electronic Logging Device (ELD) providers.

V. Data Visualization and Analytics



Shipwell TMS goes beyond conventional analytics reporting. We automate and visualize tracked shipments at every crucial stage, from Pickup to In-transit to Delivery. This granular level of visibility helps you make proactive decisions throughout the logistics journey.

Shipwell TMS is thoughtfully designed for fast, easy visualization of your entire transportation network, putting vital insights at your fingertips. Our robust reporting capabilities ensure you have the information you need when you need it, serving up valuable and helpful information without unnecessary complexity. Moreover, Shipwell TMS makes data accessible to other stakeholders who need it within the organization. This includes creating dashboards, reports, and other data visualizations to help stakeholders make informed decisions.

Key components include:

- **Out-of-the-Box Reporting:** The platform offers an intuitive reporting solution, complete with exploration and visualization capabilities.
- **Data Warehousing:** Shipwell provides a robust data warehouse with associated data model schemas, facilitating data ingestion and utilization in external data warehouses and BI tools.
- **Data Monitoring:** The platform continuously monitors data orchestration and sources, ensuring up-to-date, high-quality, and structured data within the data warehouse.
- **Reporting Frequency:** In-platform reporting enjoys a refresh rate of 15-30 minutes, ensuring access to near real-time data.

VI. Machine Learning-Powered Intelligence

Shipwell's relentless pursuit of innovation is exemplified by our strategic integration of Machine Learning (ML) models within our platform. These sophisticated models bring transformative capabilities to your logistics operations, with a particular emphasis on streamlining settlements and deciphering unstructured data.

- **Achieve Unprecedented Settlement Efficiency:**

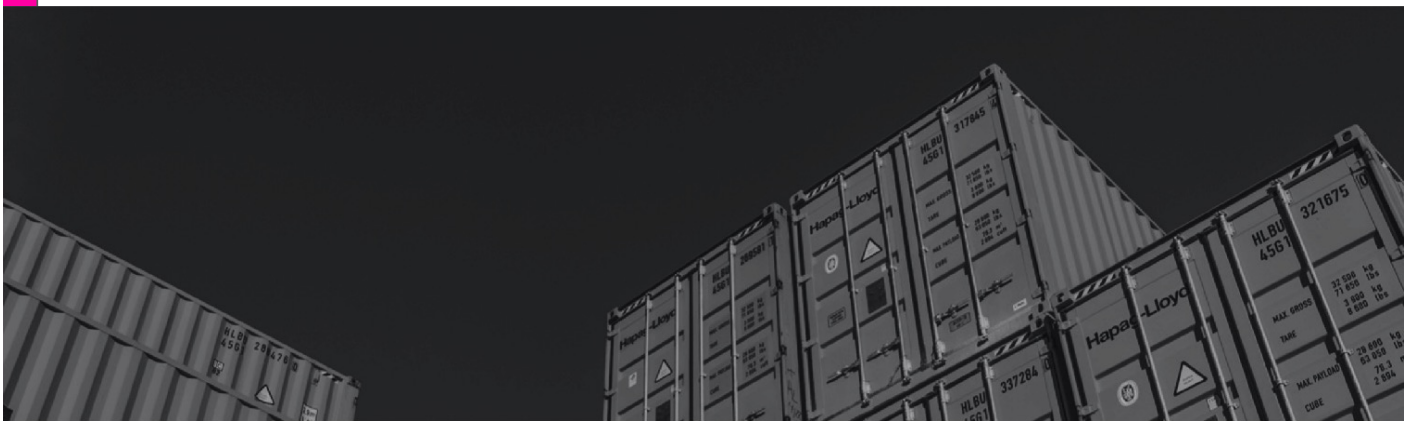
Shipwell TMS leverages ML to redefine settlements, introducing the pioneering "First Pass Match" functionality. This innovative approach ensures faster, more accurate settlement processing, saving valuable time and resources.

- **Real-Time Tracking ETA:**

Shipwell TMS offers robust real-time tracking capabilities natively. This means that you can monitor the progress of your shipments in real time, receiving up-to-the-minute updates on their ETA. Whether it's back-ordered inventory, labor capacity constraints, or complex routes, our machine learning-driven system adapts and provides the most accurate and intelligent information, ensuring you control your logistics operations.

VII. Observability

Shipwell maintains a strong focus on system observability, leveraging OpenTelemetry (otel) throughout its microservices. This approach provides trace IDs for all errors and logs, facilitating root-cause analysis. Logs, metrics, otel spans, and traces are efficiently exported into Datadog for performance and uptime monitoring. Additionally, key metrics related to system services are fed into Cloudwatch, allowing comprehensive system health monitoring. The architecture's alerting mechanism ensures timely responses to anomalous errors, traffic patterns, and critical application metrics through PagerDuty, ensuring seamless operations through a 24/7 engineering on-call rotation.



High Availability	Enhanced Data Security	Improved Fault Isolation	Scalability On-Demand	Accelerated Development
We emphasize high availability, with an uptime target of eight nines (99.999999%), ensuring system reliability.	Enjoy enhanced data security with Shipwell's SOC 2 Type 2 compliance, safeguarding your logistics information, with top-tier controls and operational effectiveness.	Even when issues arise, Shipwell TMS architecture ensures they remain contained, safeguarding your logistics workflow's integrity.	Seamlessly scale specific services to handle high-demand periods, enhancing your logistics system's performance and responsiveness.	Experience shorter development cycles for new functionalities, enabling you to access cutting-edge logistics tools without delays.

Shipwell TMS platform is a transformative force within the logistics industry. With its emphasis on flexibility, event-driven communication, high availability, performance optimization, observability, risk management, innovation, documentation, and commitment to data security, Shipwell ensures efficient and reliable operations, a superb developer experience, and ease of integration, deployment, and maintenance. It provides faster innovation cycles, system reliability, and incremental updates. Slow batch processes are moved to real-time event-driven design, providing better interoperability with existing systems and architectures. Essentially Shipwell provides a future-proof platform that puts your stack on the cutting-edge.



About Shipwell

At Shipwell, we empower supply chains with increased efficiency and service effectiveness at scale. Our solution combines everything shippers need, from transportation management and visibility to procurement, in a comprehensive, easy-to-use platform, so shippers can effectively operate, manage, and optimize their entire shipping process seamlessly. To learn more, visit www.shipwell.com.